UNIVERSITY OF SOUTHAMPTON

FACULTY OF HUMANITIES

Modern Languages

‘Take your Time’ to ‘Find yourself!’: An Exploration of Scaffolded Autonomous E-Learning Environments amongst International Students in a UK University

by

Serpil Meri Yılan

Thesis for the degree of Doctor of Philosophy

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ABSTRACT

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'TAKE YOUR TIME' TO 'FIND YOURSELF!': AN EXPLORATION OF SCAFFOLDED AUTONOMOUS E-LEARNING ENVIRONMENTS AMONGST INTERNATIONAL STUDENTS IN A UK UNIVERSITY

Serpil Meri Yılan

Over the previous decade, there has been an increase in using and undertaking research on e-learning (Aparicio, Bacao & Oliveira, 2016). In particular, learning in autonomous, self-directed e-learning environments has been of interest to educational organisations, institutions and designers, with the aim of enabling learners to improve their learning on their own in such environments. However, as learners are increasingly isolated and working without any human-based support (Zembylas, Theorou & Pavlakis, 2008), it is necessary for online learning resources (OLRs) to provide enough scaffolding to enable them to achieve 'good learning' which is 'ahead of the[ir] actual development' or zone of proximal development (Vygotsky, 1978 cited in Burns & de Silva Joyce, 2005, p.10). But we know very little about how learners working on their own online use such scaffolding for their learning. Therefore, the present study focuses on the relationship between scaffolding and learner autonomy in e-learning environments and considers scaffolding as a possible way to promote learning on one's own. By this means, it can be presumed that in well-scaffolded e-learning environments, learners are supported to further develop their own autonomy and become more capable of managing their own learning.

In order to investigate the above-mentioned relationship, pre- and post-questionnaires were distributed amongst 35 international students who were to undertake higher education, at either undergraduate or postgraduate level. These students were on a pre-sessional course to improve their English language and academic skills at the University of Southampton and were supported in their independent learning outside the classroom by training and access to online learning resources, in particular the Southampton designed EAP (English for Academic Purposes) Toolkit

which includes many interactive activities. To give detailed insight into the learning processes which take place in a scaffolded e-learning environment, additional instruments were used with 10 volunteers. During a period of five months, the participants were observed working with the EAP Toolkit and interviewed three times. Digital screen capturing with video was used to record their actions and think-aloud protocol methods were also used in order to gain some insight while carrying out the activities in the EAP Toolkit.

A total of 870 minutes of interviews and 450 minutes of digital screen capture and think-aloud recordings were made. The results of the study go some way to showing how learners learn online in scaffolded and non-scaffolded learning environments. Learners carry out different learning actions depending on the availability and use of scaffolding in the OLRs and are capable of exercising and developing their autonomy. These findings suggest that a well-designed, scaffolded, autonomous, e-learning environment can facilitate the interaction between learners and OLRs and enable them to adapt their learning on their own. Finally, the research recommends that designers, institutions, teachers, students and further studies should take into account the features of a well-designed e-learning environment which provides appropriate scaffolding that will enable learner autonomy to take place.

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DECLARATION OF AUTHORSHIP

I, Serpil Meri Yılan,

declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

'TAKE YOUR TIME' TO 'FIND YOURSELF!': AN EXPLORATION OF SCAFFOLDED AUTONOMOUS E-LEARNING ENVIRONMENTS AMONGST INTERNATIONAL STUDENTS IN A UK UNIVERSITY

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. Parts of this work have been published as:

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Signed: .....

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Last but not least, I would like to thank my mother-in law, father-in law, my mother, father, sisters and brothers for their unconditional love and support and sacrifices they have made on my behalf.

Chapter 1: INTRODUCTION

> 'What the child can do with assistance today she will be able to do by herself tomorrow.'
>
> (Vygotsky, 1978, p. 87)

1.1 Introduction

This chapter will give a brief introduction to the thesis. First, it will deal with the research rationale by giving the reasons for my interest in scaffolded autonomous e-learning environments. After that, it will discuss the purposes, goals and research questions of the present study. Then, it will describe the research design (see Figure 2) and give the outline of the thesis, explaining what is included in each chapter. The next section will discuss the research rationale and context.

1.2 Research Rationale

There is a general trend towards e-learning in education, particularly at university level, and a growing interest around the world in providing learners with online learning resources (OLRs) and computers or laptops to be accessed in educational settings (e.g. Collins & Halverson, 2010; Garrett, 2009; Selwyn, 2003; Yang & Chen, 2007). However, it is clear in the above epigraph from Lev Vygotsky that learning should be scaffolded, at least in its initial stages (see Section 2.3.), if learners are to become autonomous (see Section 3.4) in any learning environment, and this may be particularly true in online environments which are unfamiliar to the learners (see Section 2.2.3 and Table 1). OLRs and e-learning environments offer a number of affordances compared with traditional environments and resources (see Section 2.5.). However, so far very little is known about effective learning design, how learning is scaffolded, and how scaffolding can lead to greater learner autonomy whereby the learner can direct his/her own learning effectively (see Nielsen, 2012; Delen, Liew & Willson, 2014; Chen and Law, 2015 and Section 3.5.). This is perhaps particularly the case when learners are learning through the medium of another language, as is the case with many international students.

The present study sets out to explore how learning takes place in scaffolded e-learning environments and whether it can lead to greater self-management. It focuses on a group of

international students who are second language learners studying English for Academic Purposes on a pre-sessional course in a UK university and uses the 'EAP Toolkit' developed by the University of Southampton, as an example of a scaffolded online learning resource (see Sections 1.2.3. & 4.2. for a description).

1.2.1 My Personal Interest

My interest in the study reported in this thesis dates back to my undergraduate study in Turkey, which made me question Turkish educational approaches to second language learning in particular, and education in general. For one thing, these approaches are based on recitation and lack any interactivity between students and teachers or between students and their peers in language learning classrooms (Yumuk, 2002). In addition, these approaches do not pay enough attention to keeping students motivated in the classroom (Acat & Demiral, 2002). Luckily, I had the opportunity to study abroad, so I had the experience of learning within a different education system, and my interest in learning and teaching approaches continued to develop. My interest during my Master's study focused mainly on two significant concepts, namely learner autonomy and computer-assisted language learning (CALL), both of which, in my experience, are neglected concepts at all levels of the Turkish education system. Pursuing this interest, I researched these two concepts in a primary school in Turkey by looking at learners using Dynamic Education (DynEd) language learning software, a language courseware recommended and provided in a number of schools in Turkey by the Turkish Ministry of National Education (DynEd, 2014a). The findings revealed that CALL can help learners to learn independently and can increase confidence and motivation even though, in this case, the learners still needed the presence and help of the teacher (Meri, 2011). The need for the teacher's presence might result from the lack of adequate scaffolding or other assistance in this e-learning environment. It can be inferred from this study that learning design should be taken into account in order to scaffold learning, although DynEd does claim to support learning by giving the language learners the information they require to accomplish the task (DynEd, 2014b). However, my research concluded that there was little opportunity for learners to develop the ability to manage their own learning successfully (Meri, 2011).

Scaffolding is described as 'the steps taken to *reduce the degrees of freedom* taken in carrying out some task so that the child [or learners more generally] can concentrate on the difficult skill she [or he] is in the process of acquiring' (Bruner, 1978 cited in Michell & Sharpe, 2005, p.32, italics in original). Along with Bruner's definition of scaffolding, further reading of the literature has suggested that the process of scaffolding learning should take into consideration the development of learner autonomy in e-learning environments (Chang & Sun, 2009; Linn, 1996; Luzón, 2006;

McLoughlin & Marshall, 2000). For this reason, my research focus has shifted to the relationship between scaffolding and learner autonomy in e-learning environments. To understand this, my PhD research investigates what actions learners carry out while learning online, how they perceive their learning online and in what ways they exercise their autonomy, especially in scaffolded e-learning environments, by using the EAP Toolkit designed for them as well as other online learning resources (for more detail, see Chapter 4). In addition to the influence of my own learning experiences, the increase in support for online learning in the global context also led to a focus on this issue, as outlined in the next section.

1.2.2 **The Global Context: Supporting E-learning**

The use of computers has become so widespread in all contexts of education that educational institutions have had to start supporting second language learners and focusing on ways to assist them in handling their own learning (Benson, 2004; Lee, 2005; Murphy, 2006; O'Rourke & Schwienhorst, 2003) and on ways to enhance motivation (Acat & Demiral, 2002), since motivation is important for promoting their learning. A large number of universities, not only in Europe but also worldwide (Gardner & Miller, 2011), offer physical open learning centres, or libraries, which are very flexible and allow learners to extend their study beyond the classroom, or to learn by themselves without taking any course. Users are not constrained by age or culture (Gardner & Miller, 1999) as they can choose how to learn using the materials and support available. For example, a typical self-access language centre provides learners with books to support different skills, exercises, dictionaries, newspapers, magazines and multimedia resources such as CDs, DVDs, cassettes and learning laboratories where learners can study in an open working space with or without computers, as well as learning advisors (e.g. see Figure 1).

Figure 1: The Language Resources Centre at the University of Southampton

Many institutions now offer virtual self-access centres (VSACs), particularly for language learning (e.g. The University of Nottingham, no date (n.d.); University of Leicester, n.d.; The Hong Kong Polytechnic University, 2014; The University of Auckland, n.d.; Centro Navarro de Autoaprendizaje de Lenguas (CNAI) in Pamplona, Spain, 2014; Universiti Malaysia Pahang in Yau Hau Tse, 2012, and so on.; for the links of the websites, see Bibliography). A VSAC can be described as 'an institutional website that facilitates independent language learning' (Gui & Northern, 2013, p.1). In these e-learning environments, learners obtain 'resources for self-study, as well as, in some cases, forums or message boards to encourage interaction' with their fellows or tutors although they might experience an isolating and reclusive e-learning environment (ibid. p.1). That is, they might lack support and feel isolated or lost in virtual settings or e-learning environments ('Cho & Jonassen, 2009; Cho et al., 2010' cited in Shen, Cho, Tsai & Marra, 2013, p. 10). As stated by Reinders and White (2011), 'technology has the potential to not only provide access to resources for learning in a superficial sense, but also to offer increased affordances for autonomous learning' (p. 1). Therefore, the institutions offering facilities that provide access to learning resources online should not only train learners to take control of their own learning, but also support learners in deciding on learning goals, planning and improving their strategic learning, and assessing themselves (Lázaro & Reinders, 2007).

Moreover, learners have started using digital resources by means of search engines and repositories more than ever (Leacock & Nesbit, 2007). In view of this, learning beyond classroom-based instruction has changed the role of the learners by placing them at the central point of e-learning environments, which has become a factor that developers should take into account (Jarvis, 2012). Above all, a number of recent studies have emphasised that much more attention should be paid to the connection between learner autonomy and e-learning environments ('Jarvis and Szymczyk, 2010; Jarvis and Pastuszka, 2008; Jarvis, 2008a; Jarvis, 2008b; Figura and Jarvis, 2007'; cited in Jarvis, 2012) if learners are able to manage their own learning.

Overall, it may be that learners are required to study alone in e-learning environments because of the non-existence of tutors or peers in the learning process, and that they only receive support to the extent that the tools in online learning materials are able to provide it. In this context, OLRs that provide learning anytime, anywhere for learners are expected to facilitate independent learning, whereas this new kind of learning requires them to have the skills and abilities to use e-learning tools (Shetzer & Warschauer, 2000). Specifically, on the one hand, their digital literacy must be strong enough to enable them to manage their own learning in e-learning environments (see Section 3.3.2.). On the other hand, in order to succeed in taking responsibility for their

learning, e-learning environments should scaffold them and be designed in consideration of the affordances that technology can offer and implement (Haythornthwaite & Andrews, 2011). Its authenticity, feedback, practicability and applicability have a tendency to enhance their autonomous learning (see Section 2.5.). As a result, learners are likely to need scaffolding from OLRs to nurture their own learning (see Section 3.4.). Additionally, if they are handling their own learning, in terms of motivation they might lack confidence and be unable to manage their learning successes and failures in e-learning environments (see Section 3.2.4.). Perhaps this will impede learning. Therefore, e-learning environments should take into account the affective aspects of the resources in the learning design, in order to encourage learners to manage their skills (for more, see Section 3.2.4.). Through this focus, how they manage and regulate their learning, use learning strategies, make attributions for their success and failure, and feel confident in e-learning environments will shed light on the ways in which learners exercise their autonomy in e-learning environments (see Section 3.2.).

On the one hand, learners are alone and self-directed to take charge of their learning on their own in e-learning environments where there are no tutors or other human-based help. On the other hand, they might need additional help to obtain information beyond their capacity in those environments. Considering this factor, scaffolding provided in OLRs has the potential to facilitate learning and promote learner autonomy (see Section 3.4.). Effective scaffolding is likely to decrease the likelihood of failure, encouraging learners to accomplish tasks beyond their cognitive development, and enabling them to acquire independence (McLoughlin, 2002). Although scaffolding promotes learner autonomy, good digital learners 'have a proactive attitude and are autonomous insofar as is possible, they display initiative in their learning and in their performance during the course [online]' (Sáiz, 2007, p.5; for more see Section 3.3.2.). Still, in order to initiate learning, even autonomous or good digital learners might need scaffolding in an unfamiliar setting. Also, the design of the resources might have an impact on learning in terms of how learners develop their learner autonomy through scaffolding (see Chapters 6 & 7 for data). However, there has been little research on scaffolding online and learners' management of their own learning through scaffolding in e-learning environments (see Section 2.1.). Therefore, the present study aims to explore this relationship or interrelationship between scaffolding and learner autonomy in e-learning environments. In order to do this, it draws on Laurillard's Conversational Framework (Laurillard, 2012) which offers a useful frame to discuss the interaction between learners and OLRs (see Section 8.2.).

Having taken into consideration the widespread use of OLRs, along with learners' loneliness and personalisation of their learning in e-learning environments, not only in VSACs but also from digital learning resources, this study focuses on learners' actions and perceptions of their own

learning in scaffolded e-learning environments and the exercise of their autonomy through receipt of support from OLRs. In order to make the current research and its aims clearer, the next section looks at the context of the present study.

1.2.3 The Context of the Present Study

As indicated in the previous section, interest in researching, providing and using OLRs has gradually increased worldwide. Similarly, according to the Universities UK (2012) report, a large number of international students have chosen to study in UK universities, which shows 'the high esteem in which UK higher education is held throughout the world' (n.p.) partly because of their provision for flexible learning or the facilities they offer in e-learning environments. The present study was conducted in a UK university, the University of Southampton, which provides both self-access learning centres (the Language Resource Centre in Figure 1) and virtual self-access centres, for example by offering online learning resources for international students via Blackboard, a virtual learning environment (see Chapter 4 & Section 5.3.).

Participants in this research are international students, speakers of English as a second language, who enrolled on a pre-sessional course to improve their academic skills for language and content learning with the aim of undertaking higher education. However, this study does not separate out or focus on learners' use of OLRs for either language or content learning (academic skills). It looks at how learners learn and handle their learning by means of the use of OLRs.

Students at the University of Southampton can utilise online language learning resources not only in the Language Resource Centre but also at home online via Blackboard, the institutional virtual learning environment, so that they have the advantage of improving their language learning and academic skills by themselves and receiving assistance from these resources anytime and anywhere, as there is no one to guide them. The EAP (English for Academic Purposes) Toolkit is one of the resources made available to them and aims to support various aspects of language learning such as listening, writing or vocabulary (for more, see Section 4.2.) and was designed by the University of Southampton for students to use in a self-access or blended learning mode, both in the classroom and online. The learning design of the Toolkit draws on the key elements and processes presented in Laurillard's Conversational Framework (Watson, 2010), which includes interaction, adaptation, reflection and discussion (ibid. & Laurillard, 2002). Watson (ibid.) points out that, in designing the Toolkit, an attempt was made to enable task interaction, reflection on learning, discussion and adaptation through engagement with the activities and feedback based on Laurillard's iterative learning model (for more, see Section 4.2.). However, there has been no in-depth empirical study looking into the actions learners carry out, their perceptions and exercise

of autonomy through a non-human interaction while learners are using the EAP Toolkit, so one of the aims of the present study is to explore this.

Together with the EAP Toolkit, online language learning resources such as websites for language learning, online dictionaries, and exercises provided on computers in the Language Resource Centre, are available for learners to use anytime and anywhere on their own at the University of Southampton. Furthermore, they can browse other freely accessible online learning resources (OLRs) not just on the computers in this centre, but also on their laptops, tablets or mobile phones. The present study describes OLRs as digital or Internet-based resources provided by the university as just explained, discovered on their own by the learners or suggested to them by learners' tutors or peers (for more, see Section 4.3.) to facilitate their learning. This study also considers in what ways participants exercise their autonomy or not through the provision of scaffolding from other OLRs.

If learners are alone when carrying out activities in e-learning environments, we need to know if they require support in order to engage and interact with digital resources. The present study examines how the EAP Toolkit scaffolds learners' learning and enhances learner autonomy by providing interactive materials (for further empirical data, see Watson, 2010) but without any human-based interaction. As Rienties and his colleagues (2012) argue, appropriate scaffolding encourages learners to be interested and engaged in the activities online and to be aware of their learning. Therefore, the EAP Toolkit is seen here as an example of a scaffolded e-learning resource, in which to explore participants' practices and management of their learning. This study also investigates participants' views on other OLRs with regard to their benefits. Specifically, both the EAP Toolkit and other OLRs used by participants in the present study are investigated in terms of supporting or scaffolding their autonomous learning. This section having dealt with the context of this study (for more detail, see Chapter 4), the next section outlines the research questions.

1.3 Goals of the Present Study and Research Questions

The above section aimed to give a brief and clear explanation of the context of the study, namely, an exploration of the relationship between scaffolding and learner autonomy in e-learning environments (for more, see Chapter 4). Therefore, the current research firstly intends to discover how learners use learning activities and how they are supported online, by focusing mainly on the EAP Toolkit, which consists of interactive learning resources, task and activities that international students can utilise in order to improve their learning independently. There is an additional interest in other OLRs which learners have the opportunity to access through the Internet or computers in the Language Resource Centre with the help of their tutors or peers, or on their

own, in order to provide insight into scaffolded e-learning environments. Secondly, this study aims to examine how online interaction and support might enhance learners' autonomous learning, by looking at their self-management, self-regulation, use of learning strategies, attributions for success and failure, and confidence whilst using online learning materials. Last but not least, the study proposes to explore the relationship between support from OLRs, including the EAP Toolkit, and learners' assumption of responsibility for learning on their own in e-learning environments.

Overall, the first goal (RQ1) of the present study is to establish what actions learners carry out while learning online, especially in scaffolded e-learning environments (for data, see Section 6.2.), by looking at their scaffolded learning (see Sections 5.4. & 6.2.1.; Figure 19), use of OLRs (see Section 6.2.2.) and steps they carry out when learning in a scaffolded e-learning environment (see Section 6.2.3.). The second goal (RQ2) is to investigate how they perceive their learning online, especially in scaffolded e-learning environments (see Section 6.3.). The third goal (RQ3) is to examine participants' learner autonomy by looking at their self-management, self-regulation, use of learning strategies, attributions for success and failure, and confidence both during use of the EAP Toolkit and after using OLRs including the Toolkit (for data, see Chapter 7; Section 5.4. and Figure 19). The last but equally central goal (RQ4) is to explore the link between scaffolding and learner autonomy, with the help of the intended attainment of the previous goals and additional exploration of data (see Sections 5.4. & 7.7. and Figure 19). These goals are set out in the four research questions and sub-questions below:

RQ1) What actions do learners carry out when learning online, especially in scaffolded e-learning environments?

RQ 2) How do learners perceive their own learning online, especially in scaffolded e-learning environments?

RQ3) In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments?

RQ3.1) To what do learners attribute their success and failure, especially in scaffolded learning environments?

RQ3.2.) What is learners' confidence about their own learning, especially in scaffolded e-learning environments?

RQ3.3.) What learning strategies do they use, especially in scaffolded e-learning environments?

RQ4) What is the relationship between scaffolding and learner autonomy in e-learning environments?

To answer these research questions, the research design is explained in the next section.

1.4 Research Design

The previous sections have helped to conceptualise the problems in the research context as a whole. In the preceding section, the problems and purposes of the present study have been described (see Section 1.2), and the research questions have been outlined (see Section 1.3.). The intended research instruments were chosen and trialled in the pilot study (see Section 5.4.). After analysing and interpreting the findings from the pilot study (see Section 5.5.1.), the main study was developed (see Section 5.5.2.). The researcher issued pre- and post-questionnaires to a wider group of 35 participants in order to see whether there is a difference in participants' perceptions of learning with the OLRs, especially with regard to scaffolding and learner autonomy, over time (see Section 5.4.1.). In-depth data from three-time observations and interviews with 10 participants in the main study were gathered to see what actions participants carry out and in what ways they exercise their autonomy (see Sections 5.4.2., 5.4.3., 5.4.4. & 5.4.5.) in e-learning environments, particularly through scaffolding. The results and detailed reflections on the main study give an insight into how participants are supported and manage their own learning in scaffolded autonomous e-learning environments (see Chapters 6, 7 & 8).

Figure 2 illustrates how the research study was carried out. It shows how the research planning went through a number of stages from conceptualising the research problem and describing the research questions and purposes through to deciding the appropriate research methods. The pilot study then allowed the research design to be formulated more precisely. The final stage analyses the collected data and reviews the impact of the findings.

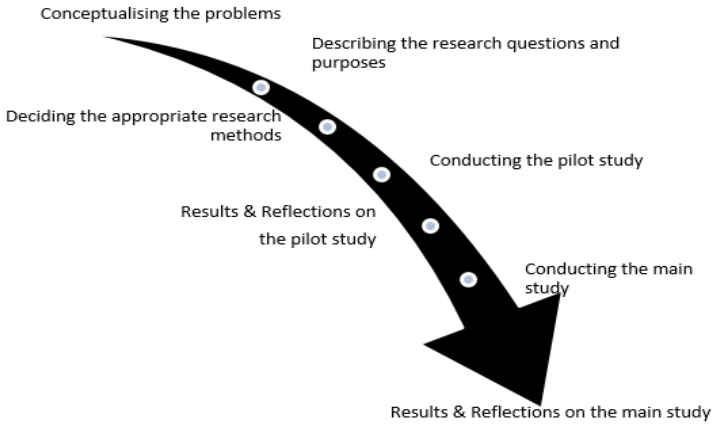


Figure 2: Research Design of the Current Study

1.5 The Outline of the Thesis

In this introductory chapter, I presented the research background and purposes of the current study, with its research questions. The literature is reviewed in two chapters. One of these, Chapter 2, discusses scaffolding in e-learning environments. Section 2.2. places emphasis on the definition of e-learning, examining CALL and its acronyms, e-learning environments and models. Next, Section 2.3. explains scaffolding theory within Vygotsky's Zone of Proximal Development and gives the features and types of scaffolding found in both traditional classroom-based learning and e-learning. As it focuses on scaffolded autonomous learning in e-learning environments, Section 2.4. clarifies the definition of learning design. Above all, learning styles are dealt with in the learning design section, and Laurillard's Conversational Framework is drawn on to see how learning takes place in e-learning environments. Meanwhile, affordances such as authenticity, feedback, practicability and applicability of learning design in terms of online resources are paid attention in Section 2.5. to see how learners manage their own learning by means of scaffolded OLRs.

The other literature review chapter, Chapter 3, defines learner autonomy and its components including self-regulation, self-management, learning strategies and motivation in terms of learners' attributions for success and failure, and self-confidence. As the present study is carried out in e-learning environments, Section 3.3. looks at learner autonomy in such environments with regard to self-directed e-learning and the connection between digital literacy and learner autonomy. Following the discussion in Section 3.4. of the related connection between learner autonomy and scaffolding in e-learning environments, previous studies on these issues including scaffolding, learner autonomy, e-learning and motivation in terms of Attribution theory and self-efficacy are indicated in Section 3.5.

Drawing on the literature review, Chapter 4 gives detailed information about the online scaffolded e-learning resource, the EAP Toolkit, which is used as an object of study in this research, together with other OLRs in order to outline the context of the study and methodological issues related to the theories. Having stated in this chapter that OLRs are appropriate for achieving the aims of this study, the next chapter (Chapter 5) sets up the research design and gives a broad outline of the research procedure, including the research setting and research participants, with reference to Chapter 4 for the context of the study. It introduces the instruments used to collect data by emphasising the reliability and validity of both qualitative and quantitative research. Then, it describes the pilot and main studies. The method of analysing data is briefly explained. Ethical issues and limitations of the present study are clarified.

Chapters 6 & 7 show the results obtained from both qualitative and quantitative data. The collected data are analysed in the sections responding to the research questions. Chapter 6 elucidates the actions participants carry out while learning online and their perceptions of their learning, especially in scaffolded e-learning environments, while Chapter 7 gives data about their use of learning strategies, self-management and self-regulation, their attributions for success and failure and their self-efficacy in a scaffolded e-learning environment. In addition, it aims to try and explain the relationship between scaffolding and learner autonomy in e-learning environments.

Chapter 8 discusses in depth the results shown in the previous two chapters. Based on these results and using Laurillard's Conversational Framework as a frame, this chapter discusses learners' interactions (see Section 8.2.) and adaptations (see Section 8.4.) to clarify how scaffolding and learner autonomy, respectively, occur. Lastly but more importantly, it attempts to clarify the main focus of the present study, which is the relationship between scaffolding and learner autonomy in e-learning environments (see Section 8.4.). Finally, Chapter 9 presents a summary this research has made through clarifying the relationship between scaffolding and learner autonomy. It also concludes the thesis by making recommendations and noting the limitations of this study.

1.6 **Conclusion**

This chapter has introduced the research background by stating the problem in terms of the relationship between scaffolding and learner autonomy in e-learning environments. It has clarified the objectives of the present research and provided the research questions. Then, it has indicated the research design adopted to serve its purposes. Ultimately, it has outlined the whole thesis by presenting the material covered by each chapter. The next section comprises the literature review of the present study.

Chapter 2: SCAFFOLDING IN E-LEARNING ENVIRONMENTS

2.1 Introduction

Chapters 2 and 3 are the research literature with underpinning this study. The key concepts of scaffolding, learner autonomy and e-learning are interrelated in the theoretical framework depicted in Figure 3 (see Artino, 2008; Benson, 1998; Chang & Sun, 2009; Frizler, 1995; Linn, 1996; Luzón, 2006; Martin & Grudziecki, 2006; McLoughlin, 2002; McLoughlin & Marshall, 2000; Motteram, 1997; Nielsen, 2012; Ribbe & Bezanilla, 2013; Toogood, 2005; Warschauer, 1996, 2004).

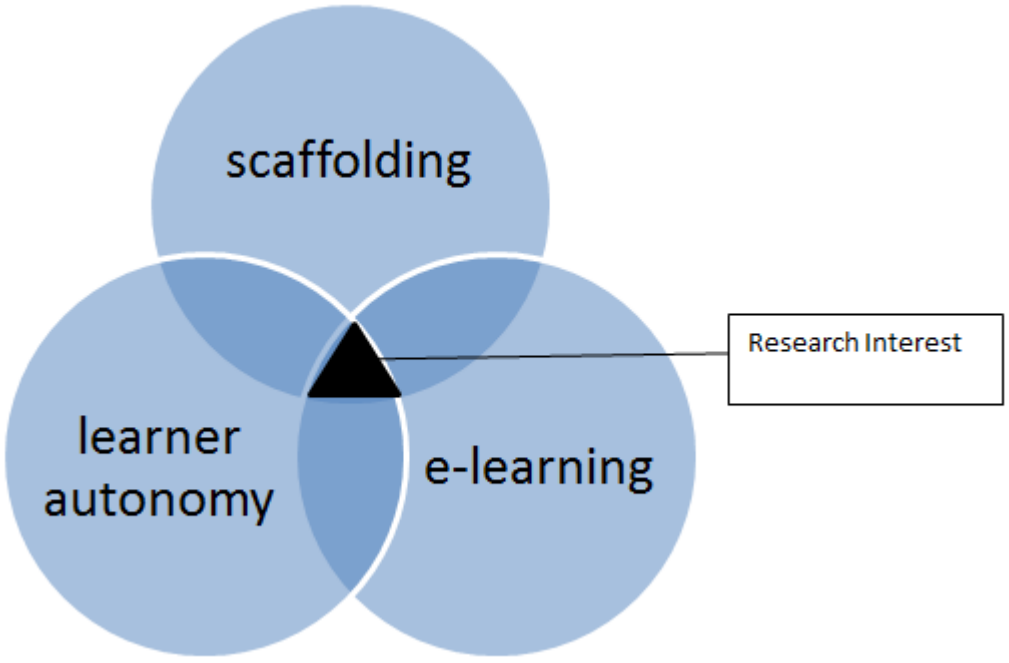


Figure 3: The conceptual framework showing the relationship between scaffolding, learner autonomy and e-learning

Although some research has indicated some sort of relationship between two of the three concepts or all these (i.e. Artino, 2008; Benson, 1998; Chang & Sun, 2009; Frizler, 1995; Linn, 1996; Luzón, 2006; Martin & Grudziecki, 2006; McLoughlin, 2002; McLoughlin & Marshall, 2000; Motteram, 1997; Nielsen, 2012; Ribbe & Bezanilla, 2013; Toogood, 2005; Warschauer, 1996, 2004), there seems to be a lack of exploration of the relationship between all these concepts (i.e.

Hodges, 2008; 'Jarvis & Szymczyk, 2010; Jarvis & Pastuszka, 2008; Jarvis, 2008a; Jarvis, 2008b; Figura & Jarvis, 2007'; cited in Jarvis, 2012; Yelland & Masters, 2007). Therefore, the purpose of the present study is to investigate the relationship between scaffolding and learner autonomy in e-learning environments. In order to understand these concepts, it is useful to look at the relevant theories and research in both learning as a whole and language learning.

This chapter will focus on two of the three concepts, scaffolding and e-learning. First, it will look at e-learning, since the present study takes place in e-learning environments. It will encompass e-learning by defining it based on the descriptions of Daly and Pachler (2010) and the Joint Information Systems Committee (JISC, 2004 and 2007 in Section 2.2.1.), outlining computer-assisted learning (CAL) research and clarifying the components of e-learning in Section 2.2.2. Section 2.2.3. will give an explanation of e-learning environments. Furthermore, Section 2.2.4. will provide a review of models of e-learning in order to shed light on e-learning in educational contexts, particularly in applied linguistics research.

Next, Section 2.3. will look at scaffolding, a key concept in the current research, in order to explain how scaffolding supports learning. Section 2.3.1. will present the description of scaffolding in the traditional sense within Vygotsky's (1978) Zone of Proximal Development, and the features of scaffolding in classroom-based learning environments will be set out in Section 2.3.1.1. Section 2.3.2. will expand on scaffolding in the evolved sense in e-learning environments. The analysis of the categorisation of scaffolding into different types will help to delineate scaffolding and will be looked at in more detail in Section 2.3.3.

Section 2.4. will examine learning design using the definitions of Koper (2006) and Conole (2013) and draws attention to the need to consider learning styles while designing a learning environment in Section 2.4.1. Section 2.4.2. will outline Laurillard's Conversational Framework, on which the present study draws. Finally, Section 2.5. will define and points out the affordances of e-learning environments for scaffolding learning, including authenticity, feedback, practicability and applicability, which are featured in e-learning environments or learning design in order to facilitate learning.

2.2 E-learning

Since the current research deals with learning in e-learning environments, this section looks at e-learning which itself has become an object of interest which cannot be disregarded by educational institutions now that it has become a popular medium for transmitting teaching and learning which goes well beyond traditional face to face methods (Garrison, 2011). After defining e-learning, the related concepts, CAL, MAL, TEL, r-Learning, ICT and NBLT are addressed, as their

development and widespread use in learning and teaching are influential. E-learning environments are then discussed from the perspective of their benefits and drawbacks and a classification of open and closed e-learning environments is given. Lastly, models of e-learning are introduced with regard to their implementation in the context of the current study.

2.2.1 What is E-learning?

The concept of e-learning (electronic learning) has become a necessary focus in learning and teaching because the transmission of knowledge and education using new methods differs significantly from traditional methods (Garrison, 2011). E-learning also has a broader meaning in the sense that learning is available in environments where technology is utilised. However, according to Keller (2008), it is difficult to describe e-learning. Considering all these indications, the present section draws attention to e-learning, using the definitions of Daly and Pachler (2010) and the Joint Information Systems Committee (JISC, 2004), both of which are taken as a basis for explaining e-learning.

Daly and Pachler (2010) describe e-learning as:

> 'a set of practices which enhance the potential of people to learn with others via technology-aided interaction, in contexts which can be "free'' of barriers of time and place. It involves the utilisation of a range of digital resources – visual, auditory and text-based – which enable learners to access, create and publish material which serves educational purposes. Essentially, this material can be shared electronically with fellow learners and teachers both within and beyond the bounds of formal education contexts' (p. 217).

Daly and Pachler (2010) define e-learning in the broad sense. Moving on from e-learning as flexible learning environment, (Phillips et al., 2012) stress 'what people do with technology, rather than technology itself' (p. 25). That is, e-learning is more than technology; it is 'the means to explore and understand how technology will evolve the teaching and learning transaction and enhance learning outcomes' (Garrison, 2011, p. 74).

Although the current research considers e-learning to mean 'electronic learning' or learning online, it is called 'enhanced learning' elsewhere (JISC, 2004). The Joint Information Systems Committee (JISC) based in the UK encourages the use of digital technologies in higher education and describes e-learning, namely electronic learning, in 2004 as any learning supported by:

- desktop and laptop computers
- software, including assistive software
- interactive whiteboards

- digital cameras
- mobile and wireless tools, including mobile phones
- electronic communication tools, including email, discussion boards, chat facilities and video conferencing
- Virtual Learning Environments (VLEs)
- learning activity management systems [LAMS] (JISC, 2004).

This is a fairly broad definition of e-learning which shows what constitutes e-learning. Goodyear (2000, cited in Goodyear, 2001) further suggests the practical use of e-learning and that learning materials provided through e-learning should:

- 'empower learners,
- 'improve learning,
- 'connect learners to people and resources supportive of their needs and
- 'integrate learning with performance and individual with organisational goals' (p.153).

Friesen (2009) claims that '… the term e-learning is used is dependent on an author's particular purposes or specific research agenda' (p. 4), with reference to the aspects of, for instance, individual or cognitive learning, or collaboration. The present research applies the concept to explore how learners work online in a particular context. In the same vein, in the present research, e-learning covers learning not only of digital resources including VLEs or LAMS, but also of mobile tools facilitating learning anytime and anywhere, as proposed by JISC (2004, 2007).

This section has presented the definitions of e-learning. In this way, this study intends to show how learners interact with online learning resources (OLRs). The next section goes on to discuss the related concepts of e-learning by looking at CAL (computer-assisted learning), TEL (technology enhanced learning), MAL (mobile assisted learning), r-Learning (robotic learning), NBLT (network-based language teaching), and so on in order to clarify the research on e-learning and its potential elements.

2.2.2 **The Conceptualisation of E-learning Components**

As the concept of e-learning has become unavoidable in educational settings, related terms are highlighted in this section in order to explore the concepts of e-learning in both general learning and language learning. Concepts such as CAL, MAL, TEL, r-Learning, and NBLT and so on relate in some way to e-learning and so have a potential impact on learning.

Phillips, McNaught and Kennedy (2012), suggest that the use of computers in learning and teaching dates back to the 1960s. However, they have gained importance since the 1990s (Phillips

et al., 2012) because of the use of learning software which in their turn have brought in a variety of different terms related to e-learning, such as 'interactive multimedia' (Phillips, 1997, cited in ibid. p.4), 'computer-facilitated learning' (McNaught et al., 2000, cited in ibid.) and 'interactive learning systems' (Reeves & Hedberg, 2003, cited in ibid.). Although the present study regards these related concepts as components of e-learning, they still need detailed discussion, as indicated below.

Considering Phillips et al.'s (2012) argument, it is observed that computers play different kinds of roles in language teaching and learning (Warschauer, 1996). For example, the computer was regarded as a tutor in the 1960s and 1970s (Taylor, 1980, cited in Warschauer, 1996) by virtue of providing drill and practice within a structural approach which highlights 'immediate positive or negative feedback to learners' (Kern & Warschauer, 2000, p. 8). However, following improvements in computer applications, they have been viewed as 'a stimulus for discussion and interaction' (Taylor & Perez, 1989, p. 63, cited in Warschauer, 1996) in a cognitive approach which allows learners to 'construct new knowledge' (Kern & Warschauer, 2000, p. 9). However, further development was needed, so their role as a tool (Warschauer, 1996) in the twenty-first century has helped learners to improve their own knowledge and to interact with others according to socio-cognitive approach (Kern & Warschauer, 2000). Following a number of stages (for more, see Chapter 3 in Blake, 2008), there has been a dramatic shift in the focus and use of computer-assisted language learning (CALL), from merely teaching grammatical structures, to nurturing communication skills, and providing content-based instruction (Blake, 2008).

Many of the key researchers in this field agree on the main feature of CAL or CALL, in which the computer plays a significant role in language learning or learning as a whole (Beatty, 2003; Egbert, 2005; Levy, 1997). CAL has more recently developed to include 'online blogs, use of apps, virtual learning environments, computer-mediated-communication …' (Jarvis & Achilleos, 2013, p.1). As a result, Thorne and Smith (2011) argue that the acronym for CAL is not suitable or relevant to the whole recent context of online education. Meanwhile, a number of researchers have posited alternative acronyms, especially for CALL, such as Technology Enhanced Language Learning (TELL), which puts the stress on technology rather than on the computer (Bush & Terry, 1997), or Network-based Language Teaching (NBLT), which 'refers specifically to the pedagogical use of computers connected in either local or global networks, allowing one-to-one, one-to-many, and many-to-many communication' (Kern, Ware & Warschauer, 2008, p.281); in other words, 'human to human communication is the focus' (Kern & Warschauer, 2000, p. 1). However, these alternative acronyms for CALL do not seem to cover the entire field of online language learning and teaching, as each of them focuses on a particular aspect of learning in e-learning settings. Pachler and Daly (2011) distinguish e-learning from the above-mentioned term, CALL, and its

acronyms in that the former 'tends to relate a mode of study, which does not require physical presence on campus' in the contexts of higher education, while the latter is connected with it in terms of 'the delivery of training material and contexts' (p. 11). The present study views CALL and TELL from the perspective of the delivery of information to learners, rather than e-learning in its broader meaning (see Section 2.2.1.).

Besides support from both computers and technology, there have been obvious developments and improvements in language learning by means of resources such as the World Wide Web and the Internet, which have brought in Information and Communication Technologies (ICT) (Levy & Hubbard, 2005). Furthermore, as learners use different technologies, we should also consider other available technologies. For instance, there has been a dramatic increase in the use of portable and personal devices, such as smartphones, tablets or personal digital assistances (PDA), rather than just desktops or laptops, to enhance language learning and general learning in educational settings (Kress & Pachler, 2007, cited in Gholami & Azarmi, 2012). This development has introduced the concept of Mobile Learning or M-learning, which differs from CAL or other acronyms by 'linking people in real and virtual worlds, creating learning communities between people on the move, providing expertise on demand, and supporting a lifetime of learning' (Sharples, Arnedillo-Sánchez, Milrad & Vavoula, 2009, p. 234). Mobile Assisted Language Learning (MALL) has been considered 'a sub[-]area of' M-learning' (Viberg & Grönlund, 2012, p.1). Although it is claimed that CALL supplies more opportunities for various learning styles such as visual or textual learning (Yamaguchi, 2005, cited in Tayebinik & Puteh, 2012), MALL has the advantage of being easy to carry and of being adaptable to different learning environments (Kukulska-Hulme & Shield, 2008; Yamaguchi, 2005, cited in Chinnery, 2006).

However, Han (2012) argues that robotic learning (r-Learning) 'defined as learning by educational service robots' (Han, 2010, p.248) is likely to be used as state-of-the-art equipment in education (Han, 2012). In the same vein, robot-assisted language learning (RALL) aims to enhance language learning. As RALL offers many types of teaching and learning such as the 'tele-operated type, autonomous type and transformed type', and a number of people have a computer for their individual use, so will the 'personal robots (PR)' probably be a new trend in education in the future (Han, 2012, p.2) but not of relevance to this research.

By virtue of new generation's use of multifarious technologies in language learning, it has been worthwhile to mention different acronyms for CALL including TELL, NBLT, ICT, MALL and RALL. All of these show how technology has developed within the education of sphere throughout the last few decades, in turn drawing attention to the need to go beyond CALL (Jarvis, 2013). According to Jarvis (ibid.), CALL focuses on aiding 'conscious learning' and students' working in a specific

computer-based environment, and is regarded as 'being motivating'; however, this description is lacking, since this was effective when students first came across computers for educational purposes (ibid., p.195). Walker and White (2013) confirm that CALL is only germane to 'assisting language learning' rather than to 'the environment in which language exists and is used' (p. 9). As an ultimate critique, Jarvis (2013) observes that a number of devices other than computers have been found to be useful in terms of learning and learning theories; these have been mentioned above with regard to RALL, MALL, and the like. How e-learning is relevant to the focus of this research is elaborated further below.

To sum up, CALL and the related acronyms do not well seem appropriate in the context of the study because of their restricted definitions. The broader concept, e-learning is preferred. However, defining e-learning is not enough to give understanding of what it takes to learn, which is elaborated in Chapter 4 of Laurillard (2012, pp. 44-63), who suggests that learning takes place through the conversation, interaction between students and teachers (see Section 2.4.2.). In the case of the current study, the exploration of what it takes to learn in e-learning environments is deemed to be more complex on seeing what happens while students are studying online, based on Laurillard's view, which presents e-learning within an educational model (for Laurillard's Conversational Framework, see Section 2.4.2.). Therefore, the following sections will help to explain, first, e-learning environments and then, e-learning models deeply, with the intention of providing a proper understanding of what it takes to learn in e-learning environments.

2.2.3 E-learning Environments

The previous sections (Sections 2.2.1. and 2.2.2.) have aimed to help provide an understanding of e-learning in some detail and intend to give the definition of e-learning environments as the places where training or learning occurs via e-learning devices such as VLEs, LAMS, software, digital devices, and the like. These environments encourage learners to take control of their own learning and reframe their own learning activity (for more, see Section 3.3.1.) with regard to 'timing, delivery, and accessibility' by utilising technology and digital devices (Johnson, Hornik & Salas, 2008, p.357). Along with the individualisation or personalisation of learning, they have the advantages of providing collaboration, interaction, and synchronous or asynchronous learning, adapting teaching according to different learning styles (see 2.4.1.), and accomplishing the task conveniently (Mouzakitis, 2010; Pandey, 2013).

Although e-learning environments are likely to support learning and learner autonomy, such environments might also impede learning progress due to the much documented issues of technological problems, feelings of isolation and also the inclusion of unsuitable contents in terms

of cultural issues and unsuitable learning approaches (Pandey, 2013). Many researchers in educational research (AL-Bataineh & Brooks, 2003; Cantoni, Cellario & Porta, 2004; Gips, DiMattia & Gips, 2004; Keller & Cernerud, 2002; Lai & Kritsonis, 2006) have indicated some drawbacks of technology. However, few studies have examined students' perceptions of the benefits of learning in either e-learning environments or classroom-based environments (Hagel & Shaw, 2006). Hagel and Shaw's (2006) study found that students perceive face-to-face study as better for engagement (i.e. aspects of interaction and learning), while online and distance paper-based study promotes functionality (i.e. convenience, time-efficiency and flexibility). Zhang, Zhao, Zhou and Nunamaker (2004) compare e-learning with traditional classroom learning in terms of their advantages and disadvantages and these are illustrated in Table 1.

Table 1: Comparison between traditional classroom learning and e-learning (taken from Zhang et al., 2004, p.76)

	Traditional Classroom Learning	E-Learning
Advantages	• Immediate feedback • Being familiar to both instructors and students • Motivating students • Cultivation of a social community	• Learner-centered and self-paced • Time and location flexibility • Cost-effective for learners • Potentially available to global audience • Unlimited access to knowledge • Archival capability for knowledge reuse and sharing
Disadvantages	• Instructor-centered • Time and location constraints • More expensive to deliver	• Lack of immediate feedback in asynchronous e-learning • Increased preparation time for the instructor • Not comfortable to some people • Potentially more frustration, anxiety, and confusion

In spite of the fact that technology seems to offer more flexible learning and teaching, as can be seen in the above table, the influence of tutors or designers cannot be ignored in terms of affecting the content, study time, access to the computers and technical assistance (Concannon, Flynn & Campbell, 2005). These considerations have brought attention to the features of the openness and closeness of e-learning environments in terms of designing a learning space. Open learning is 'both a process which focuses on access to educational opportunities and a philosophy which makes learning more client and student centred' (Paine, 1988, p. ix), whereas closed learning 'hide[s] learning materials in password-protected areas' (Mentor, 2007, p.1). DynEd software, which was referred to in Chapter 1, is an example of closed learning, since learners

using DynEd software need to follow the instructions and training offered in the learning materials and have very little freedom to follow their interests. This inhibits the development of the learning process in terms of personalisation and individualisation creating a need for the teacher's presence and help (Meri, 2011; 2012). However, open publicly accessible websites including blogs, wikis or courseware may allow the user to use and share the content (Mentor, 2007). Massive Open Online Courses (MOOCs) are another example of open learning environments, where learning can be delivered online (Margaryan, Bianco & Littlejohn, 2015; Zheng, Rosson, Shih & Carroll, 2015). The prominent feature of MOOCs is openness since they are described as being open to 'people, places, methods, and ideas' (Lord Geoffrey Crowther cited in Lane, 2009; Alrami, Zo & Ciganek, 2015, p.1). By making resources available and accessible to anyone, MOOCs are said to be a good resource for setting up 'the ultimate democratization of education' (Jacobs, 2013, cited in Hew, 2014, p.1). However, while spreading information freely, institutions should be aware of the 'disruptive technology' problem, whereby they neglect to highlight the effectiveness, cost-saving and potentialities of the new technology (Christensen, 1997, cited in Conole, 2015, p.1.). As Shulman (1999) states, learning is least effective when restricted to closed environments, and most influential when it allows public and communal use in open environments. The present study explores the learning of students who learn in either closed or open or both types of e-learning environments.

E-learning environments in the current study are seen as any place or setting where learning takes place by means of e-learning devices (JISC, 2004). Taking into account both the benefits and drawbacks of e-learning and especially online learning resources, the present study aims to investigate what actions learners carry out while learning online and exercise their autonomy in e-learning environments whether they experience closed or open learning. The EAP Toolkit (see Section 4.2.) is taken as an example of a scaffolded e-learning resource which enables learners to complete the activities and regarded as a closed e-learning environment, since it requires each individual to log in within a password-protected environment. Other online learning resources (see Section 4.3.) may be either closed or open e-learning environments and are chosen by the learner. The understanding of the learners' use of either closed or open e-learning-based resources might indicate the type of interaction they need to support their learning. The next section deals with models of e-learning in order to understand how learning in such environments might take place.

2.2.4 **Models of E-learning**

The last three sections have revealed salient research in the area of e-learning and e-learning environments. However, there is little research looking at how learners learn in e-learning

environments. Here I use learning in Laurillard's sense of 'a process of using concepts and practice to generate articulations and actions that elicit communication from the teacher and information from the environment to modulate those concepts and practice' (Laurillard, 2012, p. 63). In an attempt to provide a theoretical framework to our understanding of e-learning, Laurillard consolidates the relevant theories such as behaviourism, associative learning, cognitive learning, experiential learning, conceptual learning or collaborative learning and into a single framework as outlined in Section 2.4.2. According to Laurillard (ibid.), learning in e-learning environments builds on and is shaped according to the way the knowledge is acquired or gained by means of help not only from the teacher, also from digital tools and peers. Based on Laurillard's conversational model of learning, in which learning takes place through the interaction between teachers and students (Laurillard, 2012; see Section 2.4.2.), the present study explores how learning in e-learning environments can also be achieved via interaction through the assistance provided in e-learning environments, and in turn, how they might be improved so as to enable learners to be aware of, adapt and handle their own learning.

A number of researcher have developed e-learning theories (see Beetham, 2004; Conole, Dyke, Oliver & Seale, 2004; Mayes & De Freitas, 2004). In order to give a clearer idea of the connection between practice and theory, Conole and her colleagues (2004) summarise the features of e-learning theories they apply to e-learning environments (see Appendix A). In their paper (2004), they divide the key learning theories and models into seven categories: behaviourism, cognitive, constructivist, activity based, socially situated learning, experiential theory, and systems theory. Thus, learning theories (see Chapter 4 of Laurillard, 2012, pp. 44-63) can be related to e-learning by identifying which functions may appear in each theory and their application to e-learning settings. For instance, based on constructivist theory, the use of the tools or other supporting systems should enable learners to learn by themselves or engage in the activities while being guided and informed as to the process of their learning (Conole et al., 2004). However, activity-based theory offers more interaction with others as it happens in the learners' zone of proximal development (ibid.; for ZPD, see Section 2.3.1.). In experiential theory, learners can communicate synchronously or asynchronously by reflecting on their experiences (ibid.). It can be inferred that in order to facilitate learning in the ways described above, learners tend to utilise the implementations that e-learning environments propose by, for example, rendering the change in their learning, while behaviourism transmits instructions directly by feedback or evaluation. Still, just giving feedback is not enough for effective learning, which demands that learners take responsibility for their own learning or think critically to carry out the later steps of their assigned tasks. In that sense, additional issues should be considered, such as are dealt with in the following discussion.

For instance, Oliver (2003) comments on the presentation of both e-learning and learning, stating that

> 'we must recognise that all learning involves technology, it is simply a matter of how familiar we are with it. If we are too familiar, it will slip from view. If we are to help others work with new technologies, we must avoid projecting our own expectations onto them. This involves finding ways of making taken-for-granted technologies visible, so that we can re-interpret these practices not as simple skills … but as forms of cultural literacy' (p. 158).

Even though he implicitly addresses researchers and practitioners (ibid.), learners can also make use of what he has indicated, in that OLRs or tools have the potential to enable learners to gain the experience and capabilities to reflect on, analyse and cope with the culture that emerges in e-learning settings. In the case of the present study, which aims to provide insight into what actions learners carry out while learning online, the connection of the above-mentioned theories with the research may help to attain that aim. We need to know more about how learners cope with learning attempts in e-learning environments and how they manage and regulate their learning. In order to achieve their learning goals and improvement in learning, as stated by Oliver (2003), learners might need different types of assistance or require additional resources in e-learning environments; hence those environments should be designed in consideration of learners' preferences or learning styles (for more, see Section 2.4.1.). Although a model of e-learning needs to consider learners working individually or collaboratively, they should take into account the concept and provision of scaffolding, as learners might differ in knowledge, skills, learning styles and interests. The next section describes and examines scaffolding not only in traditional learning but also in the e-learning context.

2.3 Scaffolding in E-learning Environments

With the change of learning environments from traditional classroom learning to e-learning, there has been a greater focus on learner-centred learning (see Section 2.2.3.). As the learner-centred approach puts the emphasis on learners doing the learning (Weimer, 2002), students should be able to facilitate their learning using scaffolding within e-learning environments. In order to conceptualise this, first, we describe scaffolding in a traditional sense by mentioning its features. Then, we present the evolution of scaffolding in e-learning environments in Section 2.3.2. Lastly, we present scaffolding types in both traditional classroom and e-learning environments.

2.3.1 What is Scaffolding in a Traditional Sense?

As is widely known, the proponents of scaffolding, Wood, Bruner and Ross (1976), describe scaffolding, within the investigation of parent-child talk, as 'a process that enables a child or novice to solve a problem, carry out a task, or achieve a goal which would be beyond his unassisted efforts' (p. 90). In a further explanation, Bruner (1978) states that scaffolding consists of 'the steps taken to *reduce the degree of freedom* in carrying out some tasks so that the child can concentrate on the difficult skill she is in the process of acquiring' (cited in Michell & Sharpe, 2005, p.32, italics in original). Because the concept of 'scaffolding' is sometimes difficult to comprehend, Avery and Graves (1997) help to make it concrete by likening it to the scaffold that assists builders to construct a building, or the bicycle training wheels that help children to acquire the motor skills needed to ride it. In the same way, in classroom-based learning, it provides 'the temporary, but essential nature of the mentor's assistance' needed for learners to accomplish the activities (Maybin et al., cited in Gibbons, 2002, p.8). In the same vein, students use that kind of help while learning a language with the help of the affordances (discussed in detail in Section 3.4.) in e-learning environments: for example, by utilising computer-based learning programs or tools.

However, the origin of scaffolding in the educational sense dates back to Vygotsky (1978), who uses the concept of *zone of proximal development* (ZPD), which is 'the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (Vygotsky, 1978, cited in Lantolf & Thorne, 2006, p.206), and regards learning in terms of Sociocultural Theory (SCT) as a process taking place in socially and culturally based environments, inasmuch as ZPD is based on the 'interaction that takes place with more capable peers an, that which occurs between relatively equal peers' (Brooke, 2013, p.576). As Lantolf and Thorne (2006) indicate that SCT argues that 'human cognitive activity develop[s] through interaction' within ZPD (pp. 197-8).

Researchers have been interested in ZPD (ibid.). According to Lantolf and Thorne (ibid.), there are two reasons behind this interest. One is related to the aspect of assisted performance and the other is related to its forward-looking aspect which argues that 'what one can do today with assistance is indicative of what one will be able to do independently in the future' (ibid., p.206). The latter aspect happens through internalization which is 'the process of making what was once external assistance a resource' (i.e. interpersonal activity) 'that is internally available to the individual' (i.e. intrapersonal functioning) (ibid., p.200). By this means, Lantolf and Thorne (ibid.) discuss appropriate evidence of learning development within ZPD. Development can be through the dialogic interaction (i.e. self-talk) that occurs between people when they collaborate within

the ZPD. Development within the ZPD is also related to learner autonomy and the responsibility of learners for appropriate performance. This can be observed at two levels: 'at the level of overt independent performance and at the level where performance is mediated by someone else' (ibid., p.208), and 'understood as the difference between what an individual can do independently and what he or she is able to do with mediation' (ibid., p.208). Evidence of development can also be seen in tasks in the everyday world or in classroom settings rather than in tasks, for example, 'traditional language tests designed to elicit displays of a learner's linguistic knowledge' (ibid., p.208). In the context of language learning, development occurs when a learner takes control over a new language and regulates 'the behavior of the self and of others in carrying out goal-directed activity' (ibid., p.208). Little (2007) points out that:

> 'When we apply this metaphor not to language acquisition but to learning in general, language still plays a central role, for it is the tool by which the learning process is shaped and knowledge and skill are mediated. This is a matter of spoken communication describing and analysing the task in hand, evaluating the merits of different approaches, giving instructions, proposing alternatives, and so on; but it is also a matter of building internal representations of the task and its performance that the learner can draw on in future acts of independent task performance. This brings us to Vygotsky's view of the relationship between language and thought, or more accurately, speaking and thinking.' (p.22)

Above all, Lantolf and Aljaafreh (1995) shed light on ZPD by analysing it as a form of 'negotiated discovery that is realized through dialogic interaction between learner and expert' (p.620). That is, an engagement takes place between the learner and the tutor or expert in order to see what the learner can accomplish with and without assistance. According to Aljaafreh and Lantolf (1994), the assistance enabling engagement or negotiation between the learner and the tutor or expert should be graduated and contingent in such a way as to change from a strategic or implicit to a specific or concrete level until learners no longer need that assistance, or demonstrate 'signs of self-control and ability to function independently' (p.468).

Furthermore, there have been a variety of commentaries on the concept of Vygotsky's zone of proximal development. Lave and Wenger (1991) identify it in three senses. First, it is interpreted as the distance between what learners can do on their own and what they can do with the support of others, which is related to scaffolding in terms of pedagogically assisting learners at the first level to carry out tasks without any help at later levels (Greenfield 1984; Wood et al., 1976; for critiques of this position see Engeström 1987 and Griffin & Cole, 1984, cited in Lave & Wenger, 1991, p. 48.). The second commentary is a cultural one which interprets ZPD as 'the distance

between the cultural knowledge provided by the sociohistorical context – usually made accessible through instruction – and the everyday experience of individuals' (Davydov & Markova, 1983, cited in Lave & Wenger, 1991, p. 48). Based on Vygotsky's differentiation between 'scientific and everyday concepts', and on his statement that the combination of 'scientific' concepts with 'everyday concepts' develops 'a mature concept', Hedegaard's definition is the 'distance between understood knowledge, as provided by the instruction, and active knowledge, as owned by individuals' (cited in Lave & Wenger, 1991, p. 48.). The last definition construes the concept of ZPD in a 'collectivist' or 'societal' view, with reference to Engeström, who describes ZPD as 'the distance between the everyday actions of individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in … everyday actions' (cited in Lave & Wenger, 1991, p. 49). The categories proposed by Lave and Wenger (1991) make it easy for the current study to look at Vygotsky's ZPD not only in pedagogical contexts but also in cultural and collectivist or societal contexts, all of which help to explain how learners retain the knowledge within their ZPD. For instance, by means of scaffolding, they develop their learning; or the distance between their understood knowledge and active knowledge may help in discerning how learners take responsibility for their own learning in e-learning environments.

In the context of language learning, Mitchell and Myles (2004) describe ZPD as 'the domain of knowledge or skills where the learner is not yet capable of independent functioning, but can achieve the desired outcome given relevant scaffolded help' (p. 196). In that sense, learners are unable to learn a language on their own at first, but support from the tools or computers tends to facilitate the expected language learning or learning per se. Furthermore, that support will bring them to the necessary level and capacity to take control of their own learning.

Even though the relationship between scaffolding and Vygotsky's above-mentioned theories is relatively obvious, Verenikina's review (2003) of papers looking at the definition, interpretation and implementation of both scaffolding and the ZPD in educational research indicates that there is still a need to investigate the theory of scaffolding in terms of promoting its usability and effectiveness, since help from the teacher may impede learning in certain cases. For instance, as referred to in her paper, Wells (1999) also regards scaffolding as an operational form of Vygotsky's ZPD, while Mercer and colleagues (Mercer, 1995; Mercer & Fisher, 1993; Maybein, Mercer & Stierer, 1992, cited in Wells, 1999) relate the ZPD's role in fostering students' independent learning to the main feature of scaffolding. As Hammond (2002) states, the definition of and characteristics ascribed to scaffolding are 'sometimes used loosely to refer to rather different things' (p. 2). However, scaffolding has been considered in terms of interaction within a learner's ZPD (i.e. 'Campione, Brown, Ferrara and Bryant, 1984 & Rogoff, 1998', cited in

Granott, 2005). In that sense, interaction can be defined 'in a restrictive manner to cover only those activities where the student is in two-way contact with another person (or persons)' (Daniel & Marquis, 1988, p. 339). According to this view, scaffolding consists of helping learners to progress to the next potential level by means of the interaction between learners and tutors or others within learners' ZPD, from the traditional perspective.

Scaffolding has been defined here in terms of Vygotsky's ZPD concept and includes the concept of interaction between learners and experts, with regard to the pedagogical, cultural and societal views of ZPD, even though there is a need to look more widely at scaffolding theory (Verenikina, 2003). However, the overall concept of scaffolding, as defined and interpreted, is not enough to determine its role in educational contexts (Hammond, 2002). The next section continues to look at in order to better provide a theoretical framework in this area for this research.

2.3.1.1 The Features of Scaffolding in Classroom-based Learning Environments

In classroom-based learning environments, according to the students' progress and proficiency, ideally, scaffolding is 'gradually removed' (Diaz-Rico & Weed, 2002, p. 85). In this way, scaffolding can be regarded as the action of gradually transferring responsibility from the teacher to the students (Pearson & Gallagher, 1983). As the students are asked to create explanations and critical arguments, they understand better; in other words, the work of creating explanations helps them to assess, incorporate and enlarge their knowledge in a creative manner (Brown & Campione, 1986).

Appleby lists five criteria for effective scaffolding, which are '*student ownership of the learning event'* in which students have the opportunity to contribute to the task, '*appropriateness of the instructional task'* , '*a structured learning environment*', '*shared responsibility*' and '*transfer of control*' (Appleby, 1986, cited in Upham, Carney & Klapper, 2014, p.133). In the same way, Meyer (1993) summarises six features of scaffolding along with a succinct explanation, as follows:

(a) 'teacher support that helps students relate the new information to their prior knowledge;

(b) 'transfer of responsibility from the teacher to the students;

(c) 'dialogue which breaks from the traditional classroom discourse to more student initiated talk;

(d) 'non-evaluative collaboration that focuses on the child's potential for new learning rather than evaluating the child's current competencies;

(e) 'appropriateness of the instructional level defined as what a child can do with assistance within his/her ZPD;

(f) ‘co-participation that creates opportunities for students to participate actively and cooperate in directing instruction’ (cited in Kong, 2002, p.6).

These are useful to consider in the context of the current research.

In educational settings such as the classroom, scaffolding is built into the interaction between students and teachers, in that the teacher provides temporary assistance with which students can accomplish a task and improve their knowledge and understanding of the topic. By this process, they can accomplish similar learning activities on their own (Hammond & Gibbons, 2005). Collins, Brown and Newman (1989) put across the process like this:

> ‘Once the learner has a grasp of the target skill, the master reduces (or fades) his participation, providing only limited hints, refinements, and feedback to the learner, who practices successively approximating smooth execution of the whole skill’ (p. 456).

Together with temporary support, Hammond and Gibbons (2005) draw attention to the macro and the micro focus on tasks. In this context, the teacher should have a good knowledge of the curriculum and the task requirements in order to help students to succeed at a specific task. Also, success at this specific task needs to be seen in a broader perspective. That is, the goals achieved at a micro level of interaction need to be seen as a macro level, which then constitutes effective scaffolding (ibid.).

As an example of investigation of scaffolding in classroom-based learning environments, Roehler and Cantlon (1997) looked at the types and characteristics of scaffolding in these environments in a study which lasted for over three years. Data collected from student interviews, records kept by teachers, and transcripts of the learning conversations show five different scaffolding types: explanations, modelling, verification, participation and contribution (see Roehler & Cantlon, 1997), which are built during students’ second language learning within their zone of proximal development. It concludes that permanent and temporary scaffolding or support helps teachers to spur the students on to take responsibility for their learning. In the same vein, Rosenshine and Meister (1992) regard scaffolding as a tool comprising, for example, ‘cue cards’, or a technique such as ‘teacher modelling’ (p.26). A recent study conducted by Kayi-Aydar (2013) collected data by observing the oral skills classroom. It has shown the significance and necessity of scaffolding in teaching and learning English for second language classrooms. The results have indicated that scaffolding was not promoted during the student-led discussions or in small-group work, whereas the teacher-led discussions supported scaffolding in the classroom. This might show the importance of planning and designing scaffolding according to the specific students’ or personal

needs, to be adapted or removed by the teacher, if effective scaffolding is to be carried out (Kibler, Walqui & Bunch, 2015).

However, Hogan and Pressley (1997) discuss 'the challenges of scaffolding in classroom settings' (p. 84) which are listed as 'large classes', 'diverse communication styles', 'curriculum and time constraints', 'ownership of goals and uncertain endpoints', 'student assessment', and 'demands on teachers' (see Hogan & Pressley, 1997, pp. 84-7). In order to handle these challenges, other modes of teaching are emerging. In fact, computer-based education has increased in the area of language learning, as e-learning environments provide flexible and self-learning environments for learners (see Section 1.2.2.). As technology provides learning beyond the classroom, so must the features of learning and teaching in a new environment be taken into account (Winnips, Moonen & Collis, 2000) and this is the focus of the current research. It investigates the definition (see Section 2.3.1.) and features of scaffolding in terms of their use in e-learning environments and explores how interaction takes place. Having looked at scaffolding in the traditional sense, in classroom-based learning environments, the next section looks at scaffolding in e-learning environments.

2.3.2 **The Evolved Term, Scaffolding in E-learning Environments**

Scaffolding is likely to be present not only in classroom-based learning or teaching environments, but also in online learning settings in order to encourage and to help learners to learn. This could be in the form of teaching presence or in other ways through the learning environment. Although classroom learning is based on face-to-face teaching with the intervention of teachers, the presence of teachers is not always possible in self-paced and asynchronous e-learning environments (McLoughlin, 2002). Because of the change in type of support in these environments, as described in the above section, the term scaffolding is reconsidered here.

Puntambekar and Hübscher (2005) describe scaffolding within three categorisations in the context of software-based use by giving examples of their features and use. For instance, *supportive scaffolding* helps learners to accomplish the activity with the support of 'examples, what to do the next hints' (ibid., p.6), which can be faded by means of 'a "stop reminding me" button' (ibid., p.6). In the meantime*, passive scaffolds*, which are 'the coaching and modelling functions', can be triggered with help buttons in order to give necessary understanding and assistance to the learners (ibid.). *Reflective scaffolding* enables them to reflect on the task with the help of prompts in a notepad window where they can place text (ibid.). However, scaffolding does not mean only supplying learners with 'a visual interface of structure for a process' (ibid., p.8), where 'the hints and prompts are [not] contingent [sic] on an ongoing diagnosis of student

learning' (ibid., p.8). In other words, scaffolding should have a role and tendency that include examining and improving a specific learning process.

Table 2: Evolution of the Notion of Scaffolding (Puntambekar & Hübscher, 2005, p.7)

Feature of Scaffolding	Original Notion of Scaffolding	Evolved (Current) Notion of Scaffolding
Shared understanding	• Adult or expert establishes shared understanding of common goal and provides motivation	• Authentic task often embedded in the environment; provides a shared understanding
Scaffolder	• Single, more knowledgeable person provides support to complete the task • Multimodal assistance provided by a single individual	• Assistance is provided; tools and resources • Distributed expertise—Support is not necessarily provided by the more knowledgeable person, but by peers as well
Ongoing diagnosis and calibrated support	• Dynamic scaffolding based on an ongoing assessment of the learner (individual) • Adaptive scaffolding—Support is calibrated and sensitive to the changing needs of the learner	• Passive support—Ongoing diagnosis by peers and or software is not necessarily undertaken • Blanket "scaffolding"—Support (especially in tools) is the same for all students
Fading	• Eventual fading of scaffolding as students become capable of independent activity	• In most cases, support is permanent and unchanging

Furthermore, in the case of software tools, the features of scaffolding have evolved. As shown in Table 2, the change in the notion of scaffolding means that support from tools is set up to assist learners in the complicated setting of a classroom, while software-based tools or resources provide integrated types of support and affordances (ibid.). For instance, a shared understanding which is the common goal of learners is achieved in e-learning environments not only by providing motivation, but also by helping students to gain the essential knowledge in less complicated environments (ibid.). Also, the scaffolder's influence has changed from a single person's support to multiple assistances, and the scaffolder does not have to be an expert or more knowledgeable person. This means that in a traditional sense, the scaffolder is a teacher or an expert, whereas in e-learning environments, scaffolders can be tools, resources, peers or the learning environment itself (ibid.). However, tools do not provide an ongoing diagnosis and calibrated support, both of which are reached by means of the interactions with the tutor or peers. In the case of the EAP Toolkit, interactions with peers or tutor are inhibited; however,

some language learning websites provide that kind of help via discussion forums, blogs or wikis. On the other hand, it is argued that peer support might impair the learning of less confident but competent students (Tudge, 2000, cited in ibid.).

As the fading of support may not be implemented in the context of a software tool, it is crucial to see whether learners can manage to work online independently and to decide when to remove the tool's support (ibid.). Therefore, learners need to construct their own knowledge in e-learning environments, where others are absent but learners are the ones who decide on their learning. In order to achieve that goal, scaffolders such as resources or tools, as described above, support the interaction with learners. Instead of the restricted definition of interaction between two persons (see Section 2.3.1. and Daniel & Marquis, 1988), in the general sense, interaction is described as 'reciprocal events that require at least two objects and two actions' and occurs 'when these objects and events mutually influence one another' (Wagner, 1994, p.8). In this sense, interaction does not take place necessarily between two persons, but between two actions or objects, a process which has changed within the evolved term of scaffolding as well. That is, the interaction between a learner and a scaffolder in e-learning environments has the tendency to affect a learner's learning. Based on the change in the notion of a 'scaffolder' in e-learning environments, the new learning concept might lead to 'situations in which an individual is able to provide scaffolding for her(him)self when any problem or concept that is new to the individual is being tackled' (Holton & Clarke, 2006, p.136). In other words, learners can provide self-scaffolding for their own learning, depending on the context in which they overlap (ibid.).

In contrast with the application of scaffolding in classroom learning, scaffolding in e-learning environments is likely to be provided by means of programs and software tools or virtual learning environments. For instance, a proposed study by Lim, Campbell & Smala (2011, see Campbell, Samala & Lim, 2012) argues that LAMS (Learning Activity Management System), 'defined as an online web-based system for creating, managing and delivering sequences of collaborative learning activities' (Cameron, 2007, cited in Lim et al., 2011, p.128), can improve scaffolded learning of Korean as a foreign language within the students' ZPD. This incomplete study uses 'supportive activities' by enabling students to carry out tasks and activities located between their actual level and the expected level of their ZPD by means of 'the scaffolding and feedback tools' (Lim et al., 2011, p.132). In conclusion, they state that, by means of scaffolding and feedback, the LessonLAMS system has a tendency to enable learners to function at a higher level of their ZPD (Campbell et al., 2012). On the one hand, as regards the students' beliefs about learning, in comparing a computer-based tutor with teachers, a study by Schofield, Eurich-Fulcer and Britt (1994) considers that students favour the teachers in terms of helping their learning, whereas they benefit from a computer-based tutor. On the other hand, scaffolding has the potential to

provide individualised or personalised support within their ZPD (Chang, Chen & Sung, 2002), which should be present in e-learning environments (Teo & Gay, 2005).

To sum up, even if scaffolding in classroom-based environments facilitates learning, as shown in the study by Roehler and Cantlon (1997) discussed in Section 2.3.1.1., scaffolding in e-learning environments has the potential to encourage them to pursue their own learning in the extension of their ZPD (Campbell et al., 2012). However, it seems that there is still a debate about whether scaffolding from the tutor or computer is preferable. Further discussion of benefits of these two scaffolders are discussed in Section 3.5. Scaffolding is broken down further into different types.

2.3.3 **Scaffolding Types**

Researchers have classified scaffolding into different categories and from various perspectives, from the traditional, classroom view to the more recent, e-learning. Yelland and Masters (2007) use various terms to define scaffolding types such as cognitive, technical and affective scaffolds. Cognitive scaffolding refers to 'those activities which pertain to the development of conceptual and procedural understandings which involve either techniques or devices to assist the learner' (Yelland & Masters, 2007, p.367). Those activities can be questioning, modelling or helping with plan-making. Another type of scaffolding, technical scaffolding, is relevant to study with computers. Aspects of the program or software may have an influence on their effectiveness for enhancing understanding and solving problems. The researchers propose affective scaffolding as the last type of scaffolding, which both helps the learners to follow their tasks and promotes their thinking and operating abilities to higher levels by means of the different types of activities. Azevedo, Cromley, Thomas, Seibert and Tron (2003) claim that cognitive and metacognitive scaffolds assist, support and give hints, prompts and suggestions about the content, methods, and resources related to solving problems and managing learning, whereas motivational scaffolds are related to the techniques planned to sustain and build up a motivational approach, such as attribution and support.

Above all, the concept of scaffolding has expanded as technology has been adapted to educational contexts, as mentioned in the previous section. For example, Hmelo and Guizdial (1996) classify 'software-realized scaffolding' into two groups, 'black-box scaffolding' and 'glass-box scaffolding' (p. 130). The former intends to encourage learners in terms of performance, rather than of learning without the possibility of ceasing the support, while the latter includes both types, fading the support after a while. Rather than arguing which type of scaffolding should be provided, they highlight that the motive for learning determines which one to use, that is, whether to 'allow the learner to complete a task and allow cognitive resources to be concentrated

on higher-level goals' as happens in 'black-box scaffolding', or to allow the learner 'to look inside the support being provided and understand what the support is and why it is needed' (ibid., p. 132).

Furthermore, Hannafin, Land and Oliver (1999), who look at open learning environments (OLEs) in their paper, categorise scaffolding into four types. *Conceptual scaffolding* helps learners to deal with problematic and complex concepts by telling them 'what to consider' (ibid., p. 132). *Metacognitive scaffolding*, as discussed above, is more closely related to guiding learners about 'how to think during learning' (ibid., p. 132). *Procedural scaffolding* puts stress on the way to use the accessible sources and instruments (ibid.). By means of *strategic scaffolding*, learners have the chance to analyse, plan, make strategies and take decisions in the process of studying in OLEs (ibid.); this type also enhances their motivation to be cognisant of utilising accessible source materials and tools for specific uses (Tiantong & Teemuangsai, 2013).

Tait (2000) identifies the main functions of learner support in online environments as cognitive, affective and systematic. Cognitively, learners' learning is supported and improved 'through the mediation of the standard and uniform elements of course materials and learning resources for individual learners', while the affective function of student support develops a learning zone in order to help learners and support their engagement and self-esteem (Tait, 2000, p.289). In the systemic mode, the function comprises a number of procedures which provide useful and student-centred systems related to 'administrative processes and information management systems' (Tait, 2000, p.289).

Although the basic and common definition of scaffolding is given by Wood et al. (1976, in Section 2.3.1.) as a group of aids to allow learners to complete tasks as a further step in their ZPD, the types of assistance provided should reflect how they manage their own learning. The current study adopts these categories of scaffolding in order to deduce whether they have a significant role in the enhancement of learning in e-learning environments. That is, the categorisations drawn from other research (Azevedo et al., 2003; Hannafin et al., 1999; Hmelo & Guizdal, 1996; Tait, 2000; Yelland & Masters, 2007) are a good starting point to obtain an insight into the way students handle their learning in e-learning settings through cognitive, adaptive or technical scaffolding.

As a result, scaffolding in the present study is regarded as the process that provides support for learners to complete the task and achieve the intended goal via the interaction between themselves and online learning resources (see Chapter 4). In order to provide that interaction in e-learning environments, learning design has been addressed. Therefore, the next section defines learning design, considering different learning styles (see Section 2.4.1.) and giving an example of

a framework in an e-learning environment (see Section 2.4.2.). In the case of the current study, Laurillard's Conversational Framework is used to explain the importance of interaction in learning. The next section deals with learning design.

2.4 Learning Design

As stated in the above sections, the concept and understanding of scaffolding has changed and evolved with the involvement of technology in learning environments (see Section 2.3.2.). In the same sense, the improvement in learning within e-learning environments not only challenges the traditional sense of scaffolding, but also inhibits design challenges (Azevedo & Hadwin, 2005). This section describes learning design (LD) and common definitions given by researchers such as Koper (2006) and Conole (2013).

Koper (2006) defines LD 'as the description of the teaching-learning process that takes place in a unit of learning (e.g., a course, a lesson or any other designed learning event). The key principle in learning design is that it represents the learning activities and the support activities that are performed by different persons (learners, teachers) in the context of a unit of learning' (p.13).

In a similar but broader vein, Conole (2013) describes it as follows:

> 'It is a methodology for enabling teachers/designers to make more informed decisions in how they go about designing learning activities and interventions, which is pedagogically informed and makes effective use of appropriate resources and technologies. This includes the design of resources and individual learning activities right up to curriculum-level design. A key principle is to help make the design process more explicit and shareable. Learning design as an area of research and development includes both gathering empirical evidence to understand the design process and the development of a range of learning design resources, tools and activities' (pp. 7-8).

Following both Koper (2006) and Conole (2013), the present study suggests that LD is a way of strengthening instruction by providing necessary and adequate scaffolding and activities, whereby learners can manage their learning in e-learning environments. In other words, under these definitions, LD needs to consider essential components which should be taken into consideration in the process of designing and implementing learning activities and tasks in e-learning environments.

Considering this kind of environment, Mor and Craft (2012) refer to Falconer, Finlay and Fincher's (2011) account of LD. According to Falconer et al. (2011), LD comes from two traditions in technology-enhanced learning. The first is found 'in the attempt to build computer systems that

would orchestrate the delivery of learning resources and activities for computer-assisted language learning' (Falconer et al., 2011, p.101), which exemplifies Koper's definition (Mor & Craft, 2012), whereas the other is found 'in the need to find effective ways of sharing good and innovative practice in technology-enhanced learning' (Falconer et al., 2011, p.101), which refers to Conole's definition (Mor & Craft, 2012). Mor & Craft (ibid.) highlight that the findings from the Art and Science of Learning Design (ASLD) workshop, in which LD was discussed, indicate 'a growing recognition for the need for dialogue across these two traditions, which should lead to common definitions that acknowledge learning design both as a noun (activity) and a verb (the product of that activity)' (p.87).

According to current research, LD is regarded as 'a noun' or activity in terms of Koper's definition, whereas it is seen as 'a verb' or the product of the activity in regard to Conole's description. In this research, LD's cases as a noun and verb in e-learning environments are significant in that the study explores the relationship between scaffolding and learner autonomy, both of which are essential in designing and allocating materials and activities in e-learning environments (Álvarez & Cuesta, 2011; Cuesta, 2010). Learners' motivation and performance are also affected by the design, in which learning styles are taken into account (Demirbas & Demirkan, 2007; McLoughlin, 1999; Watson, 2003). The next subsection reviews learning styles in terms of learning design and Laurillard's Conversational Framework, which is essential for looking at the interaction between learners and tools based on OLRs and at how e-learning activities and tasks are applied to e-learning environments in the context of the current study.

2.4.1 **Learning Styles**

The definition and importance of learning design have been highlighted in the above section. In learning environments, learners might need additional assistance and motivation to join in activities in which they are inexperienced (Jackson, Krajcik & Soloway, 1998), as they differ in knowledge, skills, interests and learning styles. Learners' interaction with online learning resources with scaffolding might also impact their learning style (ibid.). Because of these learning differences, this section discusses learning styles.

Learning styles are defined as 'the composite of characteristic cognitive, affective and psychological factors that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment' (Keefe, 1979, cited in Griggs, 1991, p.2). If learning design is constructed according to these factors, the effectiveness of learning activities and tasks improves (Rasmussen, 1998; Riding & Grimley, 1999, cited in McLoughlin, 1999). As this

area of learning design is somewhat underexplored (ibid.), this research draws attention to the need to set up an e-learning environment that considers learning styles.

There have been a number of learning styles such as Kolb's Learning Styles Inventory (Kolb & Kolb, 2005) or Felder & Silverman's Learning Style (Felder & Silverman, 1988; for more types of learning styles, see Cassidy, 2004), both of which stress the need for at least four of the particular learning styles in teaching, motivating learning, balancing concrete and conceptual information and formal teaching approaches with informal activities, using visuals, setting enough repetitive drill activities, providing reflective and active exercises rather than just teaching, enabling collaboration, and accommodating flexibility of styles (Tuan, 2011). According to Felder & Silverman (1988), learning styles are categorised into five dimensions. Sensing and intuitive learners use five senses and hunches to learn, respectively (ibid.). In that case, sensors are related to the practice, whereas intuitors are concerned with imagination (Watson, 2003). Visual learners gain knowledge by means of sights, pictures, diagrams and symbols, while auditory learners use sound and verbal-based contents (Felder & Silverman, 1988). Inductive learners prefer to see the particular facts first and general context afterwards; deductive learners choose the opposite way. Active learners are willing to learn by carrying out the task well in the group. Reflective learners tend to examine the knowledge introspectively and work well alone. Learners who prefer to follow the instructions in order are sequential and tend to learn as indicated in the learning material or design. By contrast, global learners seem to do the activities unevenly, but accomplish them in a holistic way, mostly without knowing exactly how they reach the solution or obtain the information.

Considering these learning styles, learning materials should be designed according to how learners tend to learn (Felder & Silverman, 1988; Watson, 2003). Even if the designed materials do not define and specify what kind of learners they can reach and help, they should pay attention to and understand the need to include and respond to varied learning styles, which facilitates improvement in learning design (McLoughlin, 1999). According to Jackson et al. (1998), 'building scaffolding into software offers the opportunity to support diversity through individualized support that accommodates learners of different skills, backgrounds and learning styles, and growth through options that provide more powerful functionality as the learner develops expertise' (p.187). In this sense, in order for learners to accomplish tasks, learning design must aim at enabling them to feel free and comfortable in choosing and mastering the knowledge. The current research utilises Laurillard's Conversational Framework to discuss how learning design is implemented in e-learning environments.

2.4.2 **Laurillard's Conversational Framework**

The change of education from classroom-based learning to computer-assisted language learning has led to the creation of new learning environments to meet learners' requirements (Laurillard, 2008). Looking at learning design in practice rather than just in theory in new learning environments, Laurillard (2012) has developed the Conversational Framework based on learning as conversation. She has also been revolutionary in trying to apply educational models to the use of technology in this framework; therefore, many studies have used her model to design a learning environment (see Fotouhi-Ghazvini, Earnshaw, Robison, Moeini & Excell, 2011; Neo, Neo & Lim, 2013; Quinn & Reid, 2003). In this context, the aim of that model is to facilitate the knowledge of 'how to design teaching and learning now that digital technologies are making more impact on education' (pp. 94-5).

Figure 4 shows 'the role of peer learners … by complementing the teacher-learner instructions with the peer communication cycle and the peer modeling cycle' (ibid., p. 92). Although the current research does not focus mainly on collaborative or peer learning, it will be worthwhile to mention briefly the perspective of the interaction between learners and their peers in e-learning environments, including the interaction between them and the tools.

As mentioned by Laurillard (2012, see Appendix B), learning takes place via the interaction between the teacher and learner, including peer interaction if needed. The iterative conversation is the basis of the Conversational Framework, which is led by motivating and enabling learning. Participants have the opportunity to share and discuss their own knowledge collaboratively. As symbolised in Figure 4, repeated cycles are carried on with until learners require help from the tutor or reach an agreement. Interactions include activities such as narrative, interactive, discursive, adaptive and reflective processes. By virtue of extrinsic feedback from the teacher, the learners can 'modulate their concept' and 'generate questions' in the teacher communication cycle, indicating social constructivism and conceptual learning (ibid., p. 94). The representation of experiential learning and constructivism in teacher practice and modelling cycles supplies them with both an environment where they can generate and modulate their actions with the help of the extrinsic feedback, and an environment, as a model, from which they can receive intrinsic feedback. 'As learners exchange ideas through discussion and exchange their outputs from the practice or modeling environment through collaboration, these cycles also need to repeat until the learners have negotiated an agreed understanding, or perhaps more interestingly, have been unable to agree and have a question to put to the teacher' (ibid., p. 92). In that sense, learners tend to manage their own learning at a higher level within their ZPD.

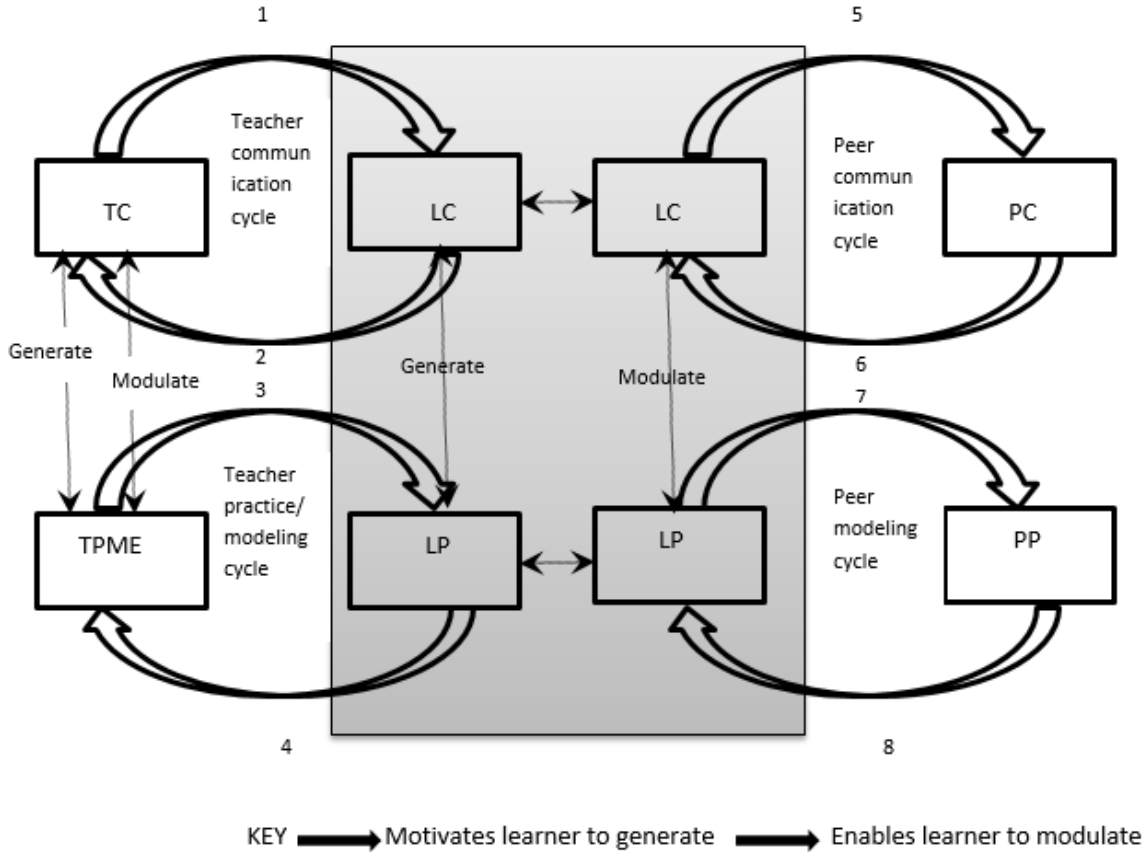


Figure 4: Laurillard's Conversational Framework (2012)

In the model, the learner is learning through interaction with peers' concepts and practice (PC, PP), exchanging the concepts and the outputs of their practice (Laurillard, 2012, p. 92). The teacher's conceptual organisation (TC), the learner's learning concepts (LC) and practice (LP), and the practice/modelling environment are set up by the teacher (TPME) (p. 88).

In an earlier version of this pedagogical model, Laurillard (1998, 2002) highlights four essential activities, as described below, which need to take place during the teaching and learning process if learning is to be effective.

'*Discussion* between teacher and learner at the level of descriptions;

'*Interaction* between the learner and some special aspect of the world defined by the teacher;

'*Adaptation* of that special world by teacher, and of action by learner;

'*Reflection* on learner's performance by teacher and learner' (Laurillard, 1998, p.230).

The present study sets out to test and adapt Laurillard's 2012 Conversational Framework (see Figure 51, Section 8.2) in order to explore how learning takes place (LC) through interaction (LP) between learners and online learning resources (TP), and whether learners are able to learn new

concepts and reconceptualise existing knowledge via the instruction, aids and feedback supplied in OLRs (for details, see Section 8.2.1.).

Laurillard's recent model shows how, within four communication cycles, the learner interacts with the teacher or peers, and receives extrinsic feedback which motivates him/her to generate the expression of the individual's concept and performance. The present study adapts and allocates Laurillard's Conversational Framework, in the particular context of this study (see Figure 51), within the teacher communication cycle. It does so to explore how learning takes place through interaction between learners and online learning resources, and how learners tend to receive the tools' concepts via the instruction, aids and feedback supplied in OLRs (for details, see Section 8.2.), if learning takes place effectively. It also looks at how feedback from the tools, that is, extrinsic feedback, motivates them to generate the expression of their concept and performance.

It further examines how, in the next step, in the teacher practice and modelling cycle, the tools motivate them to modulate their performance via extrinsic feedback and intrinsic feedback (both of which are discussed in Section 3.4.2.), at a higher level within their ZPDs. It ascertains whether the collaboration with peers, if provided, enables them to follow the same instructions, such as modulating their concept, with the help of their peers' concepts, and motivates them to generate their expression via extrinsic feedback from their peers. Similarly, it further investigates how, in the last cycle, the peer modelling cycle, they are motivated by their performance and modulate it by means of the output from collaboration with peers, if available. In order to do that, this study looks at whether and how social networking websites such as Facebook or Twitter, or discussion forums like blogs, allow them to interact and work together in e-learning environments, if contributed to by participants.

However, Laurillard's interpretations of both learning theories and the framework of learning design proposed by her may evoke other issues for learners, in that they tend to 'experience anxiety, frustration, and often failure' in e- learning environments if they do not have the ability to handle their learning (Knowles, 1975, cited in Ludwig-Hardman and Dunlap, 2003, p.2; Saadé, Kira & Nebebe, 2013). In that sense, they are expected to be aware of the need and ready to take responsibility for their learning through appropriate support from the tools in OLRs (see Section 3.4.).

In conclusion, Laurillard's Conversational Framework is intended to see and explore the interaction between learners and tools, and peers if possible, in e-learning environments. This interaction requires them to manage their own learning in this kind of learning environment, as stated above. In order to enable and maintain this interaction, e-learning environments should be based on some affordances which are described in the next section.

2.5 Affordances of E-learning Environments for Scaffolding Learning

The term 'affordance' has been used not only in the ecological context related to the environment, but also in the educational context regarding the relationship between technology and humans (see chapter 6 in Conole, 2013). As the originator of the term, Gibson (1977) describes affordances as 'all "action possibilities" latent in the environment, objectively measurable and independent of the individual's ability to recognize them, but always in relation to the actor and therefore dependent on their capabilities' (pp. 67-82). In this sense, an object in the environment has an affordance according to the user's skill and tendency to take advantage of it. Furthermore, Norman (1988) relates the term to the interaction between computers and humans by designating that:

> 'When used in this sense, the term affordance refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used. A chair affords ("is for") support and, therefore, affords sitting' (p. 9).

As regards examples of the affordances' functions in computer applications, 'radio buttons afford clicking; windows allow separation of application uses; scroll bars afford navigation within a window' (Haythornthwaite & Andrews, 2011, p. 14). However, affordances of the computer can also be illustrated by concentrating on their skills rather on their applications. For example, 'a system allows remote connection, asynchronous communication, data collection, navigation, awareness of others, etc.' (ibid., pp. 14-15). Accordingly, learners benefit from affordances of the designed learning programs, which help them to master their skills in learning independently or improve their motivation for learning and so on.

Conole and Dyke (2004) set up a taxonomy of ICT affordances drawing on both the work of Giddens (1990, 1991, cited in Conole & Dyke, 2004), Castells (1996, cited in Conole & Dyke, 2004) and Engestrom et al. (1999, cited in Conole & Dyke, 2004), and the literature on the use of technology in education, which is aligned with learning as follows:

- *Accessibility*: ICT offers available and easily accessed resources through various systems. 'The challenge is not in accessing material, but rather in knowing how to use what is available'.
- *Speed of change*: Although ICT mediates changing information, the issue is the 'quality, lack of authority of sources and lack of reflection'.

- *Diversity:* ICT provides a variety of different learning experiences which can be beyond learners' own communities.
- *Communication and collaboration*: ICT enables engagement with the 'other'.
- *Reflection*: Discussion in asynchronous technologies can be an example of encouragement of reflection for a longer time than the time face-to-face discussions can potentially provide.
- *Multimodal and non-linear*: ICT offers learners the chance to follow non-linear pathways of learning and multimodal ways to complete the activities.
- *Risk, fragility and uncertainty*: Systems in ICT are vulnerable to misuse or viruses. That might lead to, for instance, plagiarism or receiving unwelcome information or emails. Furthermore, it might cause the information to be considered uncertain and unreliable.
- *Immediacy*: The speed of communication via email has the effect of creating the expectation of receiving an instant reply from another user.
- *Monopolization*: It can consist of the dominance of particular software products to support office applications or learning applications in terms of the present study.
- *Surveillance*: Tracking devices allow teachers to monitor students' learning (ibid., pp.116-120).

These are useful to consider in the context of the present study to examine the possible provisions and learners' needs in e-learning environments. As it focuses on what actions learners carry out when learning in e-learning environments where they are alone to manage their own learning, the operation of affordances is involved. In this sense, it looks at how the tools employed by OLRs tend to afford, for instance, access to the site where they can easily and freely carry out learning tasks and activities and make use of learning materials, or provision of video clips, hyperlinks or images, if available, to both facilitate and motivate them in completing the task. In particular, the affordances of authenticity, feedback, practicability and applicability will make the context of the study more specific and clearly linked to its aims, since it looks at scaffolded OLRs' relationship with autonomous learning and motivation. In order to understand the affordances within these aforesaid issues, the next subsections provide a clear discussion and explanation.

2.5.1 **Authenticity**

With respect to what the present study intends to find out about the relationship between scaffolding and learner autonomy, including motivation in e-learning environments, the affordance of authenticity is represented in a way that helps to conceptualise the importance of

scaffolding in that kind of environment. Hutchinson and Waters (1987) count authenticity as 'fitness to the learning purpose' (p. 159) by highlighting the requirement for needs analysis in preparing the language learning course. Because that view cannot be implemented or prove beneficial through a solely text-based approach to authenticity, considering the improvement and increasing value of computer or online based language learning, especially in recent times, pedagogies in learning design have taken into account the need to afford an online learning environment which emphasises learning by doing through authentic activities and materials (Herrington, Oliver & Reeves, 2003). By the same token, Lombardi (2007) maintains that 'the Internet and a variety of emerging communication, visualization, and simulation technologies now make it possible to offer students authentic learning experiences ranging from experimentation to real-world problem solving' (p.1).

As delineated above, authentic learning helps learners to utilise e-learning activities and materials according to their learning goals and aims. Thus, they can improve and handle their learning. Above all, this makes them correspondingly motivated and eager to learn (Herrington et al., 2003). Lombardi (2007) also highlights that students are 'motivated by solving real-world problems' (p.2) and prefer to do rather than listen. Furthermore, 'the use of authentic tasks encourages and supports immersion in self-directed and independent learning – an important success factor in online learning' (Herrington, 2006, p.3170). Additionally, learning design with authentic factors has the tendency to boost students' engagement in learning tasks (ibid.).

All in all, this way of learning is crucial as 'it situates concepts and subject-specific ways of thinking in a real-world context, providing students with an opportunity to practice the activities of their subject, and reflect on the feedback that context provides' (Laurillard, 2012, p. 167). Although it is alleged to be complex and costly, learners who are aware of the need and ready to take control of their learning are expected to find a way of learning which will enable them to benefit from free resources, both online and supplied by organisations. On the one hand, the provision of many authentic variables in the Internet or the World Wide Web might cause learners to become lost, depending on their level of language or knowledge (Murray, 2005). On the other hand, scaffolding has the potential to prevent this problem arising (Murray & McPherson, 2004, cited in Murray, 2005). That is, learners might draw on the levels suggested in Laurillard's Conversational Framework, outlined in the previous section, in order for learning to take place. For example, they should be allowed to take control of their own learning after they have generated and modulated their own concepts or constructed their knowledge. In the case of the present study, the participants have the opportunity to reach free online resources such as the EAP Toolkit or OLRs such as BBC Learning English, online dictionaries or Englishtown, as selected by either their tutors or course designers, or by themselves through the Internet. In this sense, the study intends to give

an insight into how they work independently in e-learning environments with the help of scaffolding, considering the affordances of authenticity, feedback and practicability/applicability, the last two of which are discussed in the next sections.

2.5.2 **Feedback**

As stated above by Laurillard, authentic activities have an impact on students' practice and utilisation of feedback in learning environments. Also, as learners are studying alone in e-learning environments, the integration of feedback is required (Vasilyeva, Pechenizkiy & De Bra, 2007). However, in order for learners to utilise the feedback provided in e-learning activities, 'effective e-learning design will include provision for feedback that amplifies the learning from the experience, and enables students to increase their level of skill and knowledge' (Brown & Voltz, 2005, p.5). Therefore, this section discusses feedback and its provision in e-learning environments.

A new kind of feedback has emerged with the spread of technology usage in learning and teaching (Tuzi, 2004). Electronic feedback or e-feedback is given in e-learning environments to enhance learning. It has the advantages of providing support anytime and anywhere, being accessible from any distance, and enabling the sense of anonymity (ibid.). As the current study mainly explores learners' learning in e-learning environments, it also examines the effect of e-feedback in nurturing their learning. In that sense, the Toolkits or OLRs should cater to what the users need to do in the present or subsequent time; so, it must be consistent and relevant to the context of the task (Vasilyeva et al., 2007). The consistency and relevancy of these resources might be backed up by the support or feedback which helps learners to see what the learning materials require them to accomplish and master. In the meantime, learners 'welcome any technological advance' which lowers the requirement to use mental processes, while supplying them with 'the control and enjoyment of the task' (Norman, 1988, p. 193). Also, feedback promotes learning by increasing motivation and self-esteem (Black & William, 1998; Nicol, 2007), and encouraging their efforts inasmuch as it 'communicates to the students that they can do better in the future' (Dörnyei, 2001b, p. 121).

In relation to Laurillard's Conversational Framework (see Section 2.4.2.), the feedback from either an extrinsic or intrinsic method has a role in establishing learning environments where learners manage their own learning and become motivated. Here it will be better to explain types of feedback, such as the intrinsic and the extrinsic, for the purpose of deducing how learning emerges in that framework. Laurillard (2012) describes them as follows:

- '"Intrinsic" feedback is internal to the action; it takes the form of a natural or authentic consequence of the action in relation to the intended goal, from which the learner can work out how to improve their action without teacher intervention.
- '"Extrinsic" feedback is external to the action; it takes the form of an evaluative comment on the action, or guidance that the learner can follow to improve their action with respect to the intended goal' (p. 55).

By these definitions, the present study makes use of these types of feedback in that extrinsic feedback tends to lead the learners to promote their learning with the help of the tools in e-learning environments, whereas intrinsic feedback is more related to learners' cognitive processes for handling their own learning after they finish performing the action. For instance, learners benefiting from scaffolded OLRs might receive extrinsic feedback by being told the right or wrong answer to the task they have carried out. Also, they might obtain intrinsic feedback on their action after completing the task and conceptualising their own information from it, which facilitates taking responsibility for their learning (ibid.). In that sense, the EAP Toolkit with its activity-based approach, and used in the current study, aims to combine 'pedagogic assets with staged learning activities and feedback which drives and scaffold[s] students' learning' (Watson, 2010). As shown in the figure below, this study explores how extrinsic feedback is provided in the Toolkit to help users learn by doing, as it is claimed to provide scaffolding such as comments, explanation and answers (ibid.; for more details, see Section 4.1.).

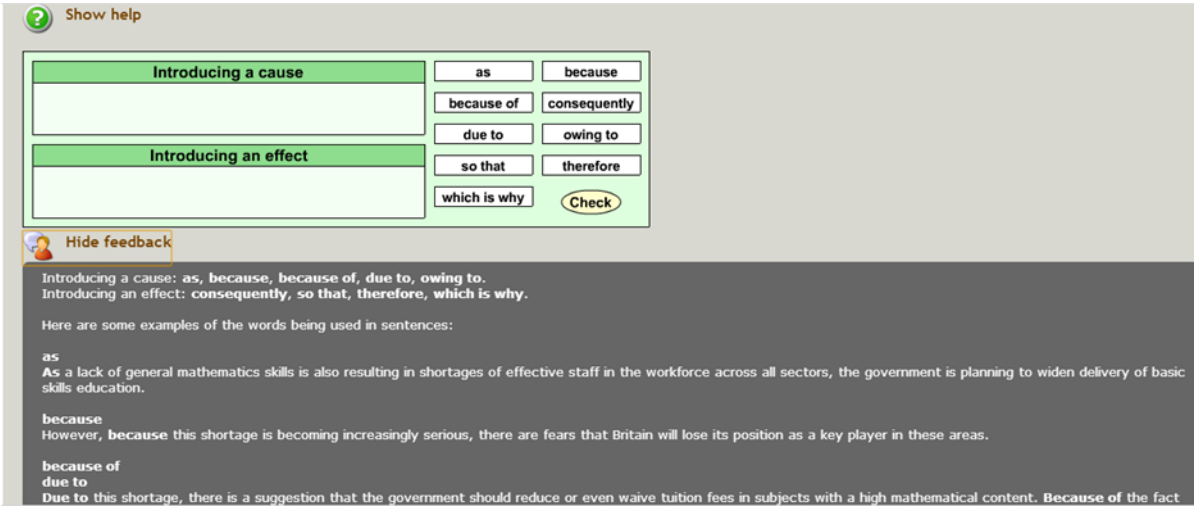


Figure 5: An example of extrinsic feedback in the EAP Toolkit to scaffold learning

Regarding the types of feedback and the aforementioned features and aims of the feedback, the current research investigates the way feedback plays the role in fostering and enhancing learning. In the next section, the affordances of practicability and applicability are outlined.

2.5.3 **Practicability and Applicability**

The affordances of both authenticity and feedback, which play an important role in learning in scaffolded e-learning environments, have been explained in the previous sections. The last affordances in the context of the present study, namely practicability and applicability, are discussed in this section. As Brophy and Alleman (1991) have defined them, activities are 'anything students are expected to do, beyond getting input through reading or listening, in order to learn, practice, apply, evaluate, or in any other way respond to particular content' (p.10). In that sense, a practical environment constitutes opportunities to share with others and advance the gained skills (Calvani, Sorzio & Varisco, 1997). Above all, a learning environment looks like a '"real world" application or discipline: managing a city, building a house, flying an airplane …' (Downes, 2007, cited in Lombardi, 2007, p.2). With respect to e-learning environments, learner activities and tasks are practised and applied through facilities and devices such as computers, mobile phones, VLEs or LAMS as stated by JISC (2004; see Section 2.3.2.).

Under the definitions of Koper (2006) and Conole (2013) indicated in Section 2.4., learning activities are interrelated with learning design to encourage learning. It can be inferred from the aforementioned definitions that OLRs should be designed and developed according to the applicability and practicability of learning activities and tasks. That is, OLRs or tools should provide learners with tasks and activities which are relevant to the context and give beneficial assistance and guidance through appropriate instruction, by which learners engage in interaction and dialogue with the tools in e-learning environments, in the context of the present study. Considering the importance of this kind of instruction and the role of personalisation in e-learning, as it tends to assist in students' practice (Mor & Minguillón, 2004), this study looks at in what ways, they exercise their autonomy with the help of scaffolding in e-learning environments, which tends to facilitate learners in practising tasks and applying learning activities to reach their desired goal.

Based on my readings, the affordances of such features as authenticity, feedback, practicability and applicability have not been reviewed with regard to scaffolding and autonomous learning in e-learning environments. Therefore, these issues are raised to help the present study to explain the characteristics of the affordances of e-learning environments in which learners are expected to be scaffolded and in turn to manage their own learning.

2.6 **Conclusion**

This chapter has introduced the main concept of the present study, scaffolding in e-learning environments. As the study was conducted in e-learning environments, it has described and

explained e-learning within its related components such as CAL, MAL, TEL, r-Learning, ICT and NBLT. After that, it has dealt with e-learning environments and models of e-learning. Then, it has given the definition of scaffolding in both the traditional and e-learning senses as providing support for learners to enable their learning, and has outlined its types. Having established a definition of learning design given by Koper (2006) and Conole (2013), the chapter has discussed the importance of considering learning styles and Laurillard's Conversational Framework, on which the present study draws. Further, the affordances of e-learning environments in terms of authenticity, feedback, practicability and applicability have been introduced in order to provide a clear idea of learning design in e-learning environments. Overall, Chapter 2 has given a conceptualisation of scaffolding in e-learning environments. However, the present study focuses on the exploration of the relationship between scaffolding and learner autonomy in e-learning environments. Therefore, the next chapter discusses learner autonomy in scaffolded e-learning environment.

Chapter 3: LEARNER AUTONOMY IN SCAFFOLDED E-LEARNING ENVIRONMENTS

3.1 Introduction

As introduced in Section 2.1., the present research focuses on three concepts which are discussed in the current chapter. Chapter 2 has discussed two concepts, e-learning and scaffolding. Chapter 3 will deal with the last concept, learner autonomy and integrates all the three concepts. First, it will define learner autonomy in Section 3.2. and explain its components such as self-regulation, self-management, learning strategies and the role of motivation in terms of attribution theory and self-efficacy in its subsections (see Figure 6). Next, learner autonomy in e-learning environments will be outlined in Section 3.3., which will describe self-directed e-learning and the connection between the ability to learn in e-learning environments, digital literacy and learner autonomy, in its subsections. As the main focus of the present study is to explore the relationship between scaffolding and learner autonomy in e-learning environments, Section 3.4. will give a deep understanding of scaffolded autonomous e-learning environments. Lastly, previous and related studies will be referred to in order to discuss the connection of these three concepts including scaffolding, e-learning and learner autonomy along with learners' attributions for success and failure and self-efficacy. Having covered that, the next section defines learner autonomy and its components in the context of the present study.

3.2 Learner Autonomy

The recurrent definition of learner autonomy has been some version of 'to take responsibility for one's own learning', as put forward by a number of researchers such as Benson (2001), Dickinson (1987), Holec (1981), and Little (1991). Holec (1981) gives the definition of autonomy as 'the ability to take charge of one's own learning', whereby students can decide on their aims and check and evaluate their progress (p. 3); however, learner autonomy is regarded as 'an attribute of the learner' rather than of 'learning situations' (Benson, 2007, p.22). Considering it in terms of learning situations, Dickinson (1987) identifies it as 'the situation in which the learner is totally responsible for all of the decisions concerned with his [or her] learning and the implementation of those decisions' (p. 11). Looking at it in its psychological aspect, Little (1991) implies that the 'learner will develop a particular kind of psychological relation to the process and content of his [or her] learning' (p. 4), and also, considers autonomy 'a capacity-for detachment, critical reflection, decision making, and independent action' (p. 4). Furthermore, Tremblay (2003) defines

autonomy as the capacity to 'know oneself as a learner', the 'reflective' capacity of learning through action, the capacity to 'adapt' to the situation and the context, and the capacity to 'learn from others' (p.80). Here he puts emphasis on several aspects of learner autonomy, bringing forward, within one definition, learners' attributes, the psychological factor, the learning situation and its sociocultural approach.

Linn (1996) differentiates passive, active and autonomous learning in order to indicate the role of the learners during learning processes. With the passive attitude, learners refrain from taking responsibility for deciding on course goals and activities and are unsuccessful in connecting concepts and patterns. In contrast, active learners can follow the implicit instructions and guidance; however, they fail to incorporate the activities into their learning as they expect others to direct and check it. Although a great amount of research ('Anderson, Boyle, & Reiser, 1985; Anderson, Corbett, & Reiser, 1987; Bruner, 1966', cited in Linn, 1996; 'Dewey, 1901; Piaget, 1952', cited in Laurillard, 2012; Vygotsky, 1962 & 1978) indicates the advantages and importance of active learning, instruction is required for active learners to become responsible and autonomous learners.

In the present study, learner autonomy is defined as the ability and capacity to take responsibility for one's own learning (Benson, 2001; Dickinson, 1987; Holec, 1981; Little, 1991) in e-learning environments. In addition, Tremblay's (2003) relevant explanation, which puts emphasis on the capacity to realise one's learner identity, the 'reflective' capacity of learning through action, and the capacity to 'adapt' to the situation and content and to 'learn from others', is taken as a basis of the indicator of learner autonomy, so as to explore its relationship with scaffolding in e-learning environments (p.80). Also, Linn's (1996) differentiation of learners as passive, active or autonomous helps the study to cover and conceptualise learner autonomy properly with regard to learners' work in e-learning environments. In this context, the present study aims to investigate how learners manage their learning on their own in scaffolded e-learning environments. Moreover, Little argues that 'they become more autonomous in language learning in proportion as they become more autonomous in language use, and vice versa' (1991, cited in Little, 2009, p.223). However, the present study focuses not only on language learning, but also on learning in general, and especially on academic learning in e-learning environments.

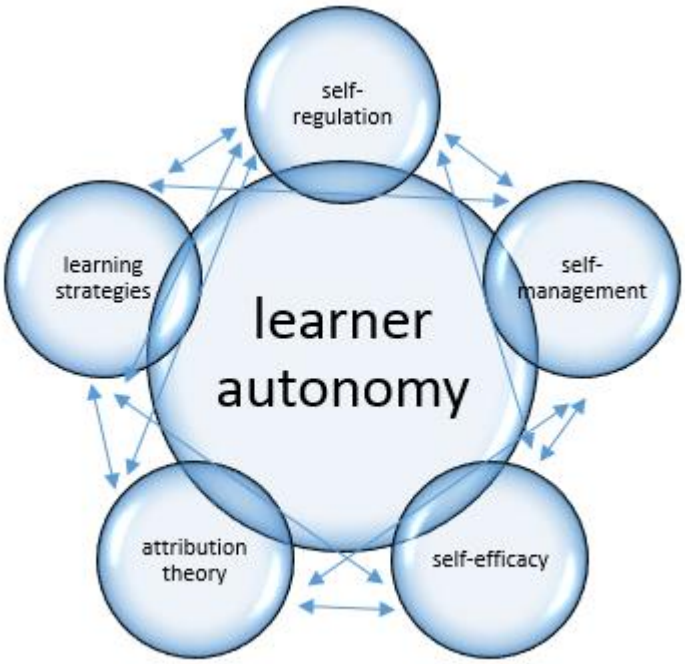


Figure 6: The interrelationship between learner autonomy and its dimensions in the present study

Still, defining and explaining learner autonomy is not enough to conceptualise it, as the concept has progressed into learning and language learning circumstances within the interaction of its crucial dimensions including self-regulation, learning strategies, motivation (Benson, 2007) and self-management. The present study aims to clarify learner autonomy by discussing and displaying the interrelationship between these dimensions such as self-regulation, self-management, learning strategies and motivation including attribution theory and self-efficacy, and learner autonomy as illustrated in Figure 6. Therefore, the next subsections outline the aforementioned concepts, respectively.

3.2.1 Self-regulation

Dörnyei (2005) indicates the link between self-regulation and learner autonomy in the definition of self-regulation as 'the degree to which individuals are active participants in their own learning' (p. 191). Furthermore, looking at self-regulation in a variety of models but combining them in common assumptions, Pintrich (2005) regards it as 'an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment' (p. 453). Similarly, taking into consideration these components and skills such as setting goals, adopting strategies, monitoring and restructuring their own learning, time-management, self-evaluation, attribution and adapting to the next step, all of which

concepts are based on metacognitive, motivational and behavioural theorists' views (Zimmerman, 1986, 1990), Zimmerman (2002) further claims that self-regulated learners can concentrate on the way of implementing, adjusting and preserving particular ways of education not only in collaborative but also in lone situations. In that case, the importance of using their personal skills in specific contexts is relevant to what self-regulation is (ibid.). Besides, they are separated from others by the use of metacognitive, motivational and behavioural methods in educational contexts (Zimmerman, 1990).

The above-mentioned views of Dörnyei (2005), Pintrich (2005) and Zimmerman (1986, 1990, and 2000) have a tendency to promote learner autonomy in educational environments, as self-regulation enables language learners to study outside the classroom (Kormos & Csizér, 2013). Considering the arguments and explanations of Dörnyei (2005), Kormos and Csizér (2013), Pintrich (2005) and Zimmerman (1986, 1990, and 2000), the present study looks at how learners implement, adjust and monitor their learning in e-learning environments by means of scaffolding provided by online learning resources.

3.2.2 **Self-management**

Self-management is a concept often referred to as learner autonomy in language learning studies (Bocanegra & Haidl, 1999). Furthermore, self-management and self-regulation have been used interchangeably in studies (Day & Unsworth in Locke & Latham, 2013; Dörnyei, 2005; Jackson, Mackenzie & Hobfoll in Boekaerts, Pintrich & Zeidner, 2005). However, the present research regards it as a component of learner autonomy and uses Lamb's (2010) succinct definition, which is to manage to plan, monitor and evaluate one's own learning. Also, it is 'the ability to deploy procedures and to access knowledge and beliefs in order to accomplish learning goals in a dynamically changing environment' (Rubin, 2001, p.25). Dafei (2007) proves that highly-proficient language learners are good at managing the process of their own learning and, thereby, become more autonomous. However, the development of self-management in language learning settings depends on the opportunities given to learners (Lamb, 1996), a factor which is considered in the present study in that support provided by online learning resources is examined in terms of learners' self-management. How they manage to plan, monitor and evaluate their learning in connection with their self-regulation in e-learning environments is explored to conceptualise the relationship between scaffolded learning and learner autonomy. Along with self-regulation and self-management, other dimensions of learner autonomy, such as learning strategies and motivation, need debating as 'self-regulated learners optimise their learning strategies through continuous self-assessment of their learning efficacy' (Cheng, 2011, p.14). Therefore, the next section deals with learning strategies.

3.2.3 **Learning Strategies**

As indicated in the above two sections (Sections 3.2.1. and 3.2.2.), the concepts of self-regulation and self-management are interdependent, so some studies have used them in that way (see Day & Unsworth in Locke & Latham, 2013; Dörnyei, 2005; Jackson et al. in Boekaerts et al., 2005). Above all, learning strategies have been regarded within the research on self-regulation as a combined model (for instance, see Oxford's Self-regulated L2 learning strategies (S^2R) model in Oxford, 2011b and the study by Zimmerman & Martinez-Pons, 1986).

Considering the above relationship between learning strategies and self-regulation or self-management, learning strategies can be defined as essential indicators with which to develop the knowledge of how to carry out learning in environments where learners are expected to manage their own learning without any help from tutors or peers (Hismanoglu, 2000; White, 2008), motivation or behaviour (Dembo, 2004). This definition shows that learning strategies are directly connected with self-management and in turn, self-regulation to develop learning. Also, learners should be enabled to realise and pinpoint the strategies that they can probably utilise (Holmes & Ramos, 1991, cited in Thanasoulas, 2000). In that sense, language learning strategies are described 'as the operations or processes which are consciously selected and employed by the learner to learn the TL [target language] or facilitate a language task' (White, 2008, p. 9). Furthermore, those processes help language learners to accomplish multifarious activities 'from the very onset of learning to the most advanced levels of target-language performance' (Cohen, 2011, p. 7). By means of that assistance, they can become more autonomous and aware of their language learning (Allwright, 1990, cited in Oxford, 2003a; Little, 1991).

Language learning strategies have been categorised by a number of scholars (e.g. O'Malley & Chamot, 1990; Oxford, 1990; Rubin, 1987; Stern, 1992, or see the research timeline of Oxford, 2011a). Although the present research does not mainly focus on types of learning strategies, it takes Oxford's latest learning strategies contained in the S^2R model (Oxford, 2011b) as a way to see learners' use of learning strategies and thus examine their autonomous learning in e-learning environments. Therefore, it first discusses three main learning strategies classified by O'Malley & Chamot (1990) and then relates them to Oxford's model (see Figure 7).

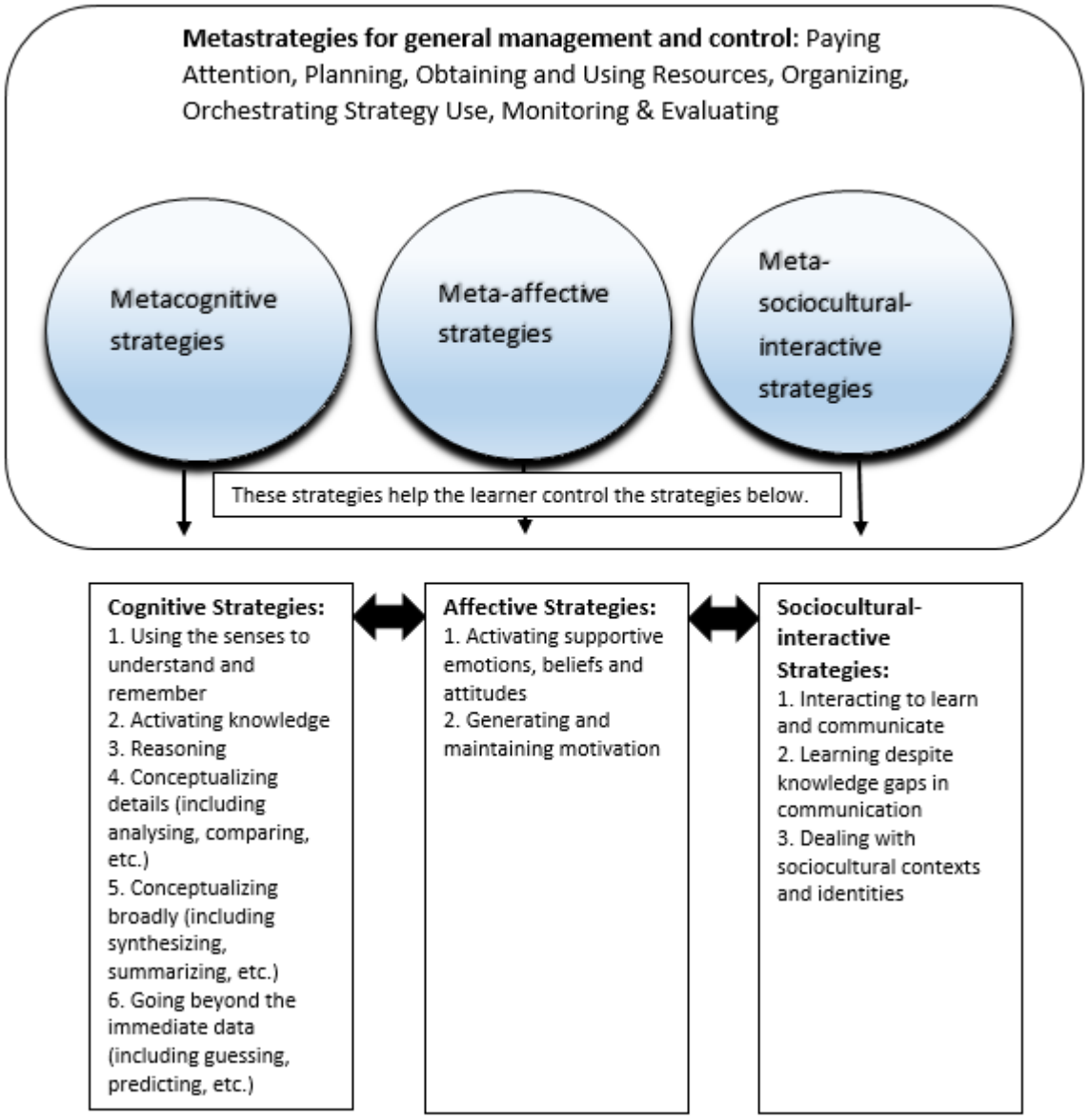


Figure 7: The categorisation of learning strategies in the S²R Model (taken from Oxford, 2011b, p. 25)

Cognitive strategies deal with direct operation on the material through the use of methods to encourage learning (ibid., cited in Thanasoulas, 2000). 'Repetition, resourcing, translation, grouping, note taking, deduction, recombination, imagery, auditory representation, key word, contextualization, elaboration, transfer, inferencing' are examples of cognitive strategies (Hismanoglu, 2000, n.p.). Metacognitive strategies use cognitive processes to handle the learning process (Benson, 2011). Planning, self-monitoring, self-evaluation, self-management, identifying problems and selective and directed attention are grouped under metacognitive strategies (O'Malley & Cohen, 1990, cited in ibid.). Social/affective strategies include the methods used to communicate with others and manage one's own learning (ibid.). They can be exemplified as cooperation with others for social strategies, and decreasing one's own anxiety or supporting

oneself for affective strategies (ibid.; for more, see Section 5.1.2. Benson, 2011). Moreover, learners use self-talk, the manifestation of verbal and non-verbal behaviours, as in the manner of expressing a word or thought, showing a smile or frown etc. (Chroni, 1997, cited in Theodorakis, Chroni, Laparidis, Bebetsos & Douma, 2001) or 'a dialogue with the self existing … addressed to self …' (Vocate, 1994, p. 6), as an affective strategy, especially when working online alone without peer support (White, 1995). Considering the use of self-talk to encourage learners to control their learning, rather than engage in an uncontrolled learning process (Zimmerman & Martinez-Pons, 1986), and to increase awareness of learning (Hauck & Hurd, 2005), self-regulation (Zimmerman, 2002) and learning strategies (Rastegar & Kermani, 2015), the present study uses this concept to see how learners manage their learning on their own in e-learning environments (see Section 8.4.).

All these best-known strategies such as the cognitive, metacognitive and social/affective strategies of O'Malley & Cohen (1990) are involved and considered in the present study to look at the kinds of methods learners have applied in order to examine how they manage and regulate their learning in e-learning environments, especially through the use of scaffolding. However, there seems to be a lack of deeper indications of their use of learning strategies at the multidimensional level. Similarly to O'Malley and Cohen's categorisation (ibid.), Oxford's (2011b) latest model of learning strategies is considered to classify learners' use of learning strategies in the present study, as shown in Figure 7.

All in all, the role of learning strategies cannot be ignored in learning contexts in terms of enhancing the learning processes, since learners or language learners who utilise such strategies are defined as '"autonomous" or seeking autonomy' (Oxford, 2011a, p.1978). Therefore, the present study benefits from the categorisation of Oxford's (2011b) learning strategies (see Figure 7) to explore the exercise of learners' autonomy. With all three dimensions (self-regulation, self-management and learning strategies) of learner autonomy in the present study having been discussed, the next section deals with motivation, which is a part of all these three dimensions, in order to understand learners' autonomous learning (i.e. Cheng, 2011; Oxford, 2011b; Pintrich, 2005).

3.2.4 **Motivation**

Considering the last argument of the previous section and Figure 6 in Section 3.2., there is an interrelationship between motivation and other dimensions of learner autonomy, and learner autonomy per se. As motivation and autonomy are interrelated concepts that support learning (Dörnyei & Ushioda, 2009; Spratt, Humphreys & Chan, 2002), the present study regards

motivation as a component or dimension of autonomy that promotes learning, rather than merely considering it an isolated concept, separate from learner autonomy. However, it is claimed to be, 'without question, the most complex and challenging issue …' (Scheidecker & Freeman, 1999, p. 116). For instance, there is a sharp disagreement on the definite meaning of motivation (Oxford & Shearin, 1994). On the one hand, some researchers disagree on the elements of motivation and their roles in learning, such as individual and situational differences, cultural and social impacts, and cognition ('Renchler, 1992; Belmechri & Hummel, 1998', cited in Keblawi, 2009). On the other hand, Dörnyei (2001a) states that most researchers agree that motivation deals with 'the direction and magnitude of human behaviour', and continues to explain that it is 'the choice of a particular action, the persistence with it', and 'the effort expended on it' (p. 8). That definition is followed by the effects of motivation, that is, 'why people decide to do something, how long they are willing to sustain the activity,' and 'how hard they are going to pursue it' (Dörnyei, 2001a, p. 8). However, in recent times, the basic and common definition has been that motivation is a term referring to 'reasons that underlie behaviour that is characterized by willingness and volition' (Lai, 2011, p.34) or 'the reasons underlying behaviour' (Guay, Chanal, Ratelle, Marsh, Larose & Boivin, 2010, p. 712).

As the present study concentrates on both academic learning and foreign language learning, the next discussion deals with motivation in second or foreign language learning, as follows. The idea of investigating the motivation in foreign or second language (L2) learning has fascinated researchers since the 1950s (Dörnyei, 2005). Well-known researchers Gardner and Lambert (1972) consider that L2s have a role in liaising between 'different ethnolinguistic communities in multicultural settings' (cited in Dörnyei, 2003a, pp.4-5). Following the studies, Gardner (1985) developed the Socio-Educational Model, which was dominant until the early 1990s, by defining motivation as a 'combination of effort plus desire to achieve the goal of learning the language plus favourable attitudes towards learning the language' (p. 10). Within this definition, he discriminates between integrative and instrumental motivation. The former is concerned with learners' desire to interact and socialise in the target language, whereas the latter is related to their reasons for learning the language, such as passing an examination, finding a good job or receiving a higher salary (Gardner, 1985).

However, Gardner later states that there is no point in discriminating between these two types of motivation to understand the role of motivation in second or foreign language learning, whereas 'its strength' (Gardner, 2010, p. x) or 'the intensity of motivation in its broadest sense, incorporating the behavioural, cognitive and affective components, … is [more] important' (Gardner, 2007, p.19). By the same token, a number of researches (Belmechri & Hummel, 1998; Crookes & Schmidt, 1991; Dörnyei, 1990, 1994, 2009; Oxford, 1996; Oxford & Shearin, 1994)

criticise Gardner's approach to motivation, in particular the concept of integrative motivation and its meaning, since the idea of integrative motivation is not related to motivational psychology (Dörnyei, 2003a), in addition to its lack of focus on L2 classroom learning. Dörnyei (2005) proposes the L2 Motivational Self System, which consists of three elements:

1. *Ideal L2 Self*, which is the L2-specific facet of one's 'ideal self'. If the person we would like to become speaks an L2, the 'ideal L2 self' is a powerful motivator to learn the L2 because of the desire to reduce the discrepancy between our actual and ideal selves.

2. *Ought-to L2 Self*, which concerns the attributes that one believes one ought to possess to meet expectations and to avoid possible negative outcomes.

3. *L2 Learning Experience*, which concerns situated, 'executive' motives related to the immediate learning environment and experience (e.g. the impact of the teacher, the curriculum, the peer group or the experience of success) (Dörnyei & Ushioda, 2011, p. 86).

As we can gather from these three elements, Dörnyei's L2 Motivational Self System does not restrict the learners to integration into any specific language or culture (Lai, 2013). Rather, it sees motivation in foreign/second language learning as having three components including 'the learner's vision of oneself as an effective L2 learner, the social pressure coming from the learner's environment and positive learning experiences' (Dörnyei & Ushioda, 2011, p. 86).

Subsequently, researchers interested in motivation in language learning have started to elaborate and develop the Socio-Educational Model within cognitive theories (Dörnyei, 1990, 1996; Oxford, 1996; Oxford & Shearin, 1994), bringing forward cognitive concepts including attribution theory and self-efficacy, both of which are concerns of the present study and are therefore discussed in the next subsections.

3.2.4.1 Attribution Theory

As presented in the previous section, the relationship between L2 motivation and learner autonomy has been explored by several researchers (Spratt et al., 2002; Ushioda, 2001). As claimed by Dörnyei (2003a), attribution theory is a crucial model of motivation since it can make a connection between learners' past experiences and future achievements. This theory is generally believed to have been initiated by Heider (1958), who accepts that the way the individual perceives events has a much stronger influence on his/her behaviour than what has really happened, and is concerned with the causes for success and failure. In the 1980s, the attribution theory had a very dominant impact on students' motivation (Dörnyei, 2003a). Weiner (1986, 2000) furthers and conjectures that attribution theory deals with a person's self-perceptions,

which affect 'their expectancy, values, emotions, and beliefs about their competence, and in turn influence their motivation' (cited in Gobel, Mori, Thang, Kan & Lee, 2011, p.66), and how they attribute to their perceived successes and failures. Also, students' attributions to success and failure tend to have an impact on their motivation to handle future tasks academically (Banks & Woolfson, 2008). In addition, Williams and Burden (1997) agree that students' future behaviours are influenced by the extent to which they attribute their failure to lack of ability or lack of effort.

Weiner (1986) suggests four sets of attributions such as ability, effort, task difficulty, and luck which learners tend to make in relation to their successes and failures. Those attribution elements are regarded as occupying three dimensions: locus of causality (internal versus external), stability, and controllability (Weiner, 1985, 2006; and see Table 4). Locus of control is related to whether people attribute the causes of actions to internal or external reasons, whereas stability refers to the continuity of the perceived successes or failures in the future. Controllability indicates the level of control people have over the different causes. For example, ability is internal, stable and uncontrollable, while effort is internal, unstable and controllable. Task difficulty is external, stable and controllable. In that sense, the relationship of motivation, particularly attribution theory, to learner autonomy is accentuated by Dickinson (1995), in that success contributes to greater motivation for learners who are aware of handling their own learning success, but in terms of success by effort, not just luck or ability. She further states, 'it seems to be the case that learning success strengthens the learning confidence only of those who accept responsibility for their own success' (ibid., p. 166). In the case of the present study, Weiner's (1985) four sets of attributions for success and failure are taken into consideration to get an insight into how students manage their own learning in e-learning settings, with reference to Dickinson's (1995) claim above for the relationship between motivation, including students' attribution for success and failure, and learner autonomy. In order to understand L2 motivation better, a related theory, self-efficacy, is outlined in the next section.

3.2.4.2 Self-efficacy

Self-efficacy can be defined as the beliefs that people have about their capacities to handle the tasks (Bandura, 1986). Bandura (1995) further explains it as 'the beliefs in one's capabilities to organize and execute the course of action required to produce given attainments' (p. 3). In similar vein, Aliegro (2006) regards it as 'a process in which students' sense of ability to perform a task influences their success, which in turn contributes to increased effort and persistence' (p. 18). Bong (2004) directly connects it with Attribution Theory, pointing out that self-efficacy is influenced by the learners' attributions for their successes and failures. In that sense, there is a remarkable relationship between Bandura's (1977) theory of self-efficacy and Weiner's

attribution theory (1974) in pointing out the perspectives which lead to understanding of learners' beliefs and the causes of success and failure (Wolters, Fan & Daugherty, 2013). Self-efficacy has a significant influence on individuals' beliefs, motivation and performance, especially in e-learning environments 'where students lack the opportunity to interact with others and as a result can become socially isolated and easily lost' ('Cho & Jonassen, 2009; Cho et al., 2010', cited in Shen, Cho, Tsai & Marra, 2013, p. 10). Furthermore, the confidence to learn affects learners' assumption of responsibility for their own learning in relation to their attributions for success and failure, as stated by Dickinson (1995) in the above section, 3.2.4.1. All in all, this interrelationship between learner autonomy and motivation, including learners' attribution and confidence, is one of the key themes to be explored in the current research in order to understand their learning in e-learning environments.

Self-efficacy in online learning is divided into three categorisations which are self-efficacy for online learning, computer self-efficacy, and Internet self-efficacy (Kuo, 2010). According to Hodges (2008), the studies have mostly been conducted on computer self-efficacy or Internet self-efficacy, whereas there is a lack of study on self-efficacy for online learning which 'is in its infancy' (p. 10). Self-efficacy for online learning resembles academic self-efficacy, which is observed in classroom-based learning environments (Hodges, 2008), and in online learning rendered by means of synchronous and asynchronous tools. However, the studies show contrasting results on the efficiency of self-efficacy for online learning. For instance, a study by Wang and Newlin (2002) indicates a positive effect on performance, while other researchers (Joo, Bong, & Choi, 2000; Lee & Witta, 2001) claim that self-efficacy for online learning does not prognosticate the efficiency of the performance. The second type of self-efficacy in online learning, computer self-efficacy, is related to the application, adoption and use of the tools ('Davis, 1989; Hedman & Sharafi, 2004; Papasratorn & Wangpipatwong, 2006; Shelton, Turns, & Wagner, 2002; Torkzadeh, Chang, & Demirhan, 2006; Torkzadeh & Van Dyke, 2002', cited in Kuo, 2010). Compeau and Higgings (1995) describe it as 'a judgement of one's ability to use a computer' (p. 192). Lim (2001) shows that computer self-efficacy has a significant role in predicting satisfaction with web-based distance instruction. Also, if adults have a higher computer self-efficacy, they tend to be more confident in their academic skills and more satisfied with the instruction (ibid.). The last type, Internet self-efficacy, is defined as 'the belief in one's capability to organize and execute Internet actions required to produce given attainments' (Eastin & LaRose, 2000, p. 1). Likewise, there are contrasting views on the prediction of Internet self-efficacy for students' success and performance (see Joo et al., 2000; DeTure, 2004). The current research examines self-efficacy of learners in e-learning environments (see Section 1.3.).

Overall, the aim of the exploration of learners' attributions for their success and failure and self-efficacy is to provide an insight into the ways learners exercise their autonomy since both attribution theory and self-efficacy have a significant and strong relationship with learners' skills and ability to take control of their own learning in e-learning environments (Chang & Ho, 2009; Taipjutorus, Hansen & Brown, 2012). As the present study explores learners' learning in e-learning environments, that aspect has been highlighted in every section of the above-mentioned dimensions of learner autonomy by connecting the literature to learning in e-learning environments. However, this review indicates a lack of elucidation of learner autonomy in e-learning environments; therefore, the next section sets out the discussion and explanation of learner autonomy in e-learning environments in terms of self-directed e-learning and the connection between digital literacy and learner autonomy.

3.3 Learner Autonomy in E-learning Environments

The literature review chapters have set out to explain e-learning environments and learner autonomy in detail in Sections 2.2. and 3.2., respectively. Although these sections have linked the literature review of learner autonomy with the present study, which took place in e-learning environments, there seems to be a lack of explanation of how learners take responsibility for their learning on their own in e-learning environments. Considering the differences between e-learning and traditional classroom learning (see Table 1 in Section 2.2.3.), the concept of learner autonomy needs revising and rethinking in e-learning environments where learners can receive freely accessible, open resources or closed-environment resources to 'transcend the traditional concept of classroom' (Drexler, 2010, p.369). Therefore, the next sections present an overview of self-directed e-learning (see Section 3.3.1.) and the connection between digital literacy and learner autonomy (see Section 3.3.2.).

3.3.1 **Self-directed E-learning**

In student-centred learning environments where teachers are present, the role of the teacher is that of a facilitator or coach (Motschnig-Pitrik & Holzinger, 2002; Wang, 2006). In this sense, the teacher is the one who

> 'supports the students in their search and supply of relevant material, coordinates the students' presentations of individual milestones of their projects, moderates discussions, consults in all kinds of problem-solving and seeking for solutions, lectures on topics that are selected in plenary discussions with the students and conform to the curriculum' (Motschnig-Pitrik & Holzinger, 2002, n.p.).

However, in learning environments where the teacher is absent, students have the freedom to direct their learning, to 'generate and pursue their own goals, and undertake critical evaluation of the materials they select' (Saks & Leijen, 2014, p.192). Furthermore, students expect to receive learning materials and information, follow their learning pathways and find a source to consult or a suggestion with which to solve the problem, with the support provided by online learning resources instead of by a teacher, as pointed out above by Motschnig-Pitrik and Holzinger (2002). In this context, the present study aims to explore learners' learning in those self-directed e-learning environments where they are alone but supported by online learning resources, if applicable. Therefore, this study draws attention to Knowles's most prioritised definition of self-directed learning, namely 'a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes' (Knowles, 1975 in Saks & Leijen, 2014, p.191). However, the present study mainly focuses on the computer-based help learners receive from online learning resources instead of human-based help such as tutors or peers in e-learning environments, rather than in classroom-based learning environments.

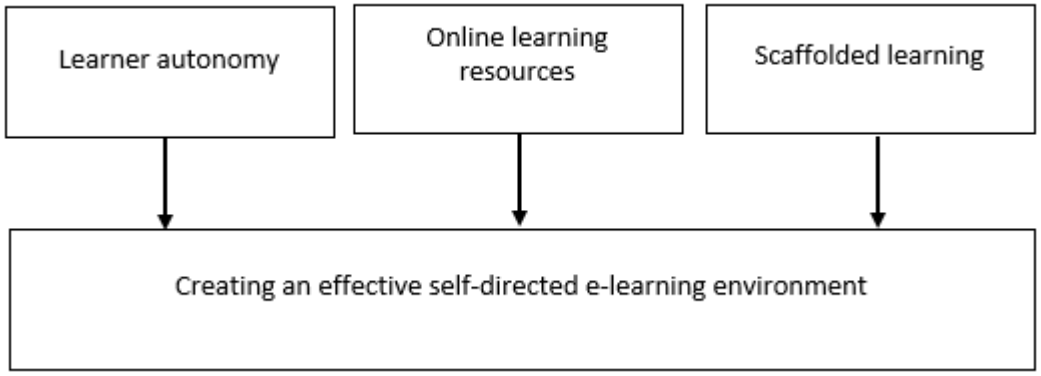


Figure 8: An illustration of the considerations in e-learning (adapted from Liaw, Huang & Chen, 2007)

Figure 8 presents the considerations involved in enhancing e-learning (Liaw et al., 2008) and illustrates how learners can handle their own learning in a self-directed e-learning environment when there is no human-based assistance in that environment. Based on this adapted model, learners' performance of the activities offered in online learning resources which provide scaffolding for their autonomous learning potentially sets up an effective self-directed e-learning environment. In this regard, the present study intends to investigate how learners experience and manage to do the activities and to learn in e-learning environments through scaffolding from online learning resources. This having been said, the next section sheds light on learners' skill and

ability in e-learning environments, namely digital literacy and its link with learner autonomy in order to understand their potential learning in those environments.

3.3.2 The Link between Digital Literacy and Learner Autonomy

The previous section has tried to explain what learner autonomy means in the e-learning environment, especially where teachers or others are not present to help learners. Schmenk (2005) points out that 'the popularity of learner autonomy may be at least partially related to the rise of computer technology and the growing importance of computers in language learning environments worldwide' (p. 107). In order to understand this relationship between learner autonomy and computer use, digital literacy should first be explained, as the concept of learning or e-learning in itself is not sufficient to understand learners' skill and knowledge in e-learning environments; then, its connection with learner autonomy will be demonstrated.

Although it is crucial to be competent in reading and writing and to receive traditional instruction, knowing how to read and write in Information and Communication Technologies (ICT) has become more and more significant over the last century, as digitalisation or integration of digital technologies is present in every part of life, a fact which prevents students who are illiterate in technology from going further in their careers (Daily Independent, 2013). The term 'digital literacy' has been utilised to define 'an ability to read and understand hypertextual and multimedia texts' (Bawden, 2001, p.246). The common description of digital literacy is proposed by Gilster (1997, cited in Bawden, 2001), who defines it as:

> 'a set of skills to access the Internet; find, manage and edit digital information; join in communications; and otherwise engage with an online information and communication network. In simple terms, digital literacy is the ability to properly use and evaluate digital resources, tools and services and apply it to their lifelong learning process' (Gilster, 1997, cited in Gruszczynska, Merchant & Pountney, 2013, p.11).

Gilster (1990) further states that 'digital literacy is the ability to understand and use information in multiple formats from a wide variety of sources when it is presented via computers' (cited in Bawden, 2008, p.246). However, Bawden (2001, 2008) argues that the definition given by Gilster is still unclear and does not indicate the specific features of digital literacy. Overall, Gilster's claim for digital literacy is not relevant to any specific technology, but to 'the ideas and mindsets … information and information resources' as stated by Bawden (2001, p.19). That is, the Internet cannot be regarded as a main source of digital literacy; however, digital literacy refers to the awareness of the possibility of supporting conventional instruction with different kinds of digital

technologies along with ‘reference works in libraries, printed newspapers and magazines, television and printed works of literature’ (Gilster, 1997, cited in Bawden, 2001, p.19).

Building on Gilster’s broad definition of digital literacy, later researchers have identified some particular components of it. For example, Eshet-Alkalai (2004, p.93) views it as the integration of five literacies such as:

- ‘photo-visual literacy’ which includes visual representations of words, letters, and the like,
- ‘reproduction literacy’ which is ‘the ability to create a meaningful, authentic, and creative work or interpretation, by integrating existing independent pieces of information’ (Gilster, 1997; Labbo et al., 1998, cited in ibid.),
- ‘branching literacy’ which is the ability to make use of hypermedia,
- ‘information literacy’ which is ‘the ability to evaluate and assess the information’, and
- ‘socio-emotional literacy’ which refers to the ‘sociological and emotional aspects of work in cyberspace’ (ibid.).

Martin (2006) takes a broad look at digital literacy, as did Gilster (1997, cited in Gruszczynska et al., 2013) and Eshet-Alkalai (2004). Although the research of both Eshet-Alkalai (2004) and Martin (2006) sheds light on the definition and explanation of digital literacy, it still does not explain what is happening in the educational contexts within digital technologies and environments.

Martin and Grudziecki (2006) propose three levels which show how digital literacy develops:

- At Level 1, digital competence incorporates the skills, concepts, approaches, attitudes and awareness of all levels, from basic to critical levels.
- At Level 2, which is digital usage level and the significant and main level, digital competence is applied for particular reasons (ibid.).
- Level 3, the digital transformation level is reached when digital usages embedded in the context provide ‘innovation and creativity’ (ibid., p.259); however, this level is not an essential requirement for digital literacy, as ‘activity at the level of appropriate and informed usage would be sufficient to describe as digitally literate’ (ibid., p.259).

Buckingham (2006) argues that 'we need a much broader reconceptualization of what we mean by literacy in a world that is increasingly dominated by electronic media’ (p.275). Researchers also pay attention to the application of digital literacy in an educational context, especially for language learning. For instance, Godwin-Jones (2010) draws attention to various options for reading and writing in digital environments; for example, electronic devices for reading such as Kindle, iPad, Nook or Instapaper may be preferred over paper-based readings (ibid.). Likewise,

social networking websites such as Facebook, Twitter, StudiVZ or Orkut are used by students in order to communicate with others or express themselves in written language in digital environments, through which process written language turns into talking and interacting with students as in spoken language (Jones & Hafner, 2012).

Beetham (2010) looks at the field of digital literacy and raises the question of whose digital literacies should be developed. Learners will be more independent and self-motivated to use digital technologies with the application of user-controlled digital devices (ibid.). The more experience they gain of learning via digital technologies, the more engaged and satisfied they will be (ibid.). Learners' skills to use technology might be affected by the teacher's skills and feelings. However, one of the main aims of digital literacy is to enhance learners' independent learning by supporting them in deciding what is essential for learning in specific conditions (Bawden, 2008). In order to understand better what learner autonomy means in e-learning environments, the characteristics of autonomous learners should be reviewed, as Siemens (2005) claims that 'how people work and function is altered when new tools are utilized' (p.9). Therefore, Shetzer and Warschauer (2000) give a definition of learner autonomy when reconceptualised in digital environments as follows:

> 'Flexible, autonomous lifelong learning is essential to success in the age of information (Reich, 1991; Rifkin, 1995). Autonomous learners know how to formulate research questions and devise plans to answer them. They answer their own questions through accessing learning tools and resources on-line and off-line. Moreover, autonomous learners are able to take charge of their own learning by working on individual and collaborative projects that result in communication opportunities in the form of presentations, Web sites, and traditional publications accessible to local and global audiences. Language professionals who have access to an Internet computer classroom are in a position to teach students valuable lifelong learning skills and strategies for becoming autonomous learners' (p.176).

This definition is useful to consider learner autonomy in digital environments as it highlights the flexibility of learning and learners' ability to use and access online resources. Drawing from this definition, good digital learners, in the same way, 'have a proactive attitude and are autonomous insofar as is possible, they display initiative in their learning and in their performance during the course [online]' (Sáiz, 2007, p.5).

A number of studies have looked at the relationship between digital literacy and learner autonomy. For example, Fuchs, Hauck and Müller-Hartmann (2012) investigated 'the interrelationship between multimodal communicative competence, multiliteracy skills and

autonomy' (p.83). Two case studies with 'a task-based telecollaborative learning format' were carried out to examine whether learner autonomy was promoted by means of the awareness developed through web resources and social networking sites (ibid., p.82). The study gives a similar finding regarding the levels proposed by Martin and Grudziecki (2006) as mentioned above. Tasks should provide learners with skills to work online through online resources; as the next step, tasks should enable them to be aware of the tools' affordances; and as the ultimate step, the users of the tools should be able to create and innovate tasks, in this case, to support learners' autonomous learning.

As seen above, the general definitions of autonomous learners, such as learners who have the ability and capacity to take responsibility (see Section 3.2.), tend to be based on particular situations in e-learning environments. That is, e-learning environments and tools place new demands on learners. Therefore, appropriate support or scaffolding should be provided in learning design (Jenkins, 2006), as the new learning environments are different from classroom environments, so it will not be enough if the same instruction is applied to e-learning environments (Hampel & Hauck, 2006). As the term 'e-learning' is more suitable by virtue of its broader qualities in this research (see Section 2.2.1.), it is chosen for use in preference to digital literacy. Digital literacy emerges as a crucial issue to consider, as it potentially enables the current study to investigate how students' digital literacy is interrelated with their autonomous learning and tools' scaffolding, as stated in the study of Fuchs et al. (2012) and the proposal of Martin and Grudziecki (2006) showing the levels of digital literacy development. Considering Gilster's (1997, cited in Bawden, 2008) emphasis on digital literacy as 'mastering ideas, not keystrokes' (p.18), the concept is meant to be used in the sense of 'mastering ideas' to promote learner autonomy in e-learning environments. However, in order to help learners, whether digitally illiterate or literate, to take charge of their learning on their own without the need for a teacher in e-learning environments, scaffolders might be provided in online learning resources. Based on this argument, the next section examines scaffolding and learner autonomy in e-learning environments by integrating all three concepts.

3.4 Scaffolded Autonomous E-Learning Environments

Technology plays a significant role in both the social and educational lives of the learners. A number of researchers emphasise that Information and Communications Technologies (ICT), particularly online technologies, can support and enhance learner autonomy (Frizler, 1995; Warschauer, 1996, 2004; Benson, 1998). Motteram (1997) draws attention to the important association between new learning technologies and autonomy. As indicated in Martin and Grudziecki's (2006) study, digital literacy requires and is based on the awareness and skills of the

learners in managing their own learning in e-learning environments (for more, see Section 3.3.2.). For example, autonomous learners have the ability and capacity to find a way to answer their questions through online and offline tools and resources (Shetzer and Warschauer, 2000). Also, Artino (2008) states that 'online learners must take greater responsibility for the management and control of their own academic progress' (p. 38). The internet functions as a practicable and beneficial tool in that it promotes 'self-paced instruction' and learners' choice, and helps the learners to gain access to various authentic materials that meet their expectations and help them communicate with others (Luzón, 2006, p.114). However, technology cannot promote learner autonomy and student-centred learning by itself (Benson, 1998). Therefore, scaffolding is required to reach the goal of enhancing autonomous and student-centred learning. McLoughlin (2002) summarises the case by saying that effective scaffolding can be described not only in the aspect of distance learning, but also in face-to-face teaching, as possessing the following capacities:

a) 'reducing the scope for failure in the task that the learner is attempting;
b) 'enabling learners to accomplish a task that they would not be able to achieve on their own; moving learners to a new and improved zone of understanding;
c) 'bringing learners closer to a state of independent competence' (p. 155).

These are important to consider the features of effective scaffolding. Linn (1996) and McLoughlin and Marshall (2000) also draw the attention to provide support that promotes learner autonomy. For instance, learners might wish to be supported when learning unknown vocabulary and grammatical structures (Chapelle, 1998; McLoughlin, 2002; Weston & Barker, 2001). There are various methods to ensure that support, such as hypertext links or buttons leading to the information, or 'help' buttons with which to complete the activities (Chapelle, 1998; Weston & Barker, 2001). In a similar vein, confirming the claims of both Lidz (1991, cited in Chang & Sun, 2009) and Rogoff and Lave (1984, cited in ibid.) regarding the relationship between scaffolding and learner autonomy, Chang and Sun (2009) conclude that the support provided through web concordances enables students to become not only confident but also aware of using them on their own.

Luzón (2006) suggests a number of ways to support learners in e-learning environments, one of which is using materials that increase learner awareness, through which students can realise their effectiveness in promoting their learning. Another way to help learners is to bring tools into learning to assess and provide feedback (ibid.). Learners are required to be autonomous and aware of their learning in the process of studying in e-learning environments. In order to reach that goal, the use of online scaffolded resources needs to be designed according to the learners' needs or learning styles. Therefore, 'learner involvement', 'learner reflection' and 'the immersion

into the target community of practice', if possible, should be taken into consideration as core elements in setting up a learning environment to scaffold learner autonomy (Ribbe & Bezanilla, 2013, p.102). In other words, e-learning environments should enable learners to be involved in their learning by deciding on their learning goals, contents and strategies. Furthermore, they should be encouraged to reflect the perceived information by self-monitoring and self-evaluation. Additionally, learner immersion can be enhanced by constructing a community of practice and supplying authentic materials in e-learning environments which have the potential to allow interaction with peers or tutors, or provide a variety of learning materials and challenging tasks which do not make students feel lost, as they are scaffolded by various methods such as providing feedback or examples (ibid.).

Toogood (2005) has shed light on the association between lots of support/no support and freedom/control, as shown in Figure 9.

Figure 9: Toogood's model (Toogood, 2005)

She indicates that association with the metaphor 'to sink or swim'. When the learners are provided with no support, but too much control, they will tend to swim. The possible reason for that is that learners do not understand learning and personalise it; and correspondingly, learning turns into a purposeless and uncontrollable one. If they are given no support, but freedom, they will either 'sink or swim'. If there is too much control and too much support for the learners, learning will be pursued according to what learners are told, as the learning lacks personalisation. It is also possible to meet a learning environment where learners are expected to handle their own learning even though the teacher has too much control on it. As Toogood (2005) further states, that kind of learning leads to certain problems: learners are just 'jumping through hoops' even if they seem to do well at what they are required to accomplish. It means that they tend to

end up with poor learning as they are not provided with enough support and control. However, if they are provided with the right amount of support and freedom, they will probably be able to make their own decisions even when they are directed to learn how to improve their language learning and to think critically. As a consequence, the aim is to help learners 'choose their stroke and swim with guidance', and it is achieved by building a scaffolded structure (Toogood, 2005, p.8). Toogod's concept is useful in computer use to comprehend the role of support/no support and freedom/control in learning in e-learning environments in that there should be a balance between support and freedom in order to encourage learning. As inferred in Laurillard's Conversational Framework in Section 2.4.2., as well, it is recommended that students be provided with 'clues' to solve the problems instead of direct routes to solutions, a practice which improves 'autonomous, self[-]initiating and self[-]regulating reflection …' (Brooke, 2013, p.576).

Based on the studies and the literature review of both scaffolding and learner autonomy, in which Wood et al. (1976) and Bruner (1978, cited in Read, 2006) highlight the characteristic of scaffolding as reducing support when learners acquire the relevant knowledge and skills (see Section 2.3.1.), while Toogood (2005) indicates the role of support/no support and freedom/control in learning, Figure 10 draws attention to the relation between scaffolding and learner autonomy in learning processes. It attempts to make a point about the 'ideal situation' for learning. As scaffolding is gradually removed, learners will tend to be more independent and autonomous, taking responsibility for their own learning. At the beginning of their learning, they are considerably scaffolded, while their learner autonomy is very low. However, as they learn, they do not need to receive as much support as in the beginning, and become autonomous learners. Thus, the ideal situation can be achieved in the learning environments. As we are reminded in the epigraph at the beginning of Chapter 1, where Vygotsky (1978, p.87) quotes that 'what the child can do with assistance today she will be able to do by herself tomorrow', Figure 10 presents that learners can be independent in their own learning after the gradually less necessary scaffolding. As learners succeed in completing the activities, so will they gain the necessary knowledge, skills and competence, which means that they will be more autonomous while the scaffolding is faded, as illustrated in the hypothesis of Figure 10.

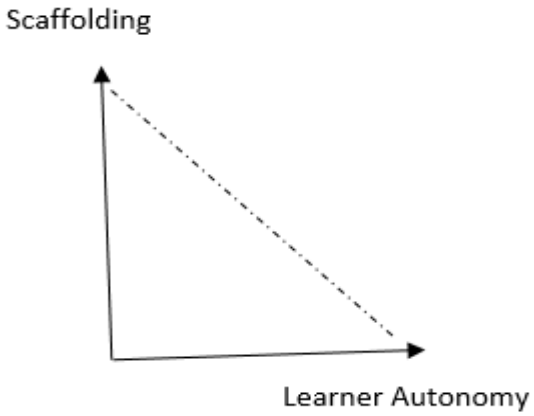


Figure 10: The relationship between scaffolding and learner autonomy based on the literature review

As regards the present study, Figure 10 is used to provide insight into how learners might handle their own learning in e-learning environments. In other words, learners are expected to receive support from tools or OLRs while carrying out learning activities and tasks. In that sense, the affordances of the tools and OLRs in terms of their authenticity, feedback, practicability and applicability (see Section 2.5.) should be taken into consideration in LD so as to provide an 'ideal situation' in which learners are scaffolded and in turn enabled to handle their own learning. Taking into account their motivation in relation to their attributions for success and failure, and their self-confidence, the study looks at how scaffolded OLRs and tools contribute to their exercise of autonomy, awareness and readiness for learning without the presence and assistance of tutors.

To sum up, the literature suggests that there is a relationship between scaffolding and learner autonomy in e-learning environments. Figure 10 is intended to show the link between these concepts, in that autonomous learning will increase as scaffolding is removed from learning environments. The aim of this research is to achieve a clearer explanation of the relationship between scaffolding and learner autonomy in the next section, which outlines the studies on these issues in learning and second language learning.

3.5 Previous Studies on Scaffolding and LA in E-Learning Environments for Learning and Second Language Learning

There have been a large number of studies and research on the use of different scaffolding types in educational areas, such as language, reading (e.g. Beed, Hawkins & Roller, 1991; Graves, Graves & Braaten, 1996; Wollman-Bonilla & Werchadlo, 1999), mathematics (e.g. Coltman, Anghileri & Petyaeva, 2002) and science (e.g. Flick, 1998). Nevertheless, there is much less research on

scaffolding in e-learning environments (Yelland & Masters, 2007). As mentioned previously, the lack of research has given impetus to the present study which explores how scaffolding contributes to learning in e-learning environments and at the strong relationship between learner autonomy and scaffolding.

This section presents studies on scaffolding, learner autonomy, motivation and e-learning. Section 3.5.1. presents studies on programs which have the possible function of scaffolding learning in e-learning environments in order to better contextualise my own research into scaffolding in e-learning environments. It presents studies on the *Computer Supported Intentional Learning Environment* program (i.e. see the below studies by Cuthbert and Hoadley, 1998; Hakkarainen, 2003; Oshima and Oshima, 1999) and the *EcoLab* program (i.e. Luckin, 2001) and a discussion on the *Knowledge Integration Environment* program (i.e. Cuthbert and Hoadley, 1998). It also discusses research on social networking, for example, the studies by Majid, Stapa & Keong (2012) and Parker, Maor and Herrington (2013), in order to understand how scaffolding learning in collaborative e-learning environments takes place. Although the present study is not focusing on scaffolding in collaborative e-learning environments, the relevant research will help this study to understand how online learning resources which potentially provide collaboration (see Section 9.3.). It presents a discussion of the features of the Internet which scaffold learning (Bull, Shuler, Overton, Kimball, Boykin & GriYn, 1999), and a study of scaffolding, especially scaffolding types in Tiantong and Teemuangsai (2013). In Section 3.5.2., I will go on then to look at studies on the components of learner autonomy (see Figure 6 in Section 3.2.). I discuss studies on students' attributions both in classroom learning (i.e. Gobel, Thang, Sidhu, Oon & Chan, 2013; Peacock, 2009) and in e-learning environments (i.e. Johnson, Marakas and Palmer, 2006), self-efficacy (i.e. Taipjutorus, Hansen & Brown, 2012) and attribution theory, self-efficacy and learner control (i.e. Chang & Ho, 2009). Lastly, in Section 3.5.3., I present research into scaffolding, learner autonomy, motivation and e-learning tools by Nielsen (2012) in order to try and understand the relationship between scaffolding and learner autonomy in e-learning environments. Studies on scaffolding in online video-based environments (i.e. Delen, Liew & Wilson, 2014) and individual and collaborative game-based learning (i.e. Chen & Law, 2015) are also discussed. I include a discussion of methodological issues relating to the aforesaid studies in order to identify and provide an overview of the methodological issues used in the previous studies and contribute to the understanding and development of those issues for the present study.

3.5.1 **Studies on Scaffolding**

Scaffolding has been investigated in different contexts and aspects. Some of the studies have discussed the features of scaffolding in e-learning environments (i.e. Diaz-Rico & Weed, 2002;

Kayi-Aydar, 2013; Linn, 1996; Luzón, 2006; McLoughlin, 2002; McLoughlin & Marshall, 2000; Puntambekar & Hübscher, 2005; Ribbe & Bezanilla, 2013; Roehler & Cantlon,1997; Toogood, 2005; see Sections 2.3.1.1., 2.3.2., 3.4. & 4.4.), while others have explored the ways to provide scaffolding (i.e. Brooke, 2013; Bull et al., 1999; Chapelle, 1998; Chang & Sun, 2009; Holton & Clarke, 2006; Lim et al., 2011; Roehler & Cantlon, 1997; Weston & Barker, 2001; see Sections 2.3.1.1., 2.3.2., 3.4. & 4.4). The following discussion presents studies on scaffolding in learning programs (see Cuthbert and Hoadley, 1998; Hakkarainen, 2003; Luckin, 2001; Oshima and Oshima, 1999) scaffolding in social networking websites (i.e. Majid, Stapa & Keong, 2012; Parker, Maor and Herrington, 2013), scaffolding in the use of the Internet (Bull, Shuler, Overton, Kimball, Boykin & GriYn, 1999) and scaffolding types (Tiantong and Teemuangsai, 2013).

There have been a number of studies on programs which potentially provide scaffolding. This section first discusses the *Computer Supported Intentional Learning Environment* (CSILE) program was adapted by Scardamalia and Bereiter's (1996) and has been investigated by other researchers (see Cuthbert and Hoadley, 1998; Hakkarainen, 2003; Oshima and Oshima, 1999; Oshima, Oshima, Murayama, Inagaki, Nakayama, Yamaguchi & Takenaka, 2002) looking at its educational aspects. This program aims 'to enable participants to gain knowledge and understanding and also form important new working relationships, but without being overwhelmed by long lists of notes requiring responses' (Scardamalia & Bereiter, 1996, n.p.; see Figure 11). Students construct a database as they enter their text, notes, graphics and links to other media (ibid.). They can read or comment on another note in the system (ibid.). Christal, Ferneding, Kennedy-Puthoff and Resta (1997) illustrate the software in Figure 11, which shows a screen shot of software, in which a user is selecting a 'thinking type' for a note (ibid., 1997, p.15). The figure indicates that software provides cognitive scaffolding (see Section 2.3.3.) with the use of thinking types contained in the system, such as What I know, Problem, Theory, Plan or New Learning, which encourage 'specific cognitive learning strategies such as questioning, identifying knowledge lacks' and making 'plans for pursuing specific knowledge goals' (ibid., p. 15). Therefore, it would be useful to discuss studies looking at learning via the program and its scaffolding as presented in the following discussion.

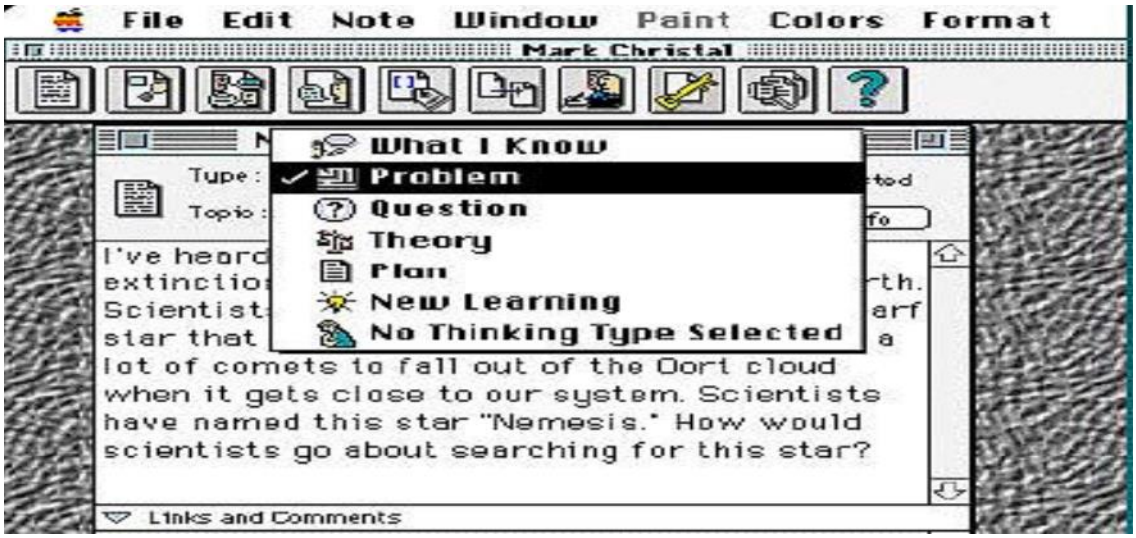


Figure 11: A screen shot of CoLearning, the commercial version of CSILE, picturing the selection of a 'thinking type' for a note (Christal et al., 1997, p. 15)

In Hakkarainen's (2003) study, the CSILE program was analysed to investigate the emergence of a progressive-inquiry culture in classrooms. 145 primary school students from Finland participated in using CSILE over a three-year period. The study collected data 'based on qualitative analysis of CSILE students' written production posted to the system's database during three academic years' (p.203). Students' notes and written production were analysed and coded according to whether they were was fact- or explanation-seeking. The results show that children's level of explanation and questioning developed after the introduction of CSILE. This study shows how learners' written productions can be important data to investigate their understanding and explanation but may be inadequate to give any direct information about their psychological and thinking processes (ibid.).

The CSILE program was also used to investigate how scaffolding helps learning via the program. Oshima and Oshima (1999) used the internet version of CSILE (WebCSILE) and looked at the effect of CSILE on learning 'in two different communities and in different contexts' (ibid., p.5) in Japan. They took the 'design experiment approach' (e.g. 'Brown, 1992; Collins, 1990 cited in ibid., p.5) which comprised novice undergraduate students. In Study 1, 30 undergraduate students took a course of Basics in Cognitive Science, the introduction of which was given by the teacher without any particular scaffolding, and they were told to write their questions and views, collaborate with others and submit a proposal report about the problems they faced and the solutions to take. In Study 2, 24 students took a course in Computing in Education and looked at information on the Japanese school system provided on the internet and were provided with scaffolding which offered a help homepage on how to write their views. Data was collected from the reported notes in WebCSILE, and questionnaires were used to ask their views on their learning using the system. The findings show that the students who used scaffolding in the second study developed more

elaborate discussion frameworks. Using WebCSILE in learning helped students to increase the interactions between the teacher, the students and the computer. This study is helpful in showing how these interactions occur even though my research looks at the relationship between students and the computer environment or online learning resources.

However, the CSILE program was criticised by Cuthbert and Hoadley (1998), who looked at a variety of studies which claim that 'properly scaffolded design problems lead to the types of convergent thinking and knowledge integration that have been difficult to achieve in' CSILE (p.1). Considering that the CSILE environment is problematic in terms of design, they proposed KIE (the *Knowledge Integration Environment* program) and used a task which asked learners to design a desert house in order to consider 'how design problems contribute to knowledge integration' (ibid., p.1) in their paper to discuss. Students had to develop and give explanations for their design using KIE. Students were also helped to improve their final reports with the help of an online-peer review. Based on students' reflections on design problems and on designing the house, the research indicates that KIE aided students to collaborate on solving design problems and enhance their knowledge of building through scaffolding by teachers, computer resource and colleagues. To conclude there have been a number of studies showing the interaction between students and the computer via scaffolding and seeing scaffolding via learning programs as a good way to promote the inquiry science (Cuthbert and Hoadley, 1998; Hakkarainen, 2003; Oshima and Oshima, 1999).

The programs have not just been investigated to observe how scaffolding improves learning as discussed in the above studies. Researchers have also highlighted the role of scaffolded online learning programs or resources serving as a tutor in e-learning environments. Wood and Wood (1996) integrate research and theory from face-to-face teaching and computer-based tutoring situations. They argue that the computer can play a role as a scaffold through software or a program, which can represent the tutor through teaching and guiding learning. Luckin (2001) used *EcoLab*, educational software which was developed using concepts from Vygotsky's Zone of Proximal Development (ZPD). This study is good to observe the development of learning within learners' ZPD, which is regarded 'as the foundation for a software design framework' (ibid., p.57) in that 'the more able partner' or computer offers 'appropriate assistance' (ibid., p.65). Data was collected from the observation of 24 primary school students aged 10 and 11. Each student used software individually for a total of 60 minutes in class over two observation sessions while they were learning about Ecology. Before taking part in the study, they had a 20 minute initial session to experience and feel comfortable with the computer and software. Data was analysed by evaluating the interactions and collaboration of students during the two observation sessions. For each student, a brief record of their interactions was created to show the learning gains they had

while using software. The data showed that constructing learning software within the ZPD framework is a useful guide to achieve but not easy, and needs to consider each learner in order to successfully design a collaborative interaction between software and computers. The success of the program depends on its flexibility and the fade of the scaffolding and the necessary support offered to learners as they engage in challenging activities. This study by Luckin (2001) contributes to the design of my research in terms of scaffolding in e-learning environments where students are working alone to carry out self-activities.

Luckin (ibid.) stresses the need to fade scaffolding in e-learning environments, but Hannafin et al. (1999) discuss the fading characteristic of scaffolding by providing an overview of open learning resources which contains scaffolding. Hannafin et al. (1999) claim that scaffolding may not fade while learners are using the system for personal benefits, 'where the nature of use and learners needs cannot be established in advance' (ibid., p.132); however, learners may not continue to require help or scaffolding as they gain more knowledge and skills. We can conclude from research carried out by Hannafin et al. (1999), Luckin (2001) and Wood and Wood (1996) that scaffolding may replace the teacher if the particular characteristics of scaffolding and learners' knowledge are in place when students are using a program or OLRs for their learning. Although Luckin (2001) supports fadable scaffolding, Hannafin et al. (1999) consider it may or may not fade according to learner use. The present study draws on Hannafin et al.'s (1999) view on the fadable characteristic of scaffolding.

E-learning programs or resources have become very widespread in learning, as shown in the above studies, and social networking sites perhaps should be seen as a type of e-learning resource which are used for learning inside or outside the classroom by university students (Robler et al., 2010, cited in Majid, Stapa & Keong, 2012). Given the interest in learning online in this study, a discussion of the existing studies on the use of social networking sites in educational contexts follows. A study by Majid et al. (2012) could be drawn on to discuss scaffolding as it investigated blended scaffolding strategies via Facebook in terms of writing development. The study included 90 ESL students aged 16 of mixed ethnicities in a Malaysian rural secondary school. Its design is a quasi-experimental pre-test/post-test experimental and control group design which includes 45 students in each group. Students in the experimental group used 'blended scaffolding strategies through Facebook for writing', whereas students in the control group had 'traditional classroom teaching' (ibid., p.38). Data was collected from a semi-structured interview conducted to 10 participants selected from the 90 participants. Each student was asked about their preferred learning strategy and the effect of blended scaffolding strategies on their learning and writing performance and writing process during the interview. The analyses of interview data indicate that students prefer to use OLRs such as the Internet or Facebook rather than the traditional

'chalk and talk' (ibid., p.39). Above all, Facebook helps them to learn outside the classroom, or anytime and anywhere in case they might miss the class, and they can overcome shyness, for example, which they experience when asking questions in classroom environments (ibid.). This kind of learning outside the classroom also has the potential to support communication between students, and between students and teachers (ibid.). As a final conclusion, blended scaffolding strategies are said to aid both collaborative and autonomous learning. By the same token, Baron (1991 cited in Yelland & Masters, 2007) regards the role of the computer as a scaffold. She considers that it improves social interactions and consequently helps to construct cognitive skills. Learners are found to manage their learning in both classroom and e-learning based environments by using computer scaffolding (ibid).

A study by Parker, Maor and Herrington (2013) went beyond observing social networking websites as happened in the study by Majid et al. (2012) and designed an authentic online course. The course aimed to give 14 university professionals a chance to experience online learning like a student by learning how to design learning courses, explore new technologies and use social media resources with their peers. Data from interviews was collected from participants who expressed their thoughts on their learning experience. The results show that that blogging was felt not to be a good way to express and share ideas between students, as the purpose was unclear and the process time-consuming. They conclude that it could be replaced with an online forum. It is concluded that scaffolding such as explanation or examples might be included in a blog to encourage learners to use them and help them to conceptualise what they are expected to do. This study emphasises the need for adequate and appropriate support while students are learning online.

Taking advantage of the other features of the Internet, Bull, Shuler, Overton, Kimball, Boykin & GriYn (1999) present an overview of scaffolding online and suggest that scaffolding can be supplied in e-learning environments via different types of techniques such as hyperlinks, visual cueing, links to downloads for help and support, and discussion forums in which teachers and students can interact. They also state that there are as many kinds of scaffolding 'as there are techniques of teaching' (ibid., p. 243). Additionally, they draw attention to the aspects of teaching that consist of providing explanations, devising solutions to the problems, joining the learners in the outer boundary of learning, setting an example of solving problems with think-aloud methods, and testing to prove or disprove the arguments. This work by Bull et al. (1999) emphasises the need to consider different techniques to scaffold learning in e-learning environments. However, they do not provide any suggestion for how to explore the different scaffolding types in e-learning environments.

A study by Tiantong and Teemuangsai (2013) could be a good example of a study observing scaffolding types in e-learning environments as it focused on exploring four scaffolding types, such as metacognitive scaffolding, conceptual scaffolding, procedural scaffolding and strategic scaffolding as proposed by Hannafin et al. (1999, see Section 2.3.3.. The study implemented them through the use of 3-D animated cartoon experts using a Moodle LMS (Learning Management System) in order to enhance collaborative problem-based learning. Twenty-two students and six experts participated in the study, in which there was no teacher but animation with the program providing each category of scaffolding. The study included the five phases of the ADDIE instructional model (Clark, 2004 cited in Tiantong & Teemuangsai, 2013) outlined below:

> '1) A – Analysis: to begin, study of the previous research about the scaffolding in learning and teaching, write the course curriculum and assign the target learners,'
>
> 2) D – Design: the next step was to design the contents structure, topics and lessons, learning activities and evaluation criteria, sources, and scaffolding techniques,'
>
> 3) D – Development: in this stage, the researchers applied the Moodle LMS to develop the lessons and added activities, quizzes, tests, learning sources, portfolios, communications, scaffolding, follow-up and evaluation,'
>
> 4) I –Implementation: this step was to assign learners into small groups, set up location, and train learners for the tryout lessons, and'
>
> 5) E – Evaluation: students and experts were asked to evaluate the lessons. The test results would represent the satisfaction towards the developed scaffolding modules in the computer programming course' (Tiantong & Teemuangsai, 2013, 50).

The evaluation of the four scaffolding types implemented in the module show that both students and experts are satisfied with the scaffolding provided in the modules. Further, they conclude that 'the teacher can be replaced by an intelligent agent that also controls the learner activity' (Tiantong & Teemuangsai, 2013, p.53). The study by Tiantong and Teemuangsai (ibid.) is relevant to my study since it investigates learning via different scaffolding types in e-learning environments.

3.5.2 **Studies on Learner Autonomy and Motivation**

Along with scaffolding, my research also looks at the role of learner autonomy in the e-learning context (see Sections 3.2. and 3.3.). There is a strong interrelationship between learner autonomy and motivation (Dörnyei & Ushioda, 2009; Spratt, Humphreys & Chan, 2002), and it seems

important when looking at e-learning research to consider the role of motivation. The relation between motivation and success in e-learning environments is dealt within two aspects of motivation attribution theory and self-efficacy (Dörnyei, 1990, 1996; Oxford, 1996; Oxford & Shearin, 1994; see Section 3.2.4.) and may give some insight into research for success, failure and confidence.

There have been a number of studies on attributions in the context of mathematics and sports (Basturk & Yavuz, 2010; Bempechat, Ginsburg, Nakkula & Wu, 1996; Boruchovitch, 2004; Green & Holeman, 2004; Powers, Choroszy, Douglas & Cool, 1986), while a few studies have been conducted on attribution in second or foreign language learning (Gray, 2005; Gobel, Thang, Sidhu, Oon & Chan, 2013; Pishghadam & Modarressi, 2008; Tsi, 2000; Williams & Burden, 1997; Williams, Burden & Al-Baharna, 2001; Williams, Burden, Poulet & Maun, 2004). Studies related to language learning generally deal with learners' attributions for their successes and failures, and the studies of L2 motivation mostly focus on attitude and anxiety concepts as shown in Dörnyei (2001b), or Horwitz (1988). Some of the studies (e.g. Ushioda, 2001; Hsieh & Schallert, 2008) back up Weiner's theory (see Section 3.2.4.1.), whereas some of them do not (e.g. Williams et al., 2004; Peacock, 2009).

A study by Gobel et al. (2013) focused on exploring students' attributions in classroom learning and has the role of providing both qualitative and quantitative data. It compared Malaysian urban and rural students' attributions for success and failure using the Attitude towards Successful Activity Questionnaire (ASQ), to which 548 students responded, and the Attitude towards Failure Questionnaire (AFQ), to which 557 students responded. In the first section of both questionnaires, students gave answers about their demographic profile, whereas in their second section, they rated the reasons why they did well or not well while learning English in the classroom, by using a six-point Likert scale ranging from strongly agree to strongly disagree. The qualitative data analysis of questionnaires with the use of SPSS package indicates that they have different attributions: students from the urban group are more confident, as they attribute success to their own ability, effort and learning competence, leading to the hypothesis that the urban group have a stronger tendency to take responsibility for their achievements in classroom-based language learning environments. Gobel et al.'s (2013) study is helpful as it states that attributions to ability, effort and competence increase learner autonomy and confidence.

A study by Peacock (2009) also included both qualitative and quantitative instruments to investigate the relationship between attribution and proficiency. The study first interviewed 60 students by asking them to what they attribute success to while learning English as a foreign language in class. Based on their answers to the attributions, a questionnaire was designed with

26 attributions. 550 students rated them using a five-point Likert scale (i.e. 'strongly agree', 'agree', 'neither agree nor disagree', 'disagree', and 'strongly disagree'). Each student was identified in order to evaluate the relationship between attribution and proficiency. They had listening comprehension, writing, reading and speaking tests to give proficiency data. A similar questionnaire was administered to 40 teachers to understand to what they attribute student success and failure. Lastly, a different group of 60 students were interviewed about the origin of their attributions. The findings show that there is a difference between the attributions of teachers and students: students attributed success and failure to luck, whereas teachers attributed student success to effort. Along with the relationship between attribution and proficiency, the study supports the claim that there is a significant connection between past and present experiences in terms of the origin of attributions. The common origins of attribution are listed as personal experiences, family influence and observation (i.e. 'causes of success/failure that they observed in others' (ibid., p.189). Although the studies by Gobel et al. (2013) and Peacock (2009) explored attributions in class, their conclusion links to the interest of the present study as it is important to know how learners see the reasons for any learning progress.

There has also been research looking at attributions towards computer technology in social and educational contexts. For instance, Marakas, Johnson and Palmer (2000) categorised attributions into two groups: 'Tool attributions' (p.732) are internal attributions which students make to the causes of their own behaviour rather than the computer, whereas 'a social actor attribution' (p.732) represents external attributions which they make towards the causes of their own behaviour because of the computer. Drawn from the social feature of computer technology, a study by Johnson, Marakas and Palmer (2006) focused on Marakas et al.'s (2000) model in a social context in order to explore the factors that contribute to the construction of attributions of causality toward computing technology. 240 participants were included from undergraduate (n=166) and graduate (n=57) students and professionals outside the academic sector (n=17). A laboratory study was designed to enable them to interact with one of two versions of a vacation planning software program. Version 1 had an interface which is made up with embedded human-like characteristics and social cues with an animated interactive character which interacts with the user by responding and reacting to the user input. Version 2 had a traditional interface and mouse movement without any embedded characteristics as in Version 1. A scale for attributions toward computing technology was prepared based on the theoretical definition of attributions. Participants rated the scale by using a seven-point Likert scale from strongly disagree to strongly agree. The results show that people mostly view the computer as a social entity possessing autonomy and agency and exerting control on their life. This would seem to be particularly relevant with the current study.

A study by Hawi (2010) is related to attributions to the computer in the educational contexts and investigated business computing students' attributions. Data was collected through a narrative interview with 45 Lebanese students who finished a 13-week introductory programming course. During the interview, each participant was free to talk about their views and experience after being asked an open-ended question about their causal attribution (i.e. 'What do you think have caused the course outcome?' (ibid., p.1130). They attributed outcomes to ten causes:

- 'learning strategy',
- 'lack of study',
- 'lack of practice',
- 'subject difficulty',
- 'lack of effort',
- 'appropriate teaching method',
- 'exam anxiety',
- 'cheating',
- 'lack of time' and '
- unfair treatment'; however, 'ability' and 'luck' were not mentioned by the students (Hawi, 2010, p.1127).

Of particular interest are the external and internal attributions students make for success and failure in e-learning environments as it gives some insight into their exercise of autonomy.

As the previous studies have shown somewhat inconclusive results for self-efficacy, still more research is required. A study by Taipjutorus, Hansen & Brown (2012) focused on analysing the relationship between learner control and self-efficacy in an online learning environment. In their pilot study for the larger project, they asked 31 students who attended an online program in an institution in New Zealand to fill out a questionnaire about their computer skills and experiences in online learning environments which offered learner control. The findings indicate that the relationship between learner control and self-efficacy in online learning environments was affirmative. Corroborating the results of an earlier study (Taipjutorus et al, 2012), Taipjutorus (2014) pays attention to the design of online courses in which both scaffolding and learner control are embedded. It was concluded that learning may increase if scaffolding is designed into online learning resources and take account of learner control and self-efficacy. However, these studies lack a direct discussion of how to design e-learning environments.

A study by Chang and Ho (2009) was also interested in learner control in online learning environments. However, the study focused on the relationship between attribution theory and learner control and explored the impacts of both internal and external attributions, and of either

program- or learner-based control over teaching, on students' self-efficacy in online language learning settings. A web-based instructional program was designed in the University Internet System. Like a teacher, the system had the following functions:

'(1) profile management,'

'(2) course management,'

'(3) assignment management,'

'(4) testing management, and'

'(5) grading management' (ibid., p.195).

Students had the access of '(1) course content, (2) course information, (3) discussion panel, (4) student profile, and (5) system questions and answers' (ibid., p.195). The study included 115 undergraduate students learning English for their studies and divided them into two groups. One group took a treatment which was controlled by the program and which required them to follow the program's instructions (such as listening to oral instruction) when they opened the page. It would not be stopped by the students if required. The others took the learner-control treatment which let them decide on the instruction they should follow by choosing any activity or clicking on external links for further information. Data was collected from different instruments. A questionnaire was prepared to 'measure student beliefs in internal and external locus of control over academic responsibility' (ibid., p.196). Participants rated 20 items by using a-five point Likert scale from strongly agree to strongly disagree. A comprehension test with 50 multiple-choice questions was used to measure how much they learn from the program. The scale for self-efficacy was designed based on previous studies (i.e. Pintrich and others, 1991, cited in ibid.) in order to assess their self-efficacy for learning and performance. Students rated the items with a five-point Likert scale strongly agree to strongly disagree. Data from the test and questionnaires provided significant results which show that students receiving learner-control web-based instruction performed better than those receiving program-control web-based instruction. Besides academic achievement, they displayed more confidence in their abilities and skills with which to carry out the task and develop their own language learning. As for their attributions, in general, students with an internal locus of control outperformed those with an external locus of control, and students with an external locus of control in the learner-control group outperformed those with an internal locus of control in the program-control group, in terms of academic achievement and self-efficacy. However, these findings indicate that the type of control over instruction in online-based language learning environments had a greater impact on their learning than their external

and internal attributions. The study by Chang and Ho (2009) is useful to indicate the investigation of attribution theory, self-efficacy, learner control and e-learning.

3.5.3 Studies on Scaffolding and Learner Autonomy in E-learning Environments

Although there have been a number of studies looking at e-learning, scaffolding and learner autonomy (i.e. Artino, 2008; Benson, 1998; Chang & Sun, 2009; Frizler, 1995; Linn, 1996; Luzón, 2006; Martin & Grudziecki, 2006; McLoughlin, 2002; McLoughlin & Marshall, 2000; Motteram, 1997; Nielsen, 2012; Ribbe & Bezanilla, 2013; Toogood, 2005; Warschauer, 1996, 2004), it seems that there has been little research on the relationship between them (Jarvis, 2012; Yelland & Masters, 2007). As the aim of this study is to explore the relationship between scaffolding and learner autonomy in e-learning environments (see Section 2.1.), the studies by Nielsen (2012), Delen, Liew and Willson (2014) and Chen and Law (2015) have been discussed in this section.

A study by Nielsen (2012) focused on the concepts of scaffolding, learner autonomy, motivation and e-learning tools and conducted a case study to examine e-learning tools in terms of promoting learner autonomy in second language learning. 24 students of different ethnicities including Danes, Norwegians, Somalis and Middle Eastern students pursuing undergraduate study at the University of Southern Denmark attended a two-semester course in Arabic at the beginner level. The study included e-learning tools such as online tests, portfolio, self-assessment and individual plans. The researcher analysed data by evaluating students' use of those e-learning tools. The findings indicate that e-learning tools should be integrated into learning compulsorily rather than voluntarily in order to ensure that all students are engaged. The findings also show that there was a difference in usage of the e-learning tools between persons of different genders and ethnic backgrounds. For example, female students seemed to take responsibility for their study skills more than did male students, since the former followed their individual learning plans. Danish or Scandinavian students utilised the e-learning tools more than the students from the Middle East. Above all, the study found out that students employing e-learning tools to learn Arabic increased their learner autonomy by means of scaffolding activities employed by either the teacher or the researcher. It concludes that 'whatever the reasons the learner reactions [in terms of the lack of interest in using the e-learning tools] were a reminder that motivation is a core factor if an increased degree of learner autonomy is to be achieved' (ibid.). The study by Nielsen (2012) is useful as it looks at the relationship between scaffolding, learner autonomy, motivation and e-learning.

A study by Delen, Liew and Willson (2014) was interested in scaffolding and self-direction in e-learning environments. The study investigated the effects of online video-based environments

and compared a specially designed online video learning environment which scaffolded self-direction with the additional functions of 'note-taking, supplemental resources, and practice questions' in the experimental group (number (n)=64 students), with a standard one which has the simple functions of 'play, pause, and rewind/forward' (ibid., p.314) in the control group (n=16 students. Data was collected using a Self-regulation Strategy Inventory survey, which included 20 items, a recall test about the video content and the frequency of students' use of the functions involved in a designed online video learning environment. The findings show that the designed online video learning environment increased participants' learning performance, since it embedded functions such as an interactive note-taking complement and supplemental resources. The practice questions also scaffolded them so as to activate self-regulated learning. The study by Delen et al. (2014) is useful as it considers different functions of scaffolding such as 'note-taking, supplemental resources, and practice questions' (ibid., 314), not just scaffolding types (see the study by Tiantong and Teemuangsai, 2013) in e-learning environments.

A study by Chen and Law (2015) drew the attention to scaffolding of individual and collaborative game-based learning. The study carried out a study which examined a total of 254 students who were divided into four groups: a) 'individual-control' (IC) (n=64), b) 'individual-scaffold' (IS) (n=61), c) 'collaborative-control' (CC) (n=64), d) 'collaborative-scaffold' (CS) (n=65) (ibid., p.1201). Each student used *Carrot Land*, which is an educational game about the concepts of force and motion (Chen, Wang & Lin, in press cited in ibid.). They were also given the instructional manual in order 'to provide students information about background knowledge of forces and motion' (ibid., p.1204). As the aim of the study was also to look at 'soft' and 'hard' scaffolds and learning performance, students in the groups of IS and CS were provided with hard scaffolds which were open-ended questions to help them 'make explicit connections between the game world and disciplinary knowledge', after the gameplay (ibid., p.1205). Data was collected from a performance test and an intrinsic motivation survey. They first had a 10-minute training session to familiarize them with the study and game environment. They were then given a performance pre-test which had twenty multiple items assessing their understanding of force and motion. Following this, they were given a tablet from which to read the instructional manual as many times as they wished. In all, they were put into four groups: IC (without any hard or soft scaffold), IS (without soft scaffold, but with hard scaffold), CC (with soft scaffold, but not hard scaffold) and CS (with hard scaffold and soft scaffold), and played the game for 20 minutes. At the end, they filled in an intrinsic motivation survey which contained items about their interest, competence and autonomy with a five-point Likert ranking scale, and they took a performance post-test. The findings from the instruments show that 'scaffolding had an impact on students' motivation and learning performance' (ibid., p.1201). Hard and soft scaffolds were positively connected with

learning performance, but especially when they were provided together in the learning environment. The study suggests that hard scaffolds ('static scaffolds that are usually provided by computers': Ge & Land, 2004; Saye & Brush, 2002, cited in ibid., p.1202) should be embodied in the materials in order to enhance learning performance and motivation and to strengthen soft scaffolds ('dynamic scaffolds that can be provided by peers during collaboration', cited in ibid. p.1202).

As shown in the above-mentioned studies, the research on both scaffolding and learner autonomy in e-learning environments has covered a range of possibilities from learning blended with social networking (Majid et al., 2012); replacement with e-learning tools or computer instead of the teacher or tutor (Luckin, 2001; Tiantong & Teemuangsai, 2013; Wood & Wood, 1996); the connection between the scaffolding feature of the computer programs or software and promotion of learning (Cuthbert & Hoadley, 1998; Hakkarainen, 2003; Oshima & Oshima, 1999; Scardamalia & Bereiter, 1996); the features of the Internet that scaffold learning, such as hyperlinks, visual cueing, and the like (Bull et al., 1999); and more importantly, the relationship between scaffolding, learner autonomy and motivation in e-learning environments (Nielsen, 2012; Delen et al., 2014; Chen & Law, 2016). The studies by Taipjutorus et al. (2012), Taipjutorus (2014) and Chang and Ho (2009) take into consideration the significance of including learner autonomy with self-efficacy and students' attributions for success and failure in e-learning environments in which learners tend to exercise their autonomy with the help of scaffolding provided by tools or resources, which is explored in the present study. Although the aforementioned studies have concluded that scaffolded e-learning environments can enhance students' capacity to improve their skills, abilities and knowledge in educational contexts, the role of online learning resources (for more information about online learning resources, see Chapter 4) used as scaffolding in e-learning environments should perhaps be explored by looking at the connection with learners' autonomous learning and motivation in relation to their attribution to success and failures, and their self-confidence. This section has given a discussion of methodological issues related to the abovementioned studies and shown that studies used different methods (for more discussion of methodological issues, see Chapter 5), to explore theoretical concepts. Data can be collected from students' written productions or notes posted to the learning program or software (i.e. Cuthbert and Hoadley, 1998; Hakkarainen, 2003; Oshima & Oshima, 1999), student questionnaires (i.e. Chang & Ho, 2009; Chen & Law, 2015; Delen et al., 2014; Gobel et al., 2013; Marakas & Palmer, 2006; Oshima & Oshima, 1999; Peacock, 2009), observation (i.e. Luckin, 2001), teacher questionnaires (Peacock, 2009), interview (i.e. Hawi, 2010; Majid et al., 2012; Nielsen, 2012; Parker et al., 2013; Peacock, 2009; Taipjutorus et al., 2012; Tiantong & Teemuangsai, 2013), experimental and control groups (i.e. Chang & Ho, 2009; Chen &

Law, 2015; Delen et al., 2014; Majid et al., 2012; Marakas & Palmer, 2006), and test (i.e. Chang & Ho, 2009; Chen & Law, 2015; Peacock, 2009). Data from multiple instruments increases the robustness of the findings as they can be supported through triangulation of data (Kaplan & Duchon, 1988; for example, see the studies by Chang & Ho, 2009; Delen et al., 2014; Oshima & Oshima, 1999; Peacock, 2009).

This having been said, the next section summarises what has been discussed in the current chapter.

3.6 Conclusion

The present chapter has addressed the concepts shown in Figure 3 in Section 2.1. First, it has provided detailed information about learner autonomy in terms of its definition and main components such as self-regulation, self-management, learning strategies and motivation, in regard to which it has presented two motivational factors, attribution theory and self-efficacy. As the present study mainly concentrates on learner autonomy in e-learning environments, self-directed e-learning and the connection between digital literacy and learner autonomy have been outlined. Following that, the related literature on scaffolded autonomous e-learning environments has been presented to discuss and show the connection of these three concepts, namely e-learning, scaffolding and learner autonomy. Lastly, the previous studies on these three concepts and motivation in terms of attribution theory and self-efficacy have been introduced. Overall, the literature review has aimed to present the theoretical concepts underpinning my research. This having been accomplished, the next section looks at the context of the study in terms of the EAP Toolkit, which is used as an online program in my research, and other online learning resources.

Chapter 4: THE CONTEXT OF THE PRESENT STUDY: THE EAP TOOLKIT AND OTHER OLRS

4.1 Introduction

Before moving on to the methodology chapter, this chapter will give an overview of the context of the study, the EAP (English for Academic Purposes) Toolkit and other online learning resources (OLRs). Section 4.2. will describe the EAP Toolkit and discuss why it was chosen as an example of a scaffolded e-learning resource in the study. It will first discuss its design with learning objects and Laurillard's Conversational Framework and then look at scaffolding in two subsections, scaffolders (see Section 4.2.1.) and scaffolding types (see Section 4.2.2.) potentially provided in the EAP Toolkit. Section 4.3. will review and discuss other available online learning resources, from which learners can potentially benefit. Section 4.4. will discuss methodological issues in relation to the theories of scaffolding, learner autonomy and e-learning environments which are the research interest (see Figure 3).

4.2 The EAP Toolkit as a Scaffolded E-learning Resource

This study draws on the EAP Toolkit to explore the relationship between scaffolding and learner autonomy in e-learning environments because of its design features. This section will first discuss the learning objects, which make up its context. It will then deal with the EAP Toolkit looking at its features, its design and the process of a student's learning in it. Finally, it will link the discussion to the research which investigates learners' actions, perceptions and exercise of autonomy in scaffolded e-learning environments. It also has two additional subsections which discuss the provision of scaffolding in the EAP Toolkit by explaining scaffolders (see Section 4.2.1.) and scaffolding types (see Section 4.2.2.) in the EAP Toolkit.

Despite the widespread use of digital or online learning resources (OLRs; see Section 1.2.2.), the potential usefulness of OLRs seems not to be comprehended thoroughly (Watson, 2010). In this context, learning objects (LOs), 'a form of eLearning resource used across a range of subject areas, which are still being realised in various formats by those involved in the field of Learning Object technology' (ibid., p.42) are created and produced for learners to enhance their learning in e-learning environments rather than in paper-based learning environments (ibid.). There have been different interpretations of defining LOs (see Polsani, 2003). However, there is a common understanding of the fundamental elements of LOs such as its accessibility, reusability and

interoperability (Polsani 2003). Wiley (2001) exemplifies LOs as digital resources such as 'digital images or photos, live data feeds (like stock tickers), live or prerecorded video audio snippets, small bits of text, animations, and smaller web-delivered applications, like a Java calculator… [or] entire web pages that combine text, images and other media or applications…' (p.7). They have the tendency to offer profitable and personalised learning (Harvey, 2005). The features of LOs can be summarised as follows:

- 'they are activity-centred;'
- 'they aim to engage the student actively in reflection;'
- 'activities allow for practice and production;'
- 'activities are also personalised (learner-centred) where possible;'
- 'they are enhanced with significant amounts of feedback which helps to support and drive students' learning;'
- 'the design of the LOs accommodates different learning approaches' (Watson, 2010, pp.44-45).

In order to support learners to achieve intended learning, LOs are a part of the instructional design (ibid.); in other words, the design of LOs need to consider instructional intentions (Polsani, 2003). Furthermore, the effectiveness of LOs is dependent on instructional design (Harvey, 2005), 'a system of procedures for developing education and training programs in a consistent and reliable fashion' (Gustafson & Branch, 2002, p. 17). Beside the importance of designing LOs for instructional purposes, the way of their delivery must be taken into account, as well. Hence, a learning management system (LMS) aims to equip LOs for students to handle their learning with the provision of immediate feedback (Martin, 2008). Blackboard (http://www.blackboard.com/) is one of the most used commercial LMS products (Munoz & Duzen, 2005) and a repository where LOs are embodied.

In this study, LOs are delivered to students via the EAP Toolkit, which is accessed through Blackboard (Watson, 2010). The EAP Toolkit is defined as 'a comprehensive set of interactive learning resources for developing the language and study skills of international students and students whose first language is not English' (eLanguages, 2012, n.p.). Being developed by the University of Southampton, the EAP Toolkit has been used since 2004 and was refreshed in 2011 (ibid.). It consists of seven folders of learning activities including Learning Skills, Academic Writing, Reading and Critical Thinking, Listening and Note-taking, Communication Skills, Grammar for Academic Purposes, and Vocabulary for Academic Resources (ibid.). It provides over 100 items or learning objects (LOs) which require an 80-hour-study which were designed with an explicit pedagogy in the University (Watson, 2010), as LOs has an importance in facilitating effective learning and teaching (ibid.).

The LOs in the EAP Toolkit 'combine multi-media assets such as audio or video clips, texts, graphics and web links with an activity-based approach to learning (Watson, 2010, p.44). In this activity-based approach, students have 'a sequence of staged activities' (ibid. p.44) which are 'supported with feedback (answers, comments, explanations, hints, examples)' (ibid. p.44). This approach aims to help learners engaged with the Toolkit. According to Conole et al. (2004, see Section 2.2.4. & Appendix A), the EAP Toolkit is supported with constructivist theory, not only activity-based theory which gives more interaction with others such as peers or tutors. Laurillard's Conversation Framework also puts stress on interaction that helps learning to take place in terms of interaction between the teacher and learner including the peer interaction if needed (for more, see Section 2.4.2. & Figure 4). The design of the LOs in the EAP Toolkit was built to reflect four elements of the learning process described by Laurillard's Conversational Framework (2002; see Section 2.4.2.):

- task 'interaction';
- 'reflection' about the learning concepts involved';
- 'discussion', which in the LOs is an internalised process through engagement with the activities and their feedback (when they are used for independent study)';
- 'adaptation' of (students') understanding through their engagement with a sequence of increasingly challenging activities centred around the learning point' (Watson, 2010, p.45).

Figure 12 below illustrates the planned learning process in a LO in the EAP Toolkit (for the detail of the learning process, see Section 4.2.1.). After entering the EAP Toolkit (see 1 in Figure 12), students need to analyse their needs and choose a LO in a particular content or skill area (see 2 & 3 in Figure 12). The aim is that the student can practise a learning activity and task and then receive feedback (see 4 in Figure 12). With this, the need for 'interaction' described by Laurillard's Conversational Framework (Laurillard, 2002) can be met. After this, the aim is that s/he reflects on their own learning and goes to the next learning activity and task. With this, the need for 'reflection' described by Laurillard's Conversational Framework (ibid.) can be met.

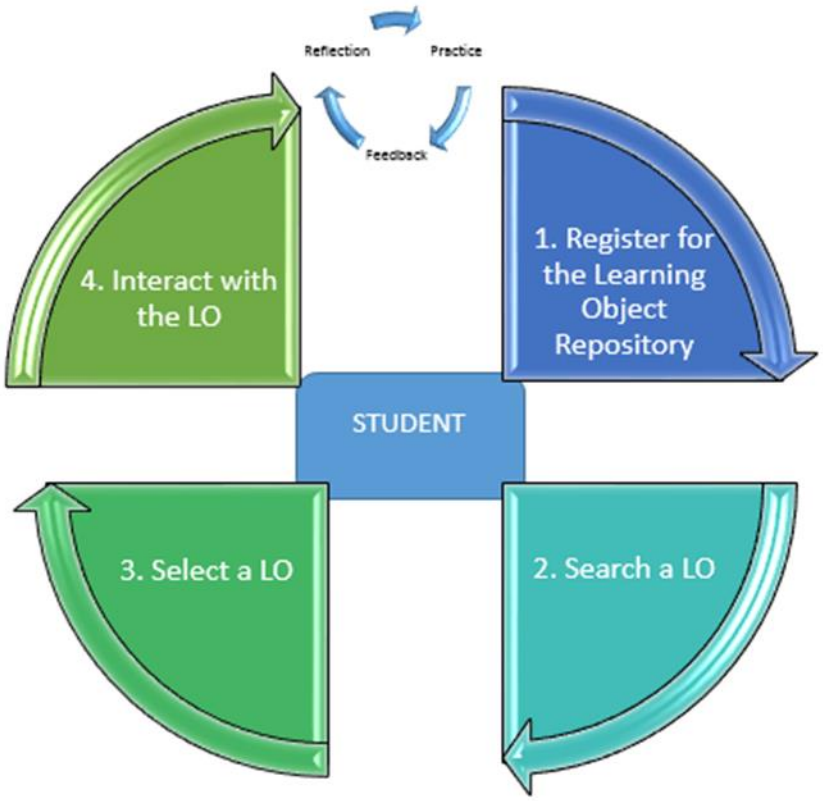


Figure 12: The Planned Learning Process in a LO in the EAP Toolkit

Figure 13 below presents a screenshot taken from Watson (2010) which shows that feedback can scaffold students' learning in an activity in the LO on paraphrasing in the EAP Toolkit. Feedback can play the role of 'an automated tutor' who might predict where students have made a mistake and might give an explanation for the answer, model answers (ibid. p.46). Students can be prompted to reflect on their learning in LOs by receiving model answers in the feedback section (ibid.). Feedback can also provide a flexible learning to the student who can independently use LOs and can decide when to look at the feedback (ibid.). After engaging with a number of increasingly challenging activities, students can adapt their understanding (ibid.). With this, the need for the 'adaptation' element described by Laurillard's Conversational Framework (Laurillard, 2002) can be met. However, the need for the 'discussion' element (ibid.) can be met through peer or tutor interaction in class or through online discussion tasks (Watson, 2010).

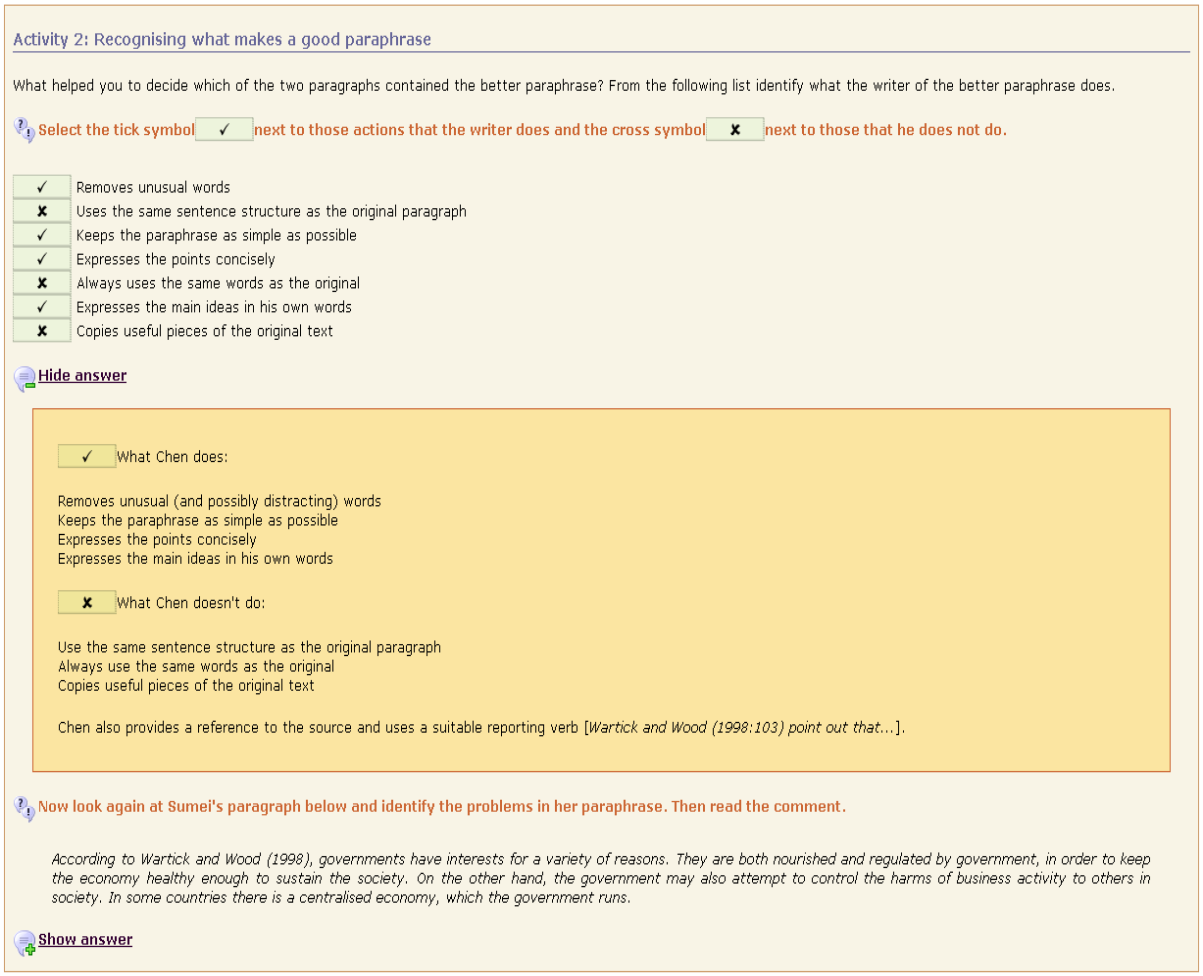


Figure 13: 'Feedback scaffolds students' learning in Activity 2 of LO on paraphrasing' (Watson, 2010, p.46)

Considering the aforesaid features of the EAP Toolkit and Laurillard's Conversational Framework (Laurillard, 2002), Watson (2010; see also Section 5.4.1.2.) designed a case study to explore the use of learning objects within the Toolkit. The study took place in 2004 (Number (n) =800), 2005 (n=260) and 2008 (n=312) when in a pre-sessional course, tutors used LOs with their classroom teaching in a blended mode. Data was gathered from observations of students who were using LOs during independent study sessions, tutor questionnaires and student learning log entries. The findings show that tutors increasingly used the LOs in classroom teaching over time. Despite that increase, the frequency of students' use of LOs slightly fell down. However, both students and tutors agreed that the LOs helped students to learn and understand a learning point and students were able to follow up a point independently if they wished. The study shows that the EAP Toolkit is flexible enough to allow different modes of use:

- 'as a stand-alone resource for students to use for independent study;'
- 'as a remedial resource for tutors to direct individual students to;'
- 'blended with face-to-face teaching and / or a specific programme of study';
- 'through student use outside the classroom for lesson preparation/consolidation';

- ‘through adaptation into hybrid online/offline tasks’;
- ‘and through tutor use in the classroom’ (ibid., p.47).

As described above, the EAP Toolkit can be ‘a stand-alone resource’ given the level of scaffolded learning it offers (ibid., p.47). It is for this reason that my research has chosen the EAP Toolkit as an example of a scaffolded e-learning resource so that it can explore the relationship between scaffolding and learner autonomy in e-learning environments.

This section having discussed that the EAP Toolkit can be taken as an example of a scaffolded e-learning resource, the following sub-sections deal with the help and support within the EAP Toolkit which is described here as scaffolders, and the various scaffolding types which are available within the EAP Toolkit.

4.2.1 **Scaffolders in the EAP Toolkit**

This section will first outline the concept of scaffolders based on previous studies and then examine the scaffolders provided in the EAP Toolkit based on Watson (2010).

Section 2.3. discusses scaffolding in detail and shows that scaffolding is designed to enable learners to receive information and develop their learning. However, scaffolding has evolved to include the concept of scaffolders which support learning in e-learning environments (see Section 2.3.2., Puntambekar & Hübscher, 2005, Table 2). Based on the study by Puntambekar and Hübscher (2005), the present study describes a scaffolder as facilitators allowing the performance on an activity learners are left to handle their own learning in e-learning environments. Watson (2010) categorises scaffolders as the introduction, explanation/information, instruction and feedback sections (see also Section 5.6.2.1.) with an additional scaffolder, the self-scaffolder (Holton & Clarke, 2006). The aim of the categorisation of scaffolders in this study is to investigate learners’ actions while learning in the EAP Toolkit, especially using scaffolders in the EAP Toolkit (see Section 6.2.1.2); their perceptions of scaffolders (see Section 6.3.2.); the exercise of learners’ autonomy via scaffolding (see Chapter 7) and the relationship between scaffolding and learner autonomy in e-learning environments (see Section 7.7.).

Users of the EAP Toolkit first need to choose a folder presented in the learning process (see Figures 12 & 14). Clicking on the folder, they will come across the introduction for each learning object (LO) or item to have the basic idea and consideration about the topic (see Figure 14). As can be seen in Figure 14 below, they have the basic information about LOs on ‘understanding essay titles’, ‘improving your paragraphs with topic sentences’, structuring your writing’ and ‘using examples to support written statements’.

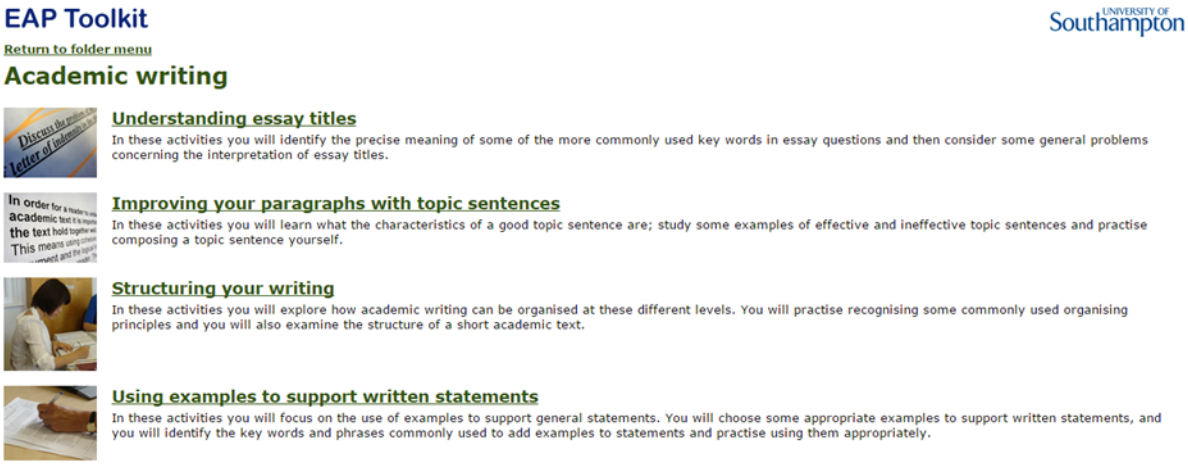


Figure 14: An Example of Introduction as a Scaffolder in the Folder of Academic Writing in the Toolkit

After choosing a LO, they will see its introduction which supplies them with the main issues to consider and think (see Figure 15). As can be seen in Figure 15 below, they can have the understanding of 'building your vocabulary'. They can also have the access to web links, glossary and dictionary if they need more support (see the right above corner of Figure 15).

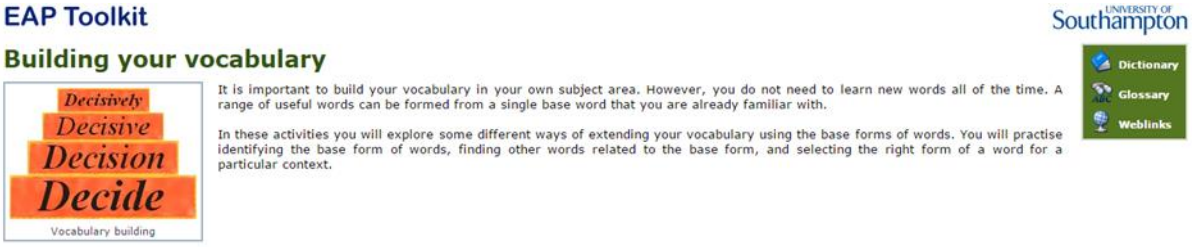


Figure 15: An Example of Introduction as a Scaffolder in the Learning Object of Building your Vocabulary in the Toolkit

After the introduction, the explanation/information section as a scaffolder is provided for learners to receive additional information about what to consider on a specific activity (see Figure 16). Figure 16 below presents what learners need to consider while doing the activity on 'identifying the base form of a word' and explains the base form of a word. Moreover, they receive additional help for any new concept through hyperlinks in the 'prefixes' and 'suffixes' (see Figure 16).

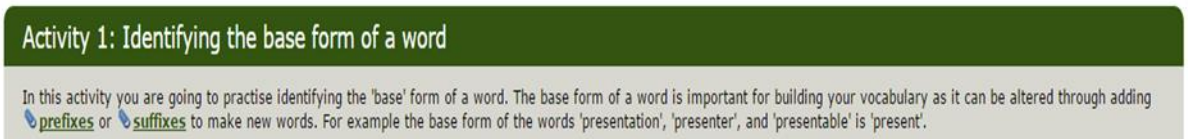


Figure 16: An Example of Explanation/Information as a Scaffolder in the Activity 1 of Building your Vocabulary in the Toolkit

The instruction section is used as a scaffolder so that learners know how they benefit from the activities. In other words, it contains information about methods to do the activity. As illustrated in Figure 17 below, the intention is to guide them on what to follow and how to accomplish the

activity and obtain more information, for example by clicking on either 'WebCorp' or 'Show help' or both, and directs them to read the feedback afterwards.

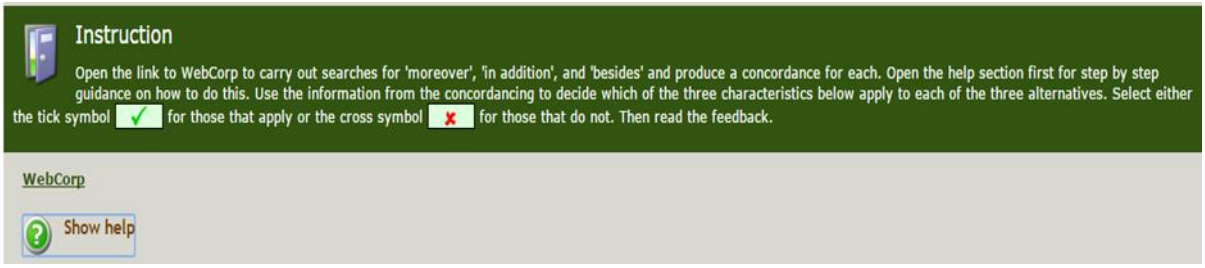


Figure 17: An Example of Instruction as a Scaffolder in the Activity 2 of Concordancing for vocabulary development in the Toolkit

Lastly, the feedback section as a scaffolder delivers explicit or implicit answers for learners, and in turn, they have the opportunity to assess, monitor and evaluate their learning. Figure 18 below gives model answers to the question directly and then adds further knowledge about the topic in the second paragraph. By this means, feedback helps learners 'modulate their concepts' and 'generate questions' (Laurillard, 2012, p.94), which can meet the need for the 'interaction', 'discussion', 'adaptation' and 'reflection' elements in the learning process identified by Laurillard's Conversational Framework (Laurillard, 2002).

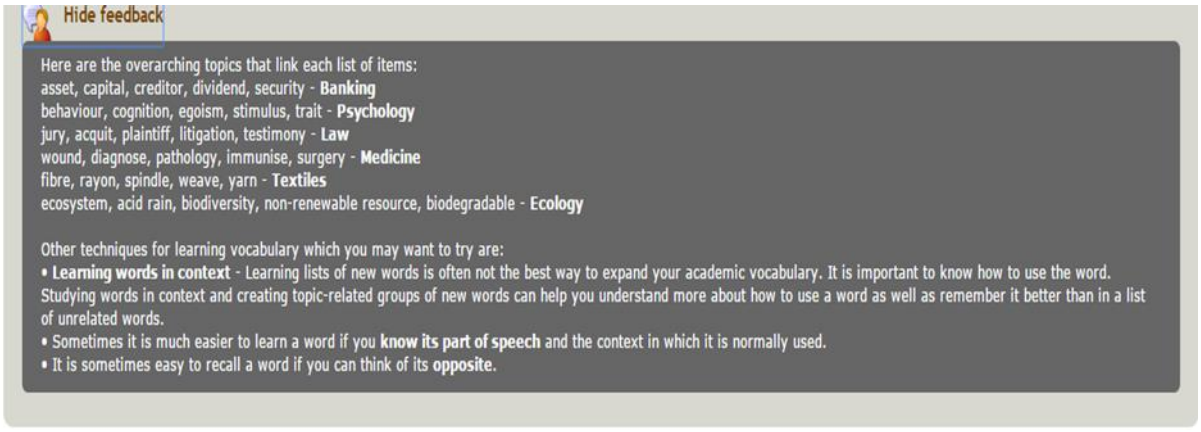


Figure 18: An Example of Feedback as a Scaffolder in the Activity 2 of Introduction to vocabulary learning in the Toolkit

Last but not least, self-scaffolding, which is scaffolding a learner provides for himself or herself when s/he tries to deal with any problem or concept (Holton & Clarke, 2006; see Section 2.3.2.). As the design of the EAP Toolkit aims to help learners reflect on the learning process (see Section 4.2.), it seems that the LOs in the Toolkit might trigger self-scaffolding through the introduction, explanation/information, instruction and feedback sections (Watson, 2010). Correspondingly, learners might create scaffolding on their own and become self-scaffolders if the resource provides 'the ideal situation' (see Section 3.4. and Figure 10) for learners to achieve 'good' learning' (Vygotsky, 1978 cited in Burns & de Silva Joyce, 2005, p.10).

The discussion of scaffolders provided in the EAP Toolkit in this section shows that the introduction, explanation/information, instruction and feedback sections in the Toolkit are designed to act as scaffolders and have the potential to encourage learners to become self-scaffolders (see examples of this process in Section 6.2.1.2.; Section 5.6.2.1.). Users of the Toolkit are able to take advantage of these scaffolders to guide and promote their learning. Similarly, the intention of the present study is to explore how and whether participants interact with pre-defined scaffolders and become engaged within the learning process (see Section 6.2.1.2.). This section has completed scaffolders in the Toolkit, and the next section deals with scaffolding types potentially provided in the EAP Toolkit in this study.

4.2.2 **Scaffolding Types in the EAP Toolkit**

The above discussion has shown that users of the EAP Toolkit can potentially receive help in the introduction, explanation/information, instruction and feedback sections depending on their use of LOs in the EAP Toolkit. This section will discuss scaffolding types which scaffolders potentially provide in the EAP Toolkit by drawing on previous studies.

As indicated in Section 2.3.3., researchers (Azevedo et al., 2003; Hannafin et al., 1999; Hmelo & Guizdal, 1996; Tait, 2000; Tiantong & Teemuangsai, 2013; Yelland & Masters, 2007) have categorised scaffolding into different types. Considering the aforesaid studies, a discussion of the EAP Toolkit reveals that there are potentially six scaffolding types: Conceptual, procedural, strategic, metacognitive, motivational-affective and technical (see also Section 5.6.2.1.). Additionally, feedback is divided into two types, explicit and implicit feedback identified in the study by Ellis, Loewen & Erlam (2006). The next explanation and discussion are made on how each scaffolding type is identified.

Conceptual scaffolding assists learners to cope with problematic and complex concepts by informing 'what to consider' (Hannafin et al., 1999, p.132). Its instances can usually be seen in the introduction, information, explanation and feedback sections in each learning object. As in the following example, the information/explanation section in Vocabulary for Academic Purposes folder in the EAP Toolkit addresses learners 'what to consider' (ibid., p.132) (see also Figures 15 & 16). In this example, learners are addressed to 'organise' their vocabulary learning in order to learn words by topic group.

> Learning words by topic group is one way to organise your vocabulary learning. There is evidence to suggest that memory operates using a neural network through which thoughts are connected to one another.

Metacognitive scaffolding helps learners 'how to think during learning' (ibid., p.132). The following example in the introduction section in Vocabulary for Academic Purposes folder in the EAP Toolkit helps learners how to think about the topic, and has an 'initial role in finding and framing problems, and [an] ongoing role during resolution' (ibid., p.131) (see also Figure 14). In this example, they are supported how to learn words which are useful for them as the introduction section states that they need to practise and consider learning vocabulary by topic group.

> In these activities you will practise identifying which words might be useful to learn to use productively and consider learning vocabulary by topic group.

Procedural scaffolding provides techniques to understand how to use the sources (ibid.) in the instruction section in each learning object in the Toolkit. In the following example in Vocabulary for Academic Purposes folder in the EAP Toolkit, learners are advised on the ways to utilize learning objects or tasks (ibid.) (see also Figure 17). In this below example, they are advised to think about the base word *negotiat*e and note any words related to this word, and then read the feedback.

> Think about the base word *negotiate* and note any words you can think of that are related to and/or formed from this base word. Then read the feedback.

Technical scaffolding comprises any help from programs or software to facilitate learning and accomplishing the tasks (Yelland & Masters, 2007) and potentially enhance and clarify learners' understanding (ibid.). In the following example, the links for prefixes and suffixes in Vocabulary for Academic Purposes folder in the EAP Toolkit are provided as help for learners to have more knowledge of the words.

> The base form of a word is important for building your vocabulary as it can be altered through adding **prefixes** or **suffixes** to make new words.

Web links page mentioned in the following example is also provided as a technical scaffolding as the support is given through a web based help, and learners can have more guidance on the topic.

> For further guidance on synthesising information from various sources go to the weblinks page.

Feedback can be either *explicit* or *implicit feedback*. An example of explicit feedback is an 'overt indicator' for the correct answer (Ellis et al., 2006). One example in Vocabulary for Academic

Purposes in the EAP Toolkit is given below. Learners are asked to select a topic that links the items in each set of words in the question. For each question, an explicit feedback is given in this example. For the items, 'asset', 'capital', 'creditor', 'dividend' and 'security', the answer is 'Banking'.

> 'Here are the overarching topics that link each list of items:
>
> asset, capital, creditor, dividend, security - Banking
>
> behaviour, cognition, egoism, stimulus, trait - Psychology
>
> jury, acquit, plaintiff, litigation, testimony - Law
>
> wound, diagnose, pathology, immunise, surgery – Medicine
>
> fibre, rayon, spindle, weave, yarn - Textiles
>
> ecosystem, acid rain, biodiversity, non-renewable resource, biodegradable – Ecology'.

However, implicit feedback does not contain any 'overt indicator' (ibid.). Rather, it initiates the learner interaction with the learning object and, in turn, indirectly yields to the knowledge in the target topic (Kardan & Monkaresi, 2008). Above all, this kind of feedback provides strategic scaffolding when it provides guidance in dealing with learning objects and future tasks (Hannafin et al. 1999). The following example of this in Vocabulary for Academic Purposes folder in the EAP Toolkit does not give any a direct answer to the question, but lists strategies how to select items of vocabulary to learn for productive purposes and example of vocabulary.

> 'Although this text is unacademic in style (this is evident from the use of 'incredibly', 'you', and the imperative form) you may still have found and highlighted words and phrases that might be useful to learn. Your choice will obviously depend on the kind of language you wish to focus on and your existing vocabulary.
>
> Here are some strategies that you might use to select items of vocabulary to learn for productive purposes and examples of such vocabulary in the text above:
>
> • Select general language that might be useful for a particular purpose: e.g. expressing with caution: tends to / It may be necessary to / seems...
>
> • Select general language structures that might be useful in your own writing e.g. ...can be related / in such a way as to...
>
> • Select general vocabulary which might be useful in other contexts: e.g. multifaceted, vitality, suppress, harmonious, distress, hinder.
>
> • Select subject-specific vocabulary which is in everyday use: e.g. migraines, arthritis, antibiotics, bronchitis, bacteria.'

This section has shown how LOs in the EAP Toolkit aim to provide scaffolding for learners. The discussion has shown that the introduction, explanation/information, instruction and feedback

sections, glossary, dictionary and weblinks embodied in the LOs in the EAP Toolkit can regarded as scaffolders (see also Section 5.6.2.1.) that support learning. Moreover, it indicates that reflection made by learners after reading the scaffolder might allow learners to provide self-scaffolding; hence become self-scaffolders. Different types of scaffolding in the Toolkit provide support in terms of guiding in tackling tasks (strategic), advising the ways to utilize LOs (procedural), telling what to consider (conceptual) and how to think (metacognitive), helping with extra links (technical) and giving the answers explicitly and implicitly (explicit and implicit feedback) (see also Section 5.6.2.1.). This chapter moves on to look at other online learning resources which learners potentially use.

4.3 Other Online Learning Resources (OLRs)

This section will discuss other online learning resources (OLRs) as a part of the context of this study by examining how and whether these resources help learners.

Through using the Internet or the World Wide Web, which has the potential of storing a range of accessible source materials (Hannafin et al., 1999 and see Section 2.2.2.), there have been prominent opportunities for learners to individualize and promote their own learning. In e-learning environments, students can be the ones to decide what to study or not as they are expected to do that (McLoughlin & Marshall, 2000). Their learning is potentially impeded in closed e-learning environments (Shulman, 1999) where learning materials are hidden in password-controlled areas (Mentor, 2007; see also Section 2.2.3.), whereas in open e-learning environments, they can be more flexible and free to learn and learning can be student centred (Paine, 1988).

In order to achieve the aim of learning, students require support from OLRs which should consider three key interrelated elements (Thorpe, 2001 & also cited in Ludwig-Hardman & Dunlap, 2003):

1. *Identity* is crucial for learners' interaction with OLRs as they have the identity.
2. *Individualization* helps learners to personalise their learning by means of the interaction in terms of learning needs and goals.
3. *Interpersonal interaction* provides flexible and 'open-ended form of interaction' (Thorpe, 2001).

The above-mentioned elements can all be seen as essential to the provision of scaffolding in a self-directed e-learning environment (Ludwig-Hardman & Dunlap, 2003). Moreover, Way & Rowe (2008) emphasise the need for scaffolding mechanisms such as feedback on interactions to feed into the pedagogical design of OLRs, and also, the scaffolding types (i.e. Sections 2.3.3. & 4.2.2.) provided in OLRs so that intended learning design targets are supported (Way & Rowe, 2008). The

instructional design is very vital to be practical of scaffolding in e-learning environments (Jumaat & Tasir, 2014) in order to foster self-regulated learning (Calabrese & Faiella, 2011).

Benefiting from the web applications, institutions in higher education of the universities create an online self-access learning environment and encourage their students to use them (see Section 1.2.2.). Likewise, the University of Southampton, where the study was conducted, aims to support its students by building an e-learning environment either in self-access centres or via VLEs (see ibid.), which 'offer new possibilities for an optimal autonomy-supportive environment' (Brooke, 2013). For instance, Blackboard supplies online materials and interactive functions to use any time and place not only in computers, laptops or tablets but also on mobile phones.

Along with providing the web-based services in VLEs, the University supports learners to take advantage of freely accessible web applications recommended in the university-based computers. Online dictionaries or web applications by well-known companies such as Oxford or Cambridge are included in these computers. They render interactive and authentic resources for them to use ubiquitously according to their choice and need. The module, 'Independent Study' encourages them to use online learning resources (for more, see Section 5.3.1.). Further, students can take the advantage of World Wide Web, where the information and resources for coursework are found (Kirkwood, 2007).

This study describes online learning resources as digital or Internet-based resources provided by the university as just explained, discovered on learners' own or suggested by learners' tutors or peers (see Section 1.2.3.). The next section will discuss methodological issues in relation to the theories.

4.4 Methodological Issues in Relation to the Theories

The aim of this study is to explore the relationship between scaffolding and learner autonomy in e-learning environments. Therefore, this section will discuss the methodological issues in relation to the concepts of scaffolding, learner autonomy and e-learning environments (see Figure 3).

In e-learning environments, scaffolding has a number of features to (see Sections 2.3.1.1., 2.3.2., 3.4. & 3.5.1.):

- help learners succeed in carrying out the task (McLoughlin, 2002),
- support them to accomplish the activities on their own (ibid.),
- bring them 'closer to a state of independent competence (ibid., p.155),
- promote learner autonomy (Linn, 1996; Luzón, 2006; McLoughlin & Marshall, 2000),
- increase learner awareness (Luzón, 2006),

- be designed considering learners' needs and learning styles (ibid.), 'learner involvement', 'learner reflection' and 'the immersion into the target community of practice' (Ribbe & Bezanilla, 2013, p.102),
- be gradually removed (Diaz-Rico & Weed, 2002; Kayi-Aydar, 2013; Roehler & Cantlon,1997), whereas Puntambekar & Hübscher (2005) argue that scaffolding's feature as fading is evolved and it can be permanent (for more, see Section 2.3.2.),
- enable them to 'choose their stroke and swim with guidance' (Toogood, 2005, p.8).

The above suggested features of scaffolding help to define scaffolding (see Section 2.3.) and to design the research (see Section 5.4.1.5.).

Also, researchers state that scaffolding can be provided in e-learning environments via (for the detail, see Sections 2.3.1.1., 2.3.2., 3.4. & 3.5.1.):

- hyperlinks (Bull et al., 1999; Chapelle, 1998; Weston & Barker, 2001)
- visual cueing (Bull et al., 1999),
- links to download for help and support (Bull et al., 1999; Chapelle, 1998; Weston & Barker, 2001),
- discussion forums in which teachers and students can interact (Bull et al., 1999),
- explanations and examples to solve the problem (Bull et al., 1999; Roehler & Cantlon, 1997),
- web concordances (Chang & Sun, 2009),
- 'clues' to solve the problems instead of direct routes to solutions, a practice which improves 'autonomous, self[-]initiating and self[-]regulating reflection …' (Brooke, 2013, p.576),
- self-scaffolding (Holton & Clarke, 2006),
- feedback (Lim et al., 2011)

This categorisation of scaffolding facilitates to consider the way and methods scaffolding is provided in e-learning environments (see Section 6.2.).

Several studies have explored scaffolding and learning in OLRs (Bull et al., 1999; Chang & Ho, 2009; Delen et al., 2014; Luckin, 2001; Marakas et al., 2000; Nielsen, 2012; Taipjutorus, 2014; Taipjutorus et al., 2012; Wood & Wood, 1996; see Section 3.5.) and concluded that learning is encouraged with the provision of different features of scaffolding in different e-learning environments. If scaffolding is provided with specific features in these environments, it may replace the tutor (Hannafin, et al., 1999; Wood & Wood, 1996).

Studies have also looked at learning in a software application (Adzharuddin & Ling, 2013; Coates, James & Baldwin, 2005; Itmazi & Megias, 2005; Luckin, 2001; Oliveria, Cunha & Nakayama, 2016; Wang, Whoo, Quek, Yang & Liu, 2012), especially scaffolding learning in programs or software (i.e. Cuthbert & Hoadley, 1998; Luckin, 2001; Oshima & Oshima, 1999; Scardamalia & Bereiter, 1996; Tiantong & Teemuangsai; 2013; see Section 3.5.). The *Ecolab* program, which was designed using concepts from Vygotsky's ZPD, was examined if computer provided appropriate assistance (Luckin, 2001; see Section 3.5.). The study finds out that the support is necessary and should be fadable (ibid.). The *CSILE* program, which provides cognitive scaffolding (see Sections 2.3.3. & 3.5. & Figure 11), was investigated to understand students' learning (i.e. Cuthbert and Hoadley, 1998; Hakkarainen, 2003; Oshima and Oshima, 1999; Oshima, Oshima, Murayama, Inagaki, Nakayama, Yamaguchi & Takenaka, 2002; see Section 3.5.). Research indicates that scaffolding has an impact on promoting learning via the interaction between students and the computer or peers (Cuthbert & Hoadley, 1998; Hakkarainen, 2013; Oshima & Oshima, 1999).

The above-mentioned studies are useful to look at scaffolding and scaffolding types in program-based e-learning environments. However, these studies do not identify different scaffolding types in a learning program or system. The present study draws from the study by Tiantong and Teemuangsai (2013) to describe scaffolding types in e-learning environments. Tiantong and Teemuangsai (2013) investigated four scaffolding types such as metacognitive scaffolding, conceptual scaffolding, and strategic scaffolding. Those scaffolding types were represented by 3-D animated cartoon experts in a learning management system (LMS), Moodle (moodle.org), where students could receive the instruction of the content, learning activities and lessons and scaffolding techniques. Based on students' evaluation of their learning in that environment, it shows that scaffolding is effective to assist students to develop their learning (ibid.). This study is also related to the present research as it draws on an e-learning environment, the EAP Toolkit in a LMS, Blackboard in order to explore scaffolding.

Studies have also addressed the effects of the support either controlled by the learner or the program in e-learning environments. The study by Chang and Ho (2009) indicates that students receiving learner-control web-based instruction performed better and felt more confident in their abilities to accomplish the task than those receiving program-control web-based instruction (for the detail, see Section 3.5.). Similarly, the study by Delen et al. (2014) finds out that scaffolding with the additional functions of 'note-taking, supplemental resources, and practice questions' in a designed online video learning environment increased learning performance and self-regulated learning more than the common functions of 'play, pause, and rewind/forward' (p.314; for the detail, see Section 3.5.). Although the study by Nielsen (2012) suggests that scaffolding is the core element to increase learner autonomy and motivation in e-learning environments, other studies

draw the attention to the issue of designing an e-learning environment which is controlled by the learner (Chang & Ho, 2009; Delen et al., 2014).

Other studies have considered the issue of scaffolding in collaborative e-learning environments (Chen & Law, 2015; Majid et al., 2012; Parker et al., 2013; for the detail, see Section 3.5.). These studies show that students' interaction with both computer and tutors or peers is necessary to develop self-regulated learning. However, Liaw et al. (2007; see Section 3.3.1.) integrates learner autonomy, online learning resources and scaffolding learning into a model of an effective self-directed e-learning environment (see Figure 8) where a live tutor is not present. For these methodological issues related to the theories, the EAP Toolkit and OLRs are taken as the context of this study to look at the relationship between scaffolding and learner autonomy in e-learning environments

4.5 Conclusion

This chapter has shed light on the context of the present study in terms of the EAP Toolkit and other OLRs. The EAP Toolkit has been dealt within its design with the LOs (see Section 4.2.). The discussion on scaffolding provided in the EAP Toolkit has shown that different scaffolders (see Section 4.2.1.) and scaffolding types (see Section 4.2.2.) can potentially be provided for learners of the EAP Toolkit. Further, methodological issues discussed in relation to the theories including both Sections 4.2. & 4.3. have indicated that research suggests that OLRs should be reinforced by supporting the interaction through the provision scaffolding and instructional design with different scaffolding types in order to increase learner autonomy. This chapter having detailed the context of the present study, the next chapter will deal with methodological underpinnings of this study.

Chapter 5: METHODOLOGY

5.1 Introduction

As explained in the previous chapters, the present study primarily looks at the relationship between scaffolding and learner autonomy in e-learning environments (for more, see Section 1.3.). In order to explore this relationship, the present chapter will outline the methodological underpinnings of the current research. It starts with a description of the research design that includes both qualitative and quantitative research methods which thus can be described as a mixed methods approach. It then explains the research procedures as well as the research setting and the participants in the research, and cross-refers to Chapter 4 which describes the applied online learning resources such as the EAP Toolkit (see Section 4.2.) and other online learning resources (OLRs) (see Section 4.3.). These resources are the primary focus of this research. This chapter also describes the research instruments which consist of questionnaires, interviews, observations of learners using online resources alongside the use of the "think-aloud protocol" and video and screen capture. The reliability and validity of this research is discussed, as well. The description and explanation of both the pilot and main studies are given under the data-collection section. The quantitative and qualitative data analysis methods are also described. Finally, the ethical issues, limitations and reflexivity of this study are described.

5.2 Research Design

The research design of this study is based on two research paradigms: a positivist paradigm and an interpretive one. A research paradigm is defined as 'a way of looking at or researching phenomena, a world view, a view of what counts as accepted or correct scientific knowledge…' (Cohen, Manion & Morrison, 2013, p.5). Positivists focus on scientific methods or approaches to research from an objective viewpoint (Mackenzie & Knipe, 2006) and observe that the situation is stable, quantifiable and independent from both researcher and instruments (Antwi & Hamza, 2015). Interpretivists endeavour 'to understand the subjective world of human experience' Cohen et al., 2013, p.17). In practice, a quantitative research approach uses positivist claims, collects data measuring attitudes and analyses data 'using statistical procedures and hypothesis testing' (Creswell, 2003, p.20). Conversely, a qualitative research approach uses interpretivist claims in order to observe participants' behaviours and interview them to investigate their opinions (ibid.).

The present research was designed using both qualitative and quantitative research methodologies, drawing on the interpretivist and positivist paradigms respectively. The results

from both methods were triangulated and consolidated - thus leading to a mixed methods approach which aims to give a clear answer to the research questions and achieve the research aims (see Section 1.3.). The research makes use of the belief that qualitative and quantitative methods should be integrated in order to achieve research aims and should not be regarded as opposing methods (Jick, 1979). The justification for this is given in the following sub-sections which deal with qualitative and quantitative methods and mixed methods research respectively.

5.2.1 Qualitative Research Methods

The qualitative research method is said to be more concerned with the participants' views than with prioritising the researchers' thoughts (Dörnyei, 2007). However, the interpretations made by the researchers cannot be excluded, so it can be inferred that qualitative research methods are not totally objective results (ibid.). Non-numerical data from interviews, conversations, field notes or observations and so on can be given as examples of this method. Not ignoring the presence of the participants, it can be stated that 'qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them' (Denzin & Lincoln, 2005, p. 3). Creswell (2009) summarises some characteristics of qualitative research methods as follows:

- A natural setting enables researchers to collect data by directly interacting with participants.
- Researchers can be 'key instrument[s]' while collecting '…data themselves through examining documents, observing behaviour or interviewing participants' (ibid., p.175).
- Multiple sources of data such as interviews, observations and documents can be gathered rather than one single source of data.
- Inductive data analysis can enable researchers to 'build their patterns, categories and themes from the bottom up' (ibid., p,.175).
- Participants' meanings about the problem or issue are the focus of the researcher but not the researchers' meanings.
- Emergent design can happen during the research process. For example, the research problems or the forms of data collection may change.
- Researchers might use theoretical lenses to look at their studies such as the concepts of culture, gender, race or class differences.
- Researchers interpret what they have seen, heard and understood. Their interpretations are connected to their background, history, context and prior understanding.
- Researchers can give a holistic picture of the problem or issue in the study by presenting multiple perspectives and discussing multiple factors involved in the study.

Although qualitative research methods have the potential to provide a great amount of data, they are lacking in terms of the generalizability, objectivity and replicability of the research (Kelle, 2006), because interpreted data from these methods is limited to the specified and defined participants and situations. Therefore, quantitative research methods can be conducted in order to overcome the limitations of qualitative research methods by producing 'factual, reliable outcome data' (Steckler, McLeroy, Goodman, Bird & McCormick, 1992, p.1). This will be explained in the next section.

5.2.2 Quantitative Research Methods

Unlike qualitative research methods, quantitative research methods are concerned with numerical data which looks at a group's action rather than with a consideration of an individual's action or with including the perceptions of the researcher. This increases the validity and reliability of the research in some points (Dörnyei, 2007; for reliability and validity, see Section 5.4.6). Surveys, questionnaires or tests can be given as an example of this method. The number of participants tends to be sizeable thus reducing the potential biases of both researchers and participants. Thus, this method can overcome a major challenge in research techniques in that results are more likely to be generalizable (ibid.).

However, quantitative research methods are often unable to provide more in-depth data or give the sort of understanding that qualitative methods offer (Steckler et al., 1992). Qualitative research methods can be integrated into the study along with complementary quantitative research methods, thus facilitating the interpretation and understanding of the data more reliably and with more validity (Zohrabi, 2013). It can be said that research design in the pedagogical field has progressed from using one type of research design to combining methods (Creswell, 2009) to achieve a better outcome (Brannen, 2005). This is discussed further in the section below.

5.2.3 Mixed Methods Research

The definition of mixed methods research can be given 'as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study' (Johnson and Onwuegbuzie, 2004, p. 17). Although there has not been any single agreed definition of mixed methods research (Morse, 2010), it can also be regarded as the combination of 'a complete method (i.e., the core component), plus one (or more) incomplete method(s) (i.e., the supplementary component that cannot be published alone, within a single study' (Morse & Niehaus, 2009, p.9 cited in ibid.).

Considering the definitions by the researchers given above, the present study makes use of a mixed methods research design where data from both qualitative and quantitative research methods are brought together (Creswell & Clark, 2007). Alongside the merging of datasets, the connection and embedding of them in the results is a useful way of presenting a study as an integrated complete description rather than as single unrelated datasets. This adds to the validity, reliability, objectivity and generalisability of the research. However, the role of the researcher in terms of their biases and thoughts during the process of interpreting data cannot be disregarded. Despite this limitation, the present study accepts Dörnyei's (2007) view that highlights the consistence of 'one's world view, research methodology, and nature of interpretation' (p.166). Therefore, the contribution of the researcher's interpretation of the findings cannot be disregarded but attempts at consistency must be enforced.

The present study uses mixed methods research and contains both qualitative research methods such as observation and interview and quantitative research methods such as pre- and post-activity questionnaires. Along with those methods, this study draws on one individual case study to investigate 'a contemporary phenomenon in depth within its real-life context' (Yin, 2009, p.18). The aim is to provide support for and further interpretation of, the analysis of data collected in observations and interviews.

A mixed methods research design helps the present study to give richer data and more accurate results rather than trusting data from just one research method. Remembering that 'researchers undertaking mixed methods techniques should seek to defend explicitly the approaches they are employing' (Onwuegbuzie & Teddlie, 2003, p.379); the current research also aims to clarify and examine findings with the help of different instruments (see Section 5.4.), thus providing more reliable and valid results (for reliability and validity, see Section 5.4.6). The next section deals with research procedures and the research setting and participants.

5.3 Research Procedures

As mentioned in Chapter 1 (see especially Section 1.2.2.), higher education institutions around the globe are now making use of computers in language learning and related fields without possibly considering the level of autonomy that learners need in order to be able to learn in this manner or their level of motivation in carrying out learning activities online (Benson, 2004; Lee, 2005; Murphy, 2006; O'Rourke & Schwienhorst, 2003). The University where this research was conducted offers computer-based support for students, particularly for undergraduate or postgraduate international students who are non-native speakers of English who can take online courses in order to prepare them before starting their main study for their future academic

learning.(University of Southampton, 2013 & see Figure 1). Before describing the particular research methods used in this study, this section will address the research setting and research participants and makes references to Chapter 4, where online language learning resources are described.

5.3.1 **Setting for the pilot and main study**

This section describes the setting for both the pilot study and the main study. The pilot study was conducted with students on an eleven-week (June to the middle of September) summer pre-sessional English for Academic Skills (EAS) course at the research location (for more detail, see Section 5.5.1.) in 2012. In order to enter this course, students need a minimum overall IELTS score of 5.5 in the English language. This course has similar characteristics to the year-round English for Academic Study (EAS) course at the same university where the participants who took part in the main study were registered. As the setting was similar, and the course objectives for both the pre-sessional and the EAS course were similar, piloting the study enabled the researcher to test and improve the intended instruments and research aims for the main study (for more detail, see Section 5.5.1.). The features of both studies are given here. However, it should be pointed out that although the features of both courses were similar, the EAS course that was the context for the main study is taken by students for either one semester (14 weeks) or two semesters (28 weeks), depending on the level of language competence at entry and this course accepts students with a minimum IELTS score of 4.5 (for more detail, see Section 5.5.2.), whereas the pre-sessional EAS course consists of nearly 28 hours of instructed study.

The pre-sessional EAS course and the year-round EAS course are for international and non-native speakers of English who are planning to study in the UK and, together with instructed study, includes independent learning tasks to be fulfilled outside the classroom. This enables students to improve their language learning in both academic-based and everyday use (University of Southampton, 2013). Students are required to attend the course and pass the end-of-course exams. After passing the pre-sessional EAS or the year-round EAS course, the students are expected to have the ability and capacity to follow their undergraduate or postgraduate studies. During the course there is a compulsory 'Independent Study' module which provides resources, materials and supervision with the aim that learners learn to take control of their own learning and to enable themselves to engage and interact with the activities proposed in the programme (ibid.). This module highlights the notion of learner choice, individualization of learning aims and learner autonomy in the learning process.

The main aim of the current study was to look at how learners work online rather than to investigate their classroom-based learning or learning using their interactions with online learning resources in the classroom, namely a blended approach. During the module, teaching or outside the classroom, the students could potentially benefit from the facilities in the computer labs or from online activities and tasks (see Figure 1) that were flexible and usable at the point of student requirement. One of the most essential online learning resources was the EAP Toolkit. As mentioned in Section 4.2., students were at times encouraged to further their learning and skills on their own by taking the provision of different scaffolders and scaffolding in Learning Objects (LOs) within the EAP Toolkit (see Section 6.2.1.). By logging into Blackboard, the students could easily access abundant interactive resources (eLanguages, 2012; see Section 4.2. and Figure 12). Similarly, students may wish to choose other online learning resources (OLRs) to improve their learning (see Section 4.3.). Students may be advised to use those OLRs during their supervision, classroom learning or peer interaction or on their own decision. They could also study on their own in Language Resource Centre (see Figure 1). Overall, both the EAP Toolkit and other OLRs aim to facilitate an e-learning setting where learners can take responsibility for their own learning by interacting with these resources through the practice of help or helpers, scaffolding or scaffolders (see Chapter 4).

Considering the aforementioned features of the course such as the encouragement to use OLRs including the EAP Toolkit in terms of the flexibility and availability of these resources in a bid to enhance the students' academic learning and skills, the present study has decided to carry out mixed methods research instruments in that programme; the EAS course at the University of Southampton in order to answer research questions (for research questions, see section 1.3.). The computer and online facilities offered by the university, especially online via Blackboard and in Language Resource Centre (see Section 1.2.2. and Figure 1), and the aims established by the programme to promote learner autonomy are regarded as an opportunity to achieve the purposes of this study (see Section 1.3.). By these means, learners or participants were expected to benefit from the opportunities to improve their skills dependent on their interaction with OLRs. The next section clarifies the participants' characteristics.

5.3.2 **Participants**

As indicated above, the reasons to choose participants for the present study were related to the characteristics of the programme in which they were instructed at the university. In both the pilot and main studies (for more detail, see Sections 5.5.1. & 5.5.2. respectively), the participants were encouraged to use not only the EAP Toolkit but also other OLRs as online self-access resources either in computer labs, the Language Resource Centre (see Figure 1 in Section 1.2.2.) or at home

(see Chapter 4). Furthermore, the participants had the flexibility and independence to select and carry out learning activities and tasks in e-learning environments. They were also intended to receive support in handling their own learning in those environments through the provision of scaffolding or scaffolders (see Section 6.2.1.). Thus, the students could possibly assess their own work and explain why they were performing the activities successfully or unsuccessfully and could potentially become autonomous learners.

In the pilot study, the participants were deliberately chosen as they would 'best help the researcher understand the research problem and the research question' (Creswell, 2003, p.185) thanks to the aforementioned conditions to which they were subjected (for more detail of the pilot study, see Section 5.5.1.). The participants of the pilot study were 9 female and 3 male students participating in the pre-sessional EAP course at the University of Southampton, coming from different nations such as China (8), Saudi Arabia (1), Thailand (2) and Hong Kong (1). Their age ranged from 22 to 25. Although their nationalities were different, their ages were similar. However, they had the same aim: they came to the U.K. to improve their language-learning and academic skills and to subsequently study the Master's degree in Management, Finance or Marketing. Before they started studying their degree, they attended this 11-week pre-sessional course as their overall IELTS score was between 5.5 and 6.0. This means that they were required to improve their academic ability before their prospective study, which helped the present research to select those students that needed to take part in it.

After the reflections on the pilot study which confirmed that the choice of the participants was right (see Section 5.5.1.), the main study was shaped in terms of research instruments and then performed (see Section 5.5.2.). 35 participants filled out the questionnaires. Table 3 indicates the background information of the participants according to the groups named as A, B, D, R, S and W, the first three of which were Semester 1 students and not streamed but assorted with regard to nationalities. However, R consisted of mixed students from Semesters 1 & 2. The last two groups were Semester 2 students. However, the questionnaires were distributed to all of the students. As some of them were absent in either the pre-questionnaire or post-questionnaire period, or did not wish to attend, they were excluded from the study in order to compare the results of pre- and post-questionnaires appropriately. In total, there were 20 students in Semester 1 and there were 15 students in Semester 2.

Table 3: The background information of the participants in the main study according to the groups

Group	Gender		Semester	Total Number
	Female	Male		
A	2	5	1	7
B	1	7	1	8
D	0	3	1	3
R	4	2	1(2), 2(4)	6
S	3	3	2	6
W	3	2	2	5
Total	13	22	1(20), 2(15)	35

Appendix C gives the detailed information about the participants. For the pre-questionnaire, they were named as 1, 2, 3… 35, whilst identified as 36, 37, 38… 70 for post-questionnaires in the same order. In total, there are 13 female students and 22 male students whose nationalities ranged from Iraqi (Numbers (N): 15), Chinese (N: 9), Saudi (N: 6), Thai (N: 2), Jordanian (N: 1), and Yemen (N: 1) to Libyan (N: 1). Their ages varied from 20 to 45. There were 28 Masters, 5 undergraduate and 2 PhD prospective students whose subjects were included within Social Science, Engineering or Arts and Humanities.

Above all, the use of participants' email in the questionnaire enabled the researcher to contact them for further data collection. An email was sent about their participation in further data collection for interview and observation was sent to 35 participants, 10 of whom were voluntarily both interviewed and observed while performing the activities in the EAP Toolkit. As illustrated in Appendix D, the volunteer participants labelled were observed and interviewed three times, starting from February to the end of May in 2013. 5 female and 5 male participants in the interview and observation had attended the course in different groups since either Semester 1 or 2 and had various subjects including Geography, Engineering, Statistics or Linguistics (for more, see Appendix D). A participant, Tase was absent for the last observation and interview, but she was not excluded from the study as the time interval between the first and second round seemed to be long enough to interpret and analyse data.

By attending the compulsory Independent Study module in the programme, participants had the potential and opportunity to be enhanced and supported in using both the EAP Toolkit and other OLRs (for more detail, see Chapter 4). This was achieved either by their tutors or on their own after reaching the requisite level of knowledge and ability to handle their own learning. In other words, in order to achieve their aims for improving their learning and academic skills, the students

potentially had the advantage of benefiting further from this resource; the EAP Toolkit delivered via Blackboard and designed especially for international students, as well as other OLRs accessed in the Language Resource Centre (see Figure 1) or promoted by tutors, peers or through their own decision. As they would study an undergraduate or postgraduate degree in the next year, they were expected to be aware of how crucial it was to take control of their learning within the British education system. As a result of their potential practice in both the EAP Toolkit and other OLRs and their common aim of enhancing their learning and academic skills for further study, they were chosen to take part in the current research.

Overall, the setting was chosen deliberately as it fulfilled the aims of the present study in terms of providing OLRs and a self-access centre and of encouraging independent learning. Benefiting from this, the study selected the participants being instructed within that setting. As given in detail above, the majority of the participants came from the same educational and cultural backgrounds, either East Asian or Middle Eastern, especially those used in observations and interviews. Furthermore, it is noted that they had the same goal to improve their learning for their further studies by making use of online learning resources, as they attended the same programme - the EAS course. By these means, the present study intends to explore participants' learning and experience in terms of their interaction with OLRs and methods of adjusting their learning in e-learning environments. In order to achieve its intention, this study was designed within a mixed methods research framework (see section 5.2.3.) and includes different instruments such as questionnaire-setting, observation and interview. The reliability and validity of the current study instruments are all explained in the next section.

5.4 Instruments

Three instruments, namely questionnaire, digital screen capturing with video along with the think-aloud protocol and interview were chosen to answer research questions. Figure 19 shows which instruments aim to answer which research question. The following sub-sections will deal with each instrument and will show how they attempt to answer the research questions.

Figure 19: The link between research questions and instruments

5.4.1 Questionnaire

As mentioned in Section 5.2., the present study used both qualitative and quantitative research methods. As a quantitative research instrument, a questionnaire is efficient in collecting a great amount of information from a group of people, reducing the researcher's bias and increasing the reliability of the findings (Dörnyei, 2003b). Burgess (2001) suggests a model for the design of a questionnaire by separating it into three parts: a) 'determine the questions to be asked', b) 'select the question type for each question and specify the wording', c) 'design the question sequence

and overall questionnaire layout' (p.6), while Kelley and her colleagues (Kelley, Clark, Brown and Sitzia, 2003) recommend numbering and grouping the questionnaire by subject.

The present study used a questionnaire (see Appendix E) in order to ascertain the perceptions of learning online, especially in scaffolded e-learning environments, of a group of learners in a research setting. It consists of five sections (for details, see the following sub-sections) which include overall 172 items that aim to answer research questions (see Figure 19), two of which were adapted from Watson's (2010) and Phillipson and Phillipson's (2010) studies (see Sections 5.4.1.2. & 5.4.1.3.). The first section (Background Information) asks questions to find out the background information about each participant. The second section (Rating the EAP Toolkit and Online Language Learning Resources) contains questions which ask how participants rate the EAP Toolkit and online language learning resources and are designed to understand the actions that learners carry out when learning online and the ways that learners perceive their own learning online, especially in scaffolded e-learning environments (see RQs 1 & 2 in Section 1.3.). The third and fourth sections (Attribution Items and Self-efficacy Items, respectively) are made up of questions related to two related concepts of learner autonomy such as attribution theory and self-efficacy in order to explore the students' autonomous learning; the ways in which learners exercise their autonomy, especially in scaffolded e-learning environments (see RQ3 in Section 1.3.). The last section (Learner Autonomy and Support Scale Items) includes questions designed to investigate the relationship between scaffolding and learner autonomy (RQ3 in Section 1.3.). These items embody a mixture of different types of questions such as factual, yes/no, multiple choice, ranking, open-ended, closed and scaled questions (Burgess, 2001; Houghton, 2014) in order to ascertain the consistency of the study. However, there was not enough data from open-ended and closed questions in the questionnaire (i.e. Items 20, 21, 29, 30, 31 & 32 in Section 2; the last items 1, 2, 3, 4, 5 & 6 in Section 5) to analyse, as participants did not give answers to those items. Therefore, they were not analysed and discussed in the results chapters in Chapters 6 & 7, but explained in the subsequent sections of the questionnaire section.

The questionnaire was first trialled in the pilot study in order to increase the validity and reliability of the study (Dörnyei, 2007; for more information on the pilot study, see Section 5.5.1.). The pilot study conducted the questionnaire with 12 students in the pre-sessional course (for details about the participants, see Section 5.3.2.). It took 30 minutes for the students to fill it out. The researcher analysed the questionnaire used in the pilot study (for more detail, see Section 5.5.1.). Based on analysis of its data, the researcher made four amendments to the questionnaire used in the main study. Firstly, pre- and post-questionnaires were conducted in the main study (for details, see Section 5.5.2.) since the result from the trialled questionnaire in the pilot study found out that a one-time questionnaire was not enough to observe learners' perceptions of learning in

e-learning environments over time. Secondly, questions were added to the questionnaire used in the main study (see Section 5.4.1.2.) to understand the students' perceptions of learning in online learning resources (OLRs) other than the EAP Toolkit, whereas questions were asked about their perceptions of learning via the blog in the trialled questionnaire. In other words, questions about the blog were replaced with questions about OLRs as the use of the blog was discontinued as a part of the course during the main study, and so excluded from this study (see also Section 5.5.1.). Thirdly, two more close-ended questions about the use of OLRs were included in the main study to enable participants to describe their learning and the feedback they received from OLRs because the study required more information about their perceptions of learning with OLRs. Fourthly, a 'neutral' scale in a 5-point Likert scale used in Sections 2, 3, 4 and 5 to rate the questions during the trialled questionnaire was replaced with 'not applicable' in the questionnaire for the main study because the items in the questionnaire do not require a 'neutral' position. In order to avoid any potential problem arising from excluding 'neutral' from the questionnaire such as the participants' omitting to respond, a 'not applicable' option was included in the main study as suggested by Frary (2013). Except for those four amendments, all of the questions in the trialled questionnaire were the same as the ones in pre- and post-questionnaires. The following subsections will explain each section of the questionnaire.

5.4.1.1 Section 1 of the Questionnaire: Background Information

In Section 1, which consists of 17 items, useful background information was collected about the participants' demographic characteristics (gender, age, ethnicity, subject and level of study and English), the length of their learning English, length of stay in the UK and their use of the EAP Toolkit (see Items from 1 to 12 in Section 1 in Appendix E) in order to contextualise the data to help to answer all the research questions (see Section 1.3.).

Ranking questions (i.e. extremely good, good, neither, bad, extremely bad) were included to elicit the students' perceptions of their computer skills for academic purposes and their computer skills in general in Items 13 & 14 in Section 1 (see Appendix E). Those two items aimed to contribute to the second research question of the present study - how they perceive their learning online. Information was also gathered about how many hours per day they used computer and online applications (see Items 15 & 16 in Section 1 in Appendix E) in order to receive information about their previous experience with and learning of online learning resources (OLRs). Those items aimed to help answer the first research question of the present study, namely what actions they carry out when learning online.

Item 17 in this section were about how confident they felt about using the computer. Participants were expected to answer this item by ranking from 1, "very unconfident", to 5, "very confident".

This item was added in order to understand their computer self-efficacy (see Section 3.2.4.2.; Kuo 2010) taking into consideration previous studies on computer self-efficacy ('Davis, 1989; Hedman & Sharafi, 2004; Papasratorn & Wangpipatwong, 2006; Shelton, Turns, & Wagner, 2002; Torkzadeh, Chang, & Demirhan, 2006; Torkzadeh & Van Dyke, 2002', cited in Kuo, 2010). As stated by Lim (2001), learners with higher computer self-efficacy seem more confident in learning (for more, see Section 3.2.4.2). Therefore, this item was intended to make a contribution to answering the third research question, (especially its second sub-question) of the present study; what learners' confidence is about their own learning.

Data from the items in this section has the purpose of contributing to all the research questions in the present study as it gives information about participants':

- demographic characteristics (Items 1-10),
- their use and views on learning in academic course and online (Items 11-16) and
- confidence (Item 17) in using a computer.

However, the items in this section were not enough to answer all the research questions. Therefore, more sections were added to the questionnaire, and the following sections will deal with the sections in the rest of the questionnaire.

5.4.1.2 Section 2 of the Questionnaire: Rating the EAP Toolkit and Online Language Learning Resources

The second section of the questionnaire titled "Rating the EAP Toolkit and Online Language Learning Resources" asked participants to give their opinions about their learning with the Toolkit and other online learning resources in order to ascertain the actions learners carry out when learning online and the way they perceive their own learning online, especially in scaffolded e-learning environments. With this, the section aimed to answer the first and second research questions (see Figure 19):

> *RQ1) What actions do learners carry out when learning online, especially in scaffolded e-learning environments?*
>
> *RQ2) How do learners perceive their own learning online, especially in scaffolded e-learning environments?*

The section was divided into two parts. The first part of the section consisted of 21 items and was with regard to the EAP Toolkit. The items in this part were drawn on and adapted from the study by Watson (2010), which is considered a major research in the same field. She prepared a questionnaire in order to see how users in the pre-sessional courses evaluated the EAP Toolkit at

regular intervals, and compared their responses in 2004, 2005 and 2008. Likewise, the present study uses her questionnaire in order to investigate participants' actions and perceptions of their own learning in the EAP Toolkit. In Item 1, a yes/no question was asked in order to ascertain whether participants already used the EAP Toolkit. If so, they continued to answering the next questions. If not, they moved to Item 22 to discover if they used online learning resources (OLRs) other than the EAP Toolkit. Items 2, 3, 4 & 5 were included to understand the students' use of the EAP Toolkit; the learning items and folder of online materials in the EAP Toolkit in order to contribute an answer to the first research question of the study. Items from 6 to 14 looked at how the students rated it (i.e. from 1 "not useful" to 5 "very useful"). Furthermore, scaled questions (i.e. a Likert scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) in items from 15 to 19 helped to understand how the students evaluated the EAP Toolkit because those types of questions are very easy for participants to respond to (Glasow, 2005). Items 20 and 21, including open-ended and closed questions, asked the students to write of their thinking about the Toolkit, if there was any, in order to enable them to express their opinions. Those items from 6 to 21 aimed to contribute to the second research question; learners' perception of their own learning.

The second part of the same section was similarly prepared, and related questions including 11 items were asked about participants' learning in online learning resources (OLRs) other than the EAP Toolkit. It intended to offer findings about the students' use of OLRs (i.e. items 22, 23, 24 & 26) in order to answer the first research question, and how students rated these OLRs (i.e. items 25, 27 & 28) in order to respond to the second research question. Additionally, open-ended and closed questions were included to allow the participants to express their ideas about OLRs.

To sum up, this section aimed to answer:

- the first research question using the inclusion of Items 2, 3, 4, 5, 22, 23, 24 & 26 about participants' perceptions about their actions while learning online, and
- the second research question using the inclusion of Items from 6 to 21 and Items 25, 27 & 28 about participants' perceptions of their own learning online, especially in scaffolded e-learning environments.

Data from this section also aimed to contribute to the focus of the current study, namely the relationship between scaffolding and learner autonomy in e-learning environments (see RQ 4 in Section 1.3.). However, this section was not enough to deduce that focus alone, so the following sections will discuss the rest of the questionnaire.

5.4.1.3 Section 3 of the Questionnaire: Attribution Items

The third section, Attribution Items (see Appendix E), which contains questions about participants' attributions to success and failure, has 20 items. This section was intended to answer the third research question, and in particular its first sub-question:

> *RQ3) In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments?*
>
> *RQ3.1) To what do learners attribute their success and failure, especially in scaffolded learning environments?*

Since the way in which a learner perceives their learning has an effect on their handling of their future tasks (Banks & Woolfson, 2008 & for more, see Section 3.2.4.1.), the causes for students' success and failures were asked in relation to their perceptions of their exercise of autonomy (RQ3). Therefore, attribution statements in this section were adapted from a study by Phillipson and Phillipson (2010). They implemented the Parents' Attributions Scale designed to describe parents' views of their children's learning. The format of their questionnaire was useful for the present study because the statements in the scale 'are representative of causes to effort, ability, strategy use and luck,' (p.627 in ibid.) on the participants' success and failure. Also, the Parents' Attributions Scale was conducted by at least two different studies (i.e. Chan and Moore, 1997 cited in ibid. and Phillipson and Phillipson, 2010) and found reliable and valid in those studies.

The current study adapted the scale like that: The participants were asked to give responses to what they attributed their success and failure. They were the ones to rate the items about their attributions of their own online learning, especially in scaffolded e-learning environments, by using a 5-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, 5=Not Applicable). They were asked about their perceptions of their attributions while learning with the EAP Toolkit, OLRs and in the classroom. 16 of 20 scaled items were about their attributions towards success due to luck, ability, effort and strategy and failure due to lack of luck, ability, effort and strategy while they were using the EAP Toolkit and OLRs.

For example, the item for the attribution of luck in success in learning in the EAP Toolkit was provided such as in:

> '*If I complete the activities in the English for Academic Purposes (EAP) Toolkit well, it is likely because I am just lucky*.'

According to their agreement with this item, they rated it in the above-mentioned Likert scale. The similar item to the above item used OLRs instead of the EAP Toolkit. It asked about understanding their attributions for success and failure while learning with other OLRs.

Table 4: Dimensional classification for causal attributions applied in the present research and adapted from Weiner's Attribution Model (1974)

Attribution	Locus	Stable	Controllability
Luck	External	Unstable	Uncontrollable
Ability	Internal	Stable	Uncontrollable
Effort	Internal	Unstable	Controllable
Strategy	Internal	Unstable	Controllable
Teacher influence in class	External	Stable	Uncontrollable

In the case of the current study, the causal attributions made by the participants for their successes and failures are exemplified in Table 4. The table was adapted from Weiner's Attribution Model (Weiner, 1974). According to Weiner (1985), 'the perceived causes of success and failure share three common properties: locus, stability and controllability' (p.548), with possible causal structures such as luck, ability, effort and strategy. As shown in the table, these might be internal and external attributions: attributions for luck are external, whereas attributions for ability, effort and strategy are internal. Along with those four causal attributions, Hawi (2010) has found out that "appropriate teaching method" is an attributed cause stated by students (for more, see Section 3.5.). Considering this, the present study included teacher influence in the classroom as a fifth causal attribution. The last four scaled statements in the section asked participants' attributions towards success with learning on their own using the EAP Toolkit and OLRs due to learning in the classroom.

Attribution statements in this section are intended to help the present study look at whether students made internal or external attributions to their successes and failures. Considering the studies by Gobel et al. (2013) and Marakas et al. (2000; for more, see Section 3.5.), both of which discovered that learners are more autonomous when they make internal attributions, the present study aimed to see which attributions learners make. Based on participants' answers to the items in this section, the present study examined whether they made internal or external attributions to their learning, which leads it to subsequently exploring their autonomous learning.

5.4.1.4 Section 4 of the Questionnaire: Self-efficacy Items

Similarly, the fourth section sought the answer for the third research question, namely in which ways learners exercise their autonomy, especially in scaffolded e-learning environments, particularly, its second sub-question:

> *RQ3.2) What is learners' confidence about their own learning, especially in scaffolded e-learning environments?*

As a related concept of learner autonomy (see Figure 6), the self-efficacy of the participants was investigated. 27 scaled statements were rated by using the same Likert scale used in the previous section. They were prepared and drawn up using the readings and papers in the literature review (Aliegro, 2006; Bandura, 1986, 1995; Chang & Ho, 2009; Kuo, 2010; Taipjutorus et al., 2012; Wolters et al. 2013; for more, see Section 3.2.4.2.). The researcher discussed the prepared statements with her supervisor and peers who have experience in this field and included the questions on which they agreed. The prepared section asked about the students' confidence and beliefs in their learning using both OLRs (including the EAP Toolkit) and in class. Taking into account the relationship between learners' confidence and self-attributions to their success and failure (Gobel et al., 2013) the present study explores both concepts and compares the results to discern learners' exercise of their autonomy (for discussion, see 8.3.).

5.4.1.5 Section 5 of the Questionnaire: Learner Autonomy and Support Scale Items

The last section, Learner Autonomy and Support Scale Items asked participants to rate statements about how OLRs helped their independent learning and learning *per se* in order to answer the last research question:

> *RQ4) What is the relationship between scaffolding and learner autonomy in e-learning environments?*

This section has 11 scaled items and uses the same Likert scale as the last two sections of the questionnaire. 6 of the questions asked students how OLRs other than the EAP Toolkit helped them and their independent learning. Likewise, 5 of the questions asked the students how OLRs supported them and their learning. All of the items were organised and prepared according to the literature review and the definitions of the theoretical framework (see Sections 2.3., 3.2. & 3.4.). For instance, based on McLoughlin's (2002) summary of effective scaffolding, the items were prepared in a similar manner, in which it was asked whether using online learning resources:

- helps me to become a more independent learner
- gives me a better opportunity to learn in my own way (etc. see Section 5 in Appendix E)

Similarly, the researcher discussed and agreed with the supervisor and experienced peers on the items. Agreed items were included in this section.

Even though data from the questionnaire tended to respond to all of the research questions, richer information was required in order to explore the research questions and acquire more reliable and valid results. Taking these into consideration, the think-aloud protocol method, digital screen recording and interviewing were carried out. The next sections will explore other instruments used in the present study.

5.4.2 Direct Observation

Direct observation of participants' activities is a useful tool for evaluating their use of digital resources (Imler & Eichelberger, 2011). During direct observation in e-learning environments, the researcher usually sits to the site or behind the participants and notes their actions (ibid.). In investigating the use of the computer, studies use a digital screen capturing tool along with direct observation (Thomsett-Scott, 2004). Considering this, the present study trialled direct observation in the pilot study (see Section 5.5.1.) in order to see whether it was an effective tool for the researchers to record the actions the students perform when learning and the ways in which they exercise their autonomy in a scaffolded e-learning environment. However, the trial discovered that direct observation is not suitable for the present study because of its drawbacks. For example, it is not easy to take note of the participants' action such as their mouse-click or movements on the web page. Also, noting their action distorts participants' performance of the activities (Imler & Eichelberger, 2011). Therefore, it was decided to use digital screen capturing software in the main study in order to avoid some of the disadvantages of direct observation and to record the students' actions and movements (for detail, see the next section). The researcher was present and sat behind the participants in an unsighted location during the data collection in order to ensure that the participants were performing the tasks, as resulted from the pilot study. Shortly, the present study observed participants via the digital screen capturing software instead of via the researcher noting them at the back of the room, so the next section discusses this.

5.4.3 The Digital Screen Capturing with Video

There has recently been a wide increase in the capturing of data through screen recording with video (i.e. Bhatt & de Roock, 2014; Heath & Hindmarsh, 2002; Heath, Hindmarsh & Luff, 2010; Imler & Eichelberger, 2011; Mroz, 2014; Paulus, Lester & Dempster, 2013; Price, Jewitt & Brown, 2013; Seror, 2013; van Waes, Leijten & Neuwirth, 2006; Yildiz & Keengwe, 2016). Digital screen capturing with video is beneficial for recording and videotaping the actions of participants,

reviewing those actions more than once and reducing the researcher's bias by giving a chance for other reviewers to watch the data in the video repeatedly (Heath et al. 2010; Imler & Eichelberger, 2011). Despite the advantages of digital screen capturing, it has some drawbacks (ibid.). It might provide unclear and inconsistent capture of the computer screen because of the quality of the video. Participants can be affected negatively due to being recorded and observed. Their anonymity cannot be kept. This is not preferable for any research which needs to consider the anonymity of the participants (ibid.).

Weighing up the advantages of the digital screen capturing with video against the disadvantages of direct observation, it was decided to use this method in the present study. The present study used this research instrument in order to observe the actions, perceptions and learner autonomy of the participants. As suggested by Imler & Eichelberger (2011), the study intends to overcome the drawbacks of this method by 'capturing the actions of the research participant from inside of the computer' (p.447). Therefore, it draws on Camtasia to capture both the entire computer screen and audio into an AVI file (Camtasia, 2016), and hence provide data for exploring which actions the participants enact when learning, in which ways they exercise their autonomy and the ways in which they perceive their own learning in a scaffolded e-learning environment. The researcher can subsequently examine the relationship between scaffolding and learner autonomy in e-learning environments (see RQs in Section 1.3.). A number of digital screen capturing programmes such as Adobe Captivate 9 (Adobe Captivate 9, 2016; Imler & Eichelberger, 2011), Panopto (Barak, 2012; Cash, Hicks, Culley & Salustri, 2011; Santos, Gomes & Mendes, 2011), Snapz Pro (Imler & Eichelberger, 2011), Screencast-O-matic (Seror, 2013), Blueberry Flashback Recorder (Bhatt & de Roock, 2014; Enríquez Raído, 2014), iShowU (Park & Kinginger, 2010) were considered, but, following a review of the options, Camtasia was trialled because of its easiness of use and efficiency in recording the data (Lauffer, 2002) onto PCs (Silva, 2012), and the features given below. The next discussion firstly considers the functions of Camtasia and then the use of Camtasia in the present study.

The image in Figure 20 below shows the recording toolbar of Camtasia and the functions of Camtasia used in this research:

Figure 20: Screen Capture and Recording Software, Camtasia 1 taken from Camtasia Studio Online Help (n.d., p.11)

1. ‘Choose area to record’ (1 in Figure 20; Camtasia Studio Online Help, n.d. p.11): Recording can be acquired using three different methods in Camtasia. *Full screen recording* is the default which allows the researcher to record the entire screen, namely, large, maximised applications or all activity on the desktop or laptop, as displayed in Figure 21 below. When Camtasia Recorder is opened and, first, the Full Screen button (1 above in Figure 20) and then Record button (4 above in Figure 20) are clicked, it starts recording the entire screen as seen in Figure 21.

Figure 21: A Screenshot of Full Screen Recording on the desktop in Camtasia (ibid., p.12)

Custom recording allows the researcher to ‘record using preset dimensions based on Widescreen or Standard aspect ratios’ (ibid., p.13). *Recording a region, area or window* allows the researcher to ‘record a specific area of the screen, a window, or an application’ (ibid., p.15).

2. ‘Record from a Web Camera’ (2 in Figure 20; ibid. p.11): Camtasia allows the researcher to record camera video such as a video of the participant or speaker with the screen recording. Clicking on the Webcam button (2 in Figure 20) enables webcam recording. Adding the camera recording to the picture-in-picture (PIP) track enables a person to embed it as PIP clip or include it ‘as a side-by-side video clip’ (p.24). The recorded person or speaker can see the live preview of the Web camera as displayed in Figure 22 below when they hover their cursor over the preview thumbnail.

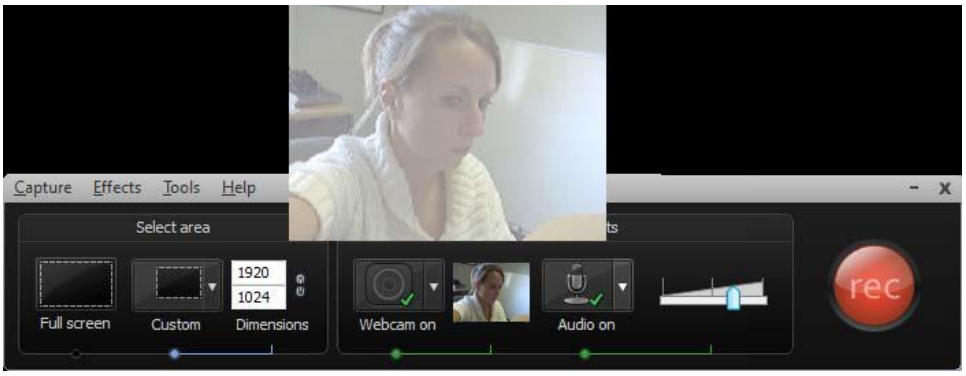


Figure 22: A Screenshot of a Live Preview of the Web Camera in Camtasia (ibid., p.24)

3. ‘Record Audio’ (3 in Figure 20; ibid., p.11): The Microphone Audio and System Audio are recorded by default.
4. ‘Click the Record button to begin’ (4 in Figure 20; ibid., p.11): After adjusting the screen recording options and functions of Camtasia as mentioned above, the researcher clicks the Record button to start recording. Camtasia allows the researcher to customise which toolbars appear on the toolbar during recording. The toolbar minimises to the system tray when the full screen is recorded. To access the recording options, the tray icon is clicked. To hide it again, the tray icon is clicked. The following image in Figure 23 shows three different states of the Recorder visible in the task bar: ‘Armed and ready to record, recording is paused, and currently recording’, respectively (ibid., p.28). While recording, it inserts elapsed time (i.e. the amount of time passed since the recording has started) into the recording.

Figure 23: Three Screenshots of the Different States of the Recorder (ibid., p.28)

5. ‘Click the Stop button’ (ibid., p.11): Once the Stop button has been clicked, the preview window appears. This enables the researcher to preview any audio, camera video and recording, and to save the video file in a CAMREC format or the audio file in an AVI format. Camtasia also has the advanced features of adding callouts ‘graphics that appear on top of a video to draw viewers’ attention to important objects or processes in a video’ [ibid., p.131) and video effects such as title clips, zooming and panning key frames to improve viewing and the focus on specific actions (ibid.)

As mentioned earlier, Camtasia provides advanced editing features for zooming in on a screen area and on interactive elements such as callouts or markers, whereas Panopto enables simple editing features such as adding or removing previous recorded segments (Panopto vs. Camtasia, n.d.). Although Adobe Captivate is more interactive than Camtasia, the latter is useful for live streaming video and is not as difficult to enable as the former (Albrecht, 2013). Snapz Pro and iShowU are Mac-based software (Imler & Eichelberger, 2011), while Camtasia is software for both Windows and Mac. Recordings in a free trial of Screen-O-Matic are limited to 15 minutes (Cornock, 2015) and Blueberry Flashback Recorder does not provide full capabilities in its free trial (Kamtiyono, 2014), whereas Camtasia does not limit those.

Considering all the above-mentioned features of Camtasia, the present study used this program to conduct the research. The free trial of Camtasia enabled the researcher to practise and understand how to use the program for data collection. After confirming the ease and effectiveness of the program with the free trail of Camtasia, the researcher decided to use Camtasia Studio Version 7, which was installed on a computer in the University's Language Resource Centre and on the laptop of the researcher. Camtasia was used to capture participants in the present study while they were carrying out the activities within the EAP Toolkit for 15 minutes (for data collection, see Section 5.5.). The following procedures were taken in order to conduct the current research while using Camtasia (Katalin, 2000; Van Someren et al., 1994; Young, 2005; for more information about the procedures, see Section 5.4.4.):

1. A comfortable setting was arranged by providing a quiet room in the University for the participants (Camtasia Studio Online Help, n.d.).
2. An instruction was given to the participants including information about the nature of Camtasia (for detail, see Section 5.4.4).
3. A demonstration of how to operate the program was made to the participants. During the demonstration, the recording toolbar (see Figure 20) was shown and participants were told that it records their entire screen, face and audio.
4. The researcher started Camtasia, by clicking on the record button, in order to prevent time loss as participants were not used to initiating the recording. The recording toolbar (see Figure 20) was then minimised with the aim of reducing that disadvantage of Camtasia not distracting them from performing the activities. The participants could see the minimised icon of the recording toolbar. If they hovered their cursor over the toolbar, they could see an image with the webcam on, as seen in Figure 23.
5. When needed (i.e. when the study was performed in a large room), the participant used a noise-cancelling headphone as a USB microphone in order to experience clearer and better sound (ibid.).
6. The researcher told the participant to stop the activities after performing the activities for 15 minutes, and then clicked the stop button and saved the video file of the participant.

In the present study, Camtasia recorded all the following activities in one camera video file such as:

- the full screen of the laptop or desktop including the cursor that the participant used and movements they made as exemplified in Figure 21,
- the webcam that recorded the participant with the screen recording function as exemplified in Figure 22,

- the audio of the participant including the sound of mouse clicks and the think-aloud protocol verbalisations, and
- elapsed time as explained in Figure 23.

The saved video file of each participant in the current study appears as exemplified in Figure 24 below. This figure has the captured image from the recorded video file of one participant, whose face is blurred in the bottom right side of the image, as the anonymity of the participants should be considered (Qian & Scott, 2007). It shows an image of both the full screen of the monitor and the participant recorded from a webcam. It gives information about the cursor data, the location and pattern of mouse movements and the participant's paralinguistic behaviour, such as gestures and mimics, and nonverbal behaviour obtained from his face.

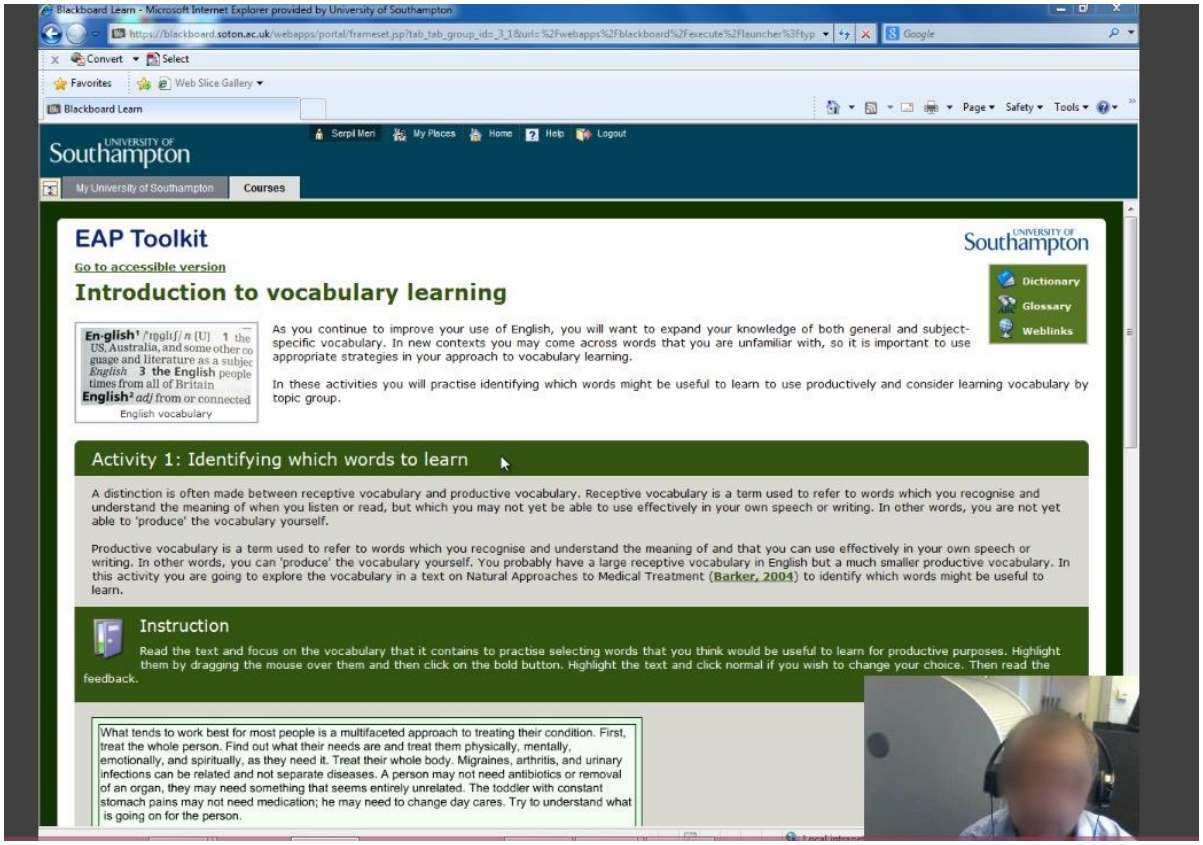


Figure 24: A Screenshot of One Participant Performing the Activity in the Present Study and Being Recorded via Camtasia

Along with the use of Camtasia for data collection, the present study used it to:

- analyse participants' activities and paralinguistic features such as gestures, facial expressions, body language and tone and pitch of voice (i.e. Participants' activities and think-aloud verbalisations were transcribed by playing and viewing the recorded video files in Camtasia.; for data analysis, see Section 5.6.2.),
- review the video files with other reviewers to reduce the researcher's bias (for intercoder reliability, see Sections 5.4.6. & 5.6.2.) and

- conduct the stimulated recall in the pilot study; however, it was excluded in the main study (see Section 5.5.1.).

As discussed above, Camtasia is useful in digital screen capturing with video. It provides a convenient and easy way to record and analyse participants' activities. It was chosen in the present study to explore learners' actions, perceptions of learning online and exercise of autonomy, especially in scaffolded e-learning environments, by capturing their activities and voice. In order to have a deeper understanding of their learning online, the think-aloud protocol method was implemented as discussed in the next section.

5.4.4 The Think-aloud Protocol Method

One of the purposes of recording the participants' activities online (see Section 5.4.3) was to use the think-aloud protocol method as this can permit in-depth analysis of the learning process (Blummer & Kenton, 2014). Using think-aloud techniques can provide 'rich verbal data' about the thinking and reasoning processes that occur whilst individuals are engaged in an activity (Fonteyn, Kuipers & Grobe, 1993, p.430). Participants are asked to voice what they are thinking at each stage of the activity they are performing (Charters, 2003; Van Someren, Barnard & Sandberg, 1994). This method aims to enable the researcher to have 'insight into processes of working memory' of the subjects in question (Charters, 2003, p.70). This has been a preferred data collection method for research into human-computer interactions (Cotton & Gresty, 2006) and for evaluating test design (Johnstone, Bottsford-Miller & Thompson, 2006). The underlying basis of this method is that participants are asked to complete a set task and to verbalise their thoughts or opinions concurrently with carrying out the task, or retrospectively after completing the task (which is also called the stimulated retrospective think-aloud method (Guan, Lee, Cuddihy & Ramey, 2006)) in order to understand the interaction and cognitive processes involved and to test any artefacts such as instructional programs, software, websites or interfaces (Van Den Haak, De Jong & Jan Schellens, 2003).

Research suggests that there are both advantages and disadvantages to obtaining data from the think-aloud protocol research method. On the positive side, it is suggested that this method has the advantages of:

- providing more direct data about the way that participants go through any information or problem-solving task and about their ongoing thinking processes (Van Someren et al., 1994),
- giving a better understanding of 'the levels, steps, units of processing, the role of the interaction of the source and target language, the amount of proceduralization, the origin

and course of search processes, and the times used for these processes' (Dechert and Sandrock, 1986, p.115)

- contributing to the validity of any research since it mirrors directly the thoughts in participants' short-term memory (Ericsson & Simon, 1993), in which verbalisations may mostly be separate from any interpretation of the participants (ibid.).
- It can be said that the data obtained from the articulation of the participants' actual use of the 'artefact', (or an online activity in the case of the current research,) rather than from just the articulation of their perspectives, increases the validity of the research (Van Den Haak et al. 2003).

Conversely, the think-aloud protocol method has a number of critics. For example, there may be problems due to the incoherence of participants' utterances (Ericsson & Simon, 1993) and difficulties have been identified around participants being asked to speak and complete an activity simultaneously given the high cognitive load that this demands (Branch, 2000). In addition, this protocol might not reveal the anticipated 'deeper thought processes in their true complexity' because these have to be simplified into words' by the participants (Charters, 2003, p. 70) and the inexperienced participants may find it difficult to put their thoughts into words.

Along with discussing the advantages and disadvantages of the think-aloud protocol in the research literature, there is also an ongoing debate as to how best use the technique (Charters, 2003; Gray & Wardle, 2013). Charters (2003) highlights some principles to consider when designing and implementing a research plan which uses the think-aloud protocol method. These principles include:

- 'selecting a task which offers an effective level of cognitive challenge',
- 'allowing an authentic outlet for inner speech' and
- providing "triangulation" through informal observation and an in-depth exit interview' (ibid., p.80).

These points were all taken into account in the current research. Charters (2003) cites Ericsson and Simon (1980) who claim that tasks needing a 'high cognitive load' (Charters, 2003, p.71) impede verbalisation, while easy tasks are also ineffective because the closer the participants' activities 'come to automaticity, the more problematic it may be for … them … to describe these automatic or near-automatic happenings' (Pressley & Afflerbach, 1995, p.132 in Charters, 2003, p.72). The present study selected a task for the participants after piloting the research. Based on the findings from the pilot study which provided data on students' preferences in selecting the tasks, the tasks in the main study were decided (for detail, see Section 5.5) in order to enable the participants to perform a suitable task while making verbal input.

It is also of note that some explicit strategies enabling participants to think aloud might distort their thought processes (Charters 2003). However, Gibson (1997) recommends that any 'pre-task orientation' (p.58) which gives brief information about the aim and framework of the think-aloud protocol method reduces its effect. The present study considers the recommendation of Gibson (1997) to allow 'an authentic outlet for inner speech' in the participants (Charters, 2003, p.80) and engaged in a warming-up session before conducting the research (for detail, see below in this section).

It is generally felt that the triangulation of the research through retrospective questioning, stimulated recall (showing perhaps a recording of the session to stimulate memory of what the participants were thinking at any stage of the activity) or post-activity interview helps the researcher to reduce problems and thus increase reliability (ibid.). Therefore, the present study carried out a follow-up interview (see Section 5.4.5) after each think-aloud protocol method.

In the present study, the decision was made to use the think-aloud protocol despite the stated disadvantages of the technique since it was important to try to understand through their verbalisation of their decisions, why and how learners perform actions when learning online and the ways in which they perceive their own learning online. This should lead to a better understanding of how students exercise their autonomy in a scaffolded e-learning environment. It was also decided to triangulate this data in order to compensate for some of its potential disadvantages (see Section 5.4.5; Charters, 2003).

In planning the study, it was felt to be important to consider how best to prepare the participants for verbalising their thoughts (Cotton & Gresty, 2006). Participants may be more willing to voice their thought processes if they know the type of thinking (i.e. task specific thinking) they should be focusing their attention on (Olive & Levy, 2001) but participants also must not be distracted from the main focus of the activity. Concerns about distortion of the data and the preparation of the participants take into account the suggestions made by Van Someren et al. (1994), Katalin (2000) and Young (2005) which are given below. Following the analysis of previous findings on the use of the think-aloud protocol, the following procedures were carried out in this research in order to maximise the possibility of success:

1) *Setting:* The researcher (she) firstly wished to ensure that a setting was available for participants to feel at ease (Van Someren et al., 1994). Therefore, a separate room within the University of Southampton was arranged with a laptop so that the participants would feel more comfortable out of the sight of others. All of the equipment was checked to ensure that it was working properly. In the first observation session, the think-aloud protocol method was explained to each

participant and they were told to verbalise whatever came into their mind and to speak freely during observation sessions as if they were completing the activities and tasks in their daily practice at home or anywhere else (for the detail of the practice session, see the descriptions of warming-up below), even if speaking aloud might feel unnatural at first. It was also emphasised that the researcher was interested in the ways they used to solve the problems rather than whether they were wrong or right; in this way it was hoped to make participants feel more at ease. (ibid.). It was considered important to realise that not only the think-aloud protocol method but also the fact that they were being recorded via Camtasia could cause concern in participants. To go some way to allay these additional concerns, the researcher described Camtasia and then demonstrated how it works; for example, how it records the computer screen and the participants themselves. Their approval for their face to be recorded was sought whilst showing them how the technology would work, just before the observation. In addition, the participants were given information about these protocols in the consent form and they signed their agreement (see Appendix G).

2) *Instructions:* Instructions for the task carried out with the think-aloud protocol method need to be related to the research aims (Olson, Duffy & Mack, 1984 cited in Katalin, 2000). As stated above, the research aims of the present study are not to discern whether participants accomplish the tasks in a right or wrong manner, but to observe how they proceed through the information, so this study can ascertain which actions they perform and how they perceive their learning and exercise their autonomy. Furthermore, too-long instructions could misguide participants, and could lead to them having their own interpretations (Van Someren, et al., 1994). Considering these suggestions, this study used the instruction drawn from Van Someren et al. (ibid.) as follows:

   'I will show you activities. Please keep speaking aloud while doing the activities and saying whatever comes into your mind.'

   After the instructions were given, the participants carried out the selected activity in the EAP Toolkit. However, in the first observation session, each participant was prepared for the think-aloud protocol as explained in "warming up" below.

3) *Warming up:* As suggested by Gibson (1997), 'a pre-task orientation' (p.58) reduces the possible drawbacks of the think-aloud protocol method. During this orientation, a related task with the main task in the study should be given to the participants to familiarise themselves with that method (Van Someren, et al. 1994). Therefore, a warming-up session aimed to prepare the participants for the main task was carried

out. After performing the first and second training procedures, the participants were asked to look up the word, 'autonomy' in an online dictionary. Also, they were individually reminded that the researcher was not interested in whether they found a right or wrong answer, but was interested in the manner in which they were working through the information and answer. Therefore, the participants were reminded to explain aloud the way they were doing this. Five minutes were considered enough time for the warm-up session since it is not easy for participants to verbalise what they are doing after a few minutes to a quarter of an hour (ibid.; see also the study of Drofa, Jones, Koh, Shipman & Su, n.d.; Drofa et al., 2006). Although some studies have used a hidden picture activity (Johnstone et al., 2006) and suggested a 1-minute demo video (Nielsen, 2014) to teach students how to think aloud, it was decided that this method with those suggestions might interfere with their methods and processes for going through the information. Therefore, the present study considered both a demonstration of the think-aloud protocol and hands-on practice beneficial (Young, 2005). In addition, further time was allowed for explanation and practice if any participants looked as if they were not ready and confident and did not understand fully what they were going to do.

4) *Behaviour of the researcher or observer, prompting and conducting the main task:* As interference probably affects participants' thinking aloud, the researcher prompted each participant only by saying 'Keep on talking' (Van Someren et al., 1994, p.44) if they stopped talking for 10 consecutive seconds (Johnstone et al., 2006). Apart from that, the researcher did not contact the participants. She sat behind each participant where they could not see her. In order to make the participants feel less disturbed, she did not take any notes, (also, because their actions were captured by Camtasia (see also 5.4.2.)). The participants were allotted 15 minutes to complete the activities while thinking aloud. Although some studies (Drofa et al, n.d.; Eveland & Dunwoody, 2000) have spent around 30 minutes on an activity, the present research considered that participants would get tired and stop talking after a quarter of an hour (Van Someren et al., 1994), so it lasted that long. However, if they wished to talk and carry out the activities more, they were allowed. For example, one student, Tasleem (see tables for Observation 1 in Appendix K) wished to continue and completed the activities for around 30 minutes during the first observation session.

5) *Post-activity follow-up interviews:* Having completed the activities while thinking aloud, each participant was asked structured interview questions (see Section A in Appendix F) individually in order 'to "validate" the researcher's interpretation of their think-aloud utterances (Qi, 1998 cited in Charters, 2003, p.73) using the basis of their

experience and learning through the think-aloud protocol method. However, the follow-up interview structure was kept flexible in order to enable the participants to feel at ease (Adams & Cox, 2008). Therefore, the following questions were asked:

- How do you feel about your experience in doing the activity?
- What did you expect to learn before doing the activity?
- After finishing, did you learn what you expected?
- Did you learn what you did not expect/unexpected?

Data from the think-aloud protocol method provides information about the following aspects to explore in this study:

- the actions students carry out when learning online,
- their perceptions of learning online and
- exercise of their autonomy while learning online, especially in a scaffolded e-learning environment.

However, this method needs to be triangulated with another method (Charters, 2003). Beside the follow-up interviews as mentioned before, in-depth interviewing is required in order to elicit data on their learning. The next section deals with the interview method.

5.4.5 **Interview**

The interview has been a crucial research instrument in applied linguistics in recent years (Mann, 2010; Talmy, 2010), especially 'to investigate participants' identities, experiences, beliefs, and orientations' (Talmy, 2010, p.128) which are not easily examined through surveys or observation and not in detail (Baker, 2009). It can be described as a professional conversation between an interviewee and an interviewer (Brinkmann, 2014) that 'has the purpose of obtaining descriptions of the life world of the interviewee in order to interpret the meaning of the described phenomena' (Kvale & Brinkmann, 2008, p. 3). Hence, the interview enables interviewees 'to discuss their interpretations of the world in which they live, and to express how they regard situations from their own point of view' (Cohen, Manion & Morrison, 2007, p.349).

The direct interaction between an interviewer and interviewee can be both advantageous and disadvantageous (Guba & Lincoln, 1994). As an advantage, the flexibility of interviews can provide deeper information, and also, 'the interviewer can change elements of the interview schedule if it is not working', which helps the researcher control the research environment (Brown, 2001, p.76). The researcher can receive a more 'relatively high return rate' from interviews than from questionnaires (ibid. p.75). However, interviews have disadvantages, as well. They are time-consuming, expensive and not completely anonymous (ibid.). Furthermore, they provide small-

scale surveys if they are done with only small numbers of participants (ibid.). There is also the possibility of a bias (ibid.), of which the source is both the interviewer and the interviewee (McCormick & James, 1988 cited in Sharma, 2010). The way the former asks the question and the latter's ability to answer or conceptualise the question and the latter's motivation in participating in the research might affect the interview data (ibid.). McCormick and James (1988 cited in ibid.) suggest that a critical examination is needed to preserve the validity and reliability of any research instrument.

The present research conducted interviews to elicit deeper data and information about the following aspects for investigation in this study (see Figure 19):

- learners' actions and perceptions of their own learning with the EAP Toolkit and other OLRs which provide or do not provide scaffolding;
- their autonomous learning including the components of learner autonomy such as self-management, self-regulation, learning strategies, attributions for success and failure and self-efficacy through scaffolding or lack of scaffolding from OLRs; and
- the relationship between scaffolding and learner autonomy in e-learning environments.

It used a semi-structured interview approach, which 'has some degree of predetermined order but still ensures flexibility' (Dunn, 2005, p.80) in order to have a better understanding of their beliefs and to enhance the responses in the questionnaire. This is because the items solely in the questionnaires are lacking indications of the more conceptual beliefs and thoughts about how participants work online. The questionnaire aims to provide more objective answers from the participants for the research questions in the current study, as data is not solely collected using the researcher's interpretation of observation.

After using the observation and think-aloud protocol method, interviewing was carried out for 30 minutes (for data collection, see Section 5.5.2.). However, sufficient time was allowed for them to use and comment on both their experiences and the scaffolded online learning resources. The questions asked during interviewing were evaluated in the pilot study, and properly rearranged questions (see Appendix F) addressed to respond to the research questions. Furthermore, the errors of using yes-no questions or multiple questions at one time (Brenner, 2006) were tried not to be implemented and were avoided although the present study found it necessary to ask that kind of questions a few times. The correspondence between research questions and students replies to the questions in the interview is given in Table 5 below:

Table 5: Correspondence between research questions and interview questions

Research Questions	Interview Questions
RQ1: What actions do learners carry out when learning online, especially in scaffolded e-learning environments?	B) 1,2,3,4,5,6,7,8,9 C) 1,2,3,4,5,6
RQ: How do learners perceive their own learning online, especially in scaffolded e-learning environments?	A) 1,2,3,4 B) 1,2,3,4,5,6,7,8,9 C) 1,2,3,4,5,6
RQ 3: In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments? RQ 3.1. To what do learners attribute their success and failure, especially in scaffolded learning environments? RQ 3.2. What is the learners' confidence about their own learning, especially in scaffolded e-learning environments? RQ 3.3. What learning strategies do learners use, especially in scaffolded e-learning environments?	B) 10, 11, 12 C) 7, 8, 9
RQ4: What is the relationship between scaffolding and learner autonomy in e-learning environments?	B) 1,2,3,4,5,6,7,8,9,10,11,12 C) 1,2,3,4,5,6,7,8,9

As seen in the above table:

- Section A (in Appendix F) consisting of the questions about participants' experiences in learning and expectations from performing the activity in the Toolkit during each observation session after the think-aloud protocol method was conducted (for more details, see Section 5.4.4.), showed a tendency to give a contribution to the second research question of the present study. This is because the participants' feelings about their experience in performing the activity using the think-aloud protocol method and expectations about their learning are related to their perceptions of their own learning in a scaffolded e-learning environment. This section also aimed to ascertain whether using the think-aloud protocol method as an instrument has an effect on the participants' learning, as they were not accustomed to performing the activities in that way.
- Section B (in Appendix F) involved questions about the EAP Toolkit similarly targeted to answer all of the research questions. The questions about participants' use and perceptions of the EAP Toolkit, its scaffolding of their learning with feedback, links and another scaffolding if stated by them, and their suggestion about its improvement aimed this study towards finding out how the participants perceive their own learning online,

especially in scaffolded e-learning environments (RQ2). Furthermore, the questions about a need to require help from a tutor or the EAP Toolkit and the reasons for their success, failure and confidence are intended to understand the participants' attribution for success and failure, and their confidence (RQ3). Data from those questions was purposed to discern how their use of the EAP Toolkit through scaffolding, if there was any, affected their independent learning or vice versa (RQ4).

- Section C (in Appendix F) contained questions about their learning in online learning environments other than the EAP Toolkit. Therefore, similar questions to the one in Section B were asked. Questions about their use and perceptions of OLRs, those resources' helpfulness or otherwise and the participants' suggestions for their improvement assisted this study to further explore their actions (RQ1) and their perceptions of their own learning (RQ2), especially in scaffolded e-learning environments. Moreover, questions about those resources' support for their learning and the learners' motivation to accomplish or fail in completing their tasks and subsequently feel confident in learning are aimed at obtaining data on which elements the learners attribute to their successes or failures and their level of confidence, which helps to answer RQ3. Similarly, the questions in this section have the purpose of investigating the relationship between scaffolding and learning autonomy in e-learning environments (RQ4).

As a result, richer data was intended to be collected as 'individual constructions can be elicited and refined only through interaction between and among investigator and respondents' (Guba and Lincoln, 1994, p.111). As the researcher did not have any role in teaching and contacting the participants during the EAS course as a teacher or supervisor, the participants possibly felt comfortable and confident in evaluating OLRs and expressing their ideas about their learning in e-learning environments. Although they might be shy or modest in telling their thoughts because of their personality or their inexperience with participation, that limitation was minimised by ensuring that data from interviews would be kept anonymously and safely.

This section has explained the instruments conducted in the present study; the next section discusses the reliability and validity of the above-mentioned instruments in both qualitative and quantitative research manners.

5.4.6 **Reliability and Validity**

Reliability and validity are used widely in quantitative research; and they are also considered in qualitative research (Golafshani, 2003). Both of these factors are the most significant issues in the research (Bashir, Afzal and Azeem 2008). As the present study has included both qualitative and

quantitative research, the use of reliability and validity will be given in terms of these two types of research.

Joppe (2000) identifies reliability in quantitative research as 'the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable' (cited in Golafshani, 2003, p.598). The reliability of the research instrument can be improved by the tests or questionnaires' consistency and the stability of the instrument, which means the results would be close in the repeated study (Charles, 1995 cited in Golafshani, 2003, Fraenkel and Wallen, 2007). However, as Crocker and Algina (1986) state, 'test developers have a responsibility to demonstrate the reliability of scores obtained from their tests' (p. 106). With regards to validity in quantitative research, Joppe (2000) describes that 'validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit "the bull's eye" of your research object? Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others' (cited in Golafshani, 2003, p.599). In that sense, researchers should use the proper instruments to reach their aims. Also, similar words to validity have been accepted such as the 'appropriateness, correctness, meaningfulness and usefulness [sic]' of the research instrument (Fraenkel & Wallen, 2007, p. 148). Overall, in the quantitative research, reliability refers to stability, consistency and replicability of the study (Charles, 1995 cited in Golafshani, 2003, Fraenkel and Wallen, 2007), whereas validity can be inferred as 'appropriateness, correctness, meaningfulness and usefulness [sic]' as aforementioned. Additionally, proving validity is enough for the study to be reliable as reliability cannot exist without validity (Lincoln and Guba, 1985 cited in Golafshani, 2003).

However, in qualitative research, both of these are regarded in a different way, as they do not provide enough explanation for that kind of research (Bashir et al., 2008, Golafshani, 2003). Although Stenbacka (2001) argues that reliability cannot fit into qualitative research as it does not consist of measuring data, the understanding of reliability in the context of qualitative research can be reframed. For instance, 'the terms Credibility, Neutrality or Conformability, Consistency or Dependability and Applicability or Transferability' have the potential to be necessary factors in qualitative research, whereas reliability and validity work similarly in quantitative research (Lincoln & Guba, 1985 cited in Golafshani, 2003, p.601). In contrast to her views about the reliability in qualitative research, Stenbacka (2001) backs up that validity can be achieved easily if the purposes of the study are explained freely and clearly. Overall, both these issues including

reliability and validity are viewed as 'trustworthiness, rigor and quality' in qualitative research (Golafshani, 2003, p.604).

As for the present study, it takes into consideration all of the definitions and discriminations of both reliability and validity. To achieve reliable and valid results, this study conducted a pilot study first, and then the main study as discussed in the next section. In accordance with the results of the former, this study made some amendments for the latter and added questions to ensure that the research would be accomplished under its aims and purposes, which enables validity. Its reliability intends to be accomplished through implementation of both pre- and post-questionnaires. The statistical data has a tendency to provide reliable results for both studies. As the qualitative data analysis of this research is based on coding data, intercoder reliability, which 'is the widely used term for the extent to which independent coders evaluate a characteristic of a message or artefact and reach the same conclusion' (Lombard, Snyder-Duch & Bracken, 2010, n.p.), is required. Hence, this study aims to ensure it is reliable by discussing and agreeing codes generated with the analysis of at least 10 percent of data transcripts (Hodson, 1999 cited in Campbell, Quincy, Osserman & Pedersen, 2013) with a second coder and peers (for more and the detail, see Section 5.6.2.). Above all, triangulation, 'a process of verification that increases validity by incorporating several viewpoints and methods' (Yeasmin & Rahman, 2012, p.156), which in turn enhances reliability (Lincoln & Guba, 1985 cited in Golafshani, 2003), enables the current research to provide valid results from the instruments stated in the above section. In other words,

> 'By combining multiple observers, theories, methods, and empirical materials, researchers can hope to overcome the weakness or intrinsic biases and the problems that come from single-method, single-observer, single-theory studies. Often the purpose of triangulation in specific contexts is to obtain confirmation of findings through convergence of different perspectives. The point at which the perspectives converge is seen to represent reality.' (Jakob, 2001 cited in Yeasmin & Rahman, 2012, p.154).

As for the present study, combining both qualitative and quantitative research instruments encompassing questionnaire, observation and interview aids this study in achieving its goals and intentions. In order to increase the validity of the study, for instance, it included some open-ended questions in the questionnaires to collect clearer data in order to answer research questions. Also, before starting the research, some advice and comments from colleagues and supervisors were considered in order to enable the study to be suitable and useful in terms of its aims. How these procedures were applied onto the current research is outlined in the next section.

5.5 Data Collection

The previous section has outlined the instruments performed in the present study and the reliability and validity of both qualitative and quantitative research concluding with their application in the current research. In this section, it looks at the manner in which these instruments were drawn upon. The study included a pilot study and a main study to reach its aims and to answer the research questions shown in Section 1.3. The next subsections give an explanation of these studies.

5.5.1 The Pilot Study

Piloting a research study is a significant issue. Dörnyei (2007) depicts it like theatre performances and claims that 'a dress rehearsal' is necessary for a study to be in 'the high quality (in terms of reliability and validity)…' (p. 75). Taking into consideration its significance, a pilot study was carried out. This section deals with the way the pilot study was conducted (i.e. who participated and which instruments were used, etc.) and the elements that resulted from this pilot study that could improve the main study.

Twelve deliberately-selected and voluntarily-participated students, whose backgrounds and details were given in Section 5.3.2., were included in the pilot study which was conducted in July 2012. The questionnaire similar to the one given in Appendix E was distributed to all of the participants in the last half -hour of a lesson by the researcher who was present to answer any questions or misunderstandings by taking note of the questions and suggestions that were given during the application of the instrument. Concurrently, before distributing the questionnaire, a consent form and participant information sheet (see Appendices G and H) were distributed. The researcher also explained the aims of the questionnaire and the way to fill out the questionnaire. The questionnaire encompassed the questions about their perspectives of the EAP Toolkit and blog. However, this was excluded from the main study.

As explained in Section 4.2., the EAP Toolkit was considered a scaffolded e-learning resource where students could be potentially encouraged to take responsibility for their own learning. However, the inclusion of the blog in the pilot study was intended to observe their interactions in an e-learning environment. Since blog had the tendency to give and share information beyond the closed learning environments where learning materials are hidden within passwords (for more detail, see Section 2.2.3.), it was aimed at exploring students' learning in those environments. Considering the features of blog both in general (McIntosh, 2005) and as a scaffold (Ferdig and Trammell, 2004), the study first included it to provide an insight into the relationship between scaffolding and learner autonomy, as scaffolding enhances learners' independent learning (see

the studies of Luzón, 2006; McLoughlin, 2002; McLoughlin and Marshall, 2000, Toogood, 2005 in Section 3.4.). Conversely, the study had to exclude the blog since use of the blog during the EAS teaching programme was discontinued. Therefore, instead of taking the blog into account, other online learning resources (OLRs) which students could potentially use were included into the questionnaires of the main study since OLRs have many advantages in promoting autonomous learning by providing scaffolding for users (see Section 4.3.).

Although Dörnyei (2007) argues that piloting is more significant in quantitative research, the present study values the act of piloting qualitative studies as well. This is because qualitative research provides the focus on participants' meanings and views rather than researchers' thoughts (Creswell, 2009; Dörnyei, 2007; see also Section 5.2.1). Therefore, along with conducting the questionnaire, two voluntary participants were observed for 10 minutes (see Table 6). Immediately after the observation, Stimulated Recall was used for 10 minutes by the researcher to show the video and audio file of each participant to them and ask them to reflect on their action (Fox-Turnbull, 2009). Ultimately, they were interviewed for 30 minutes as shown in Table 6.

Table 6: Timetable for the Pilot Study

Research Instrument	Date	Duration
Questionnaire	Week 4 (July 2012)	30 mins
Observation	Week 4 (July 2012)	10 mins
Stimulated Recall	Week 4 (July 2012)	10 mins
Interview	Week 4 (July 2012)	30 mins

Data from the pilot study was analysed and provided crucial findings for the researcher to develop and test research instruments and research design (Van Teijlingen & Hundley, 2002). With regards to the results and reflections of the pilot study, the participants showed interest in using and have a positive opinion about the EAP Toolkit but not about the blog since they had only used it once. Nevertheless, most of the participants were not sure about enjoying using and receiving positive feedback from the Toolkit. Also, their answers to the attribution questionnaire indicated that they made attributions to their effort and strategy but not to their luck and ability for their success in both resources. In a similar way, they made self-attributions for failure. As for the influence of class teaching on the Toolkit and blog, they favoured it to support their learning in e-learning environments. Despite all the aforementioned statements of nearly half of the participants, the participants seemed unsure of either favouring or disfavouring making attributions to scaffolded OLRs. Regarding learners' confidence in either e-learning environments or classroom-based

learning environments, they were mostly neutral; however, nearly all of them felt confident when their tutors supported them in language learning in the blog. Also, half of them were not sure that learning in English online was easy and fun. Similarly, they mostly supported the help from the teacher in the classroom rather than the EAP Toolkit or the tutor's help in the blog. As for the relationship between learner autonomy and support, the findings from the questionnaire indicated that most of the learners seemed to agree that online resources including both the EAP Toolkit and the blog helped them to manage their learning, whereas other learners were not sure or disagreed with that. In order to clarify what they thought of these resources, two participants were interviewed and observed as shown in the above table (Table 6). Data from both instruments supported the results of the questionnaire. However, there was still not sufficient and clear agreement or conclusion on the use of online resources in terms of enhancing the learners' independent learning.

Considering the need for clearer and more conclusive indication of data from instruments, the present study drew attention to make some amendments to these instruments. It can be interpreted that the pre- and post-questionnaires attempted to suggest the way that the Toolkit had a potential impact on their independent learning and their self-confidence and attributions for their success and failure over time. Also, it was observed that the questions about participants' rating the EAP Toolkit were not clear, so a few more open-ended questions were included in the questionnaire for the main study about participants' views on the EAP Toolkit and other OLRs (see Section 5.4.1.2.). As said above, use of the blog was stopped during the EAS teaching course, changing the conduct of the main study. Therefore, the main study replaced the question about the blog in the questionnaire with a question about other OLRs (see Section 5.4.1.2). Apart from this, the questionnaire for the main study closely followed the one conducted in the pilot study (see Section 5.4.1.). In addition, a 5-point Likert scale designed to rate the questions included 'not applicable' in place of 'neutral' as it seems that the items in the questionnaire do not require a 'neutral' position. In order to avoid any potential problem caused by excluding 'neutral' from the questionnaire such as participants' omitting to respond, a 'not applicable' option was included as suggested by Frary (2013). Also, the questions in the interview were changed to improve clarity, for example, asking 'Why were you successful or unsuccessful while doing the activity?' in the main study rather than 'What do you attribute to your success and failure in studying academic language via the EAP Toolkit to develop your language learning on your own?' in the pilot study. With regards to the activities, the findings from both the questionnaire and the observation where the participants were free to choose which learning object (LO) in the EAP Toolkit to access showed which kinds of activities they were interested in, (which will be explained in the next section). With this, during the first and second observation

periods, the participants in the main study performed the activities in the folders which the participants in the pilot study favoured and preferred to perform. Lastly, it was seen that Stimulated Recall did not work very well in the present study. While watching their own recordings and reflecting on their actions, the participants looked and expressed their unwillingness and tiredness. Therefore, Stimulated Recall as a research instrument was not preferred in the main study.

Consequently, the pilot study was necessary and helped to ensure that the main study would be conducted in a more reliable and proper way (Thabane, Ma, Chu, Cheng, Ismaila, Rios, Robson, Thabne, Giangregorio & Goldsmith, 2010; Van Teijlingen & Hundley, 2002). Following the findings and reflections of the former, the latter was shaped and amended. The next section gives a more detailed explanation of the main study.

5.5.2 **The Main study**

After obtaining the above-mentioned reflections from the pilot study, the present study made necessary amendments before conducting the main study. As stated above, further items were added to both questionnaire (see Section 5.4.1.2) and interview (i.e. Questions 11 in Section B and 8 in Section C in Appendix F). In addition, because of the cessation of blog from the EAS course during the semesters, other OLRs were included in the main study in order to understand deeply which action learners perform when learning online, the way they perceive their own learning and the ways they choose to exercise autonomy, especially in scaffolded e-learning environments (see Section 5.4.1.2.). The items about other OLRs were drawn on similar lines as the items about the EAP Toolkit.

The revised questionnaire was first distributed to all the students (divided into 6 groups (see Appendix C)) in the EAS course at the University of Southampton in the first week of February 2013 and later in the second week of May 2013 as indicated in Table 7.

Table 7: Timetable for the Main Study

Research Instrument	Date	Duration
A Pre-Questionnaire	Week 2 (4th-8th February)	30 mins
The First Observation/Interview	Week 3,4,5 (11th February-1st March)	45 mins
The Second Observation/Interview	Week 7, 8 (11th March-19th April)	45 mins
The Last Observation/Interview	Week 10, 11,12 (29th April-17th May)	45 mins
A Post-Questionnaire	Week 11 (7th -13th May)	30 mins

Although the EAS course finished in the first week of June, the date for conducting the post-questionnaire was decided according to the participants' examination week. Therefore, it was distributed earlier. Sufficient time was given to the participants if required, even though the study generally lasted 30 minutes. 40 students who were informed about the study (see Appendix I) and signed the consent form (see Appendix G) returned it to the researcher in the process of the first data collection, whereas in the last collection, five of the students did not attend because of their absence. Therefore, 35 students took part in the main study (see Appendix C). The researcher ensured this by stating during the data-collection and writing of the consent form (see Appendix G) and participation information sheet (see Appendix H) that data from both questionnaires would be kept anonymously and safely. As the questionnaire did not include any question about the students' names, they were expected to feel comfortable and confident in responding to the questions honestly. Additionally, the researcher was responsible and present during the process of administrating it in order to help and clarify elements to the participants if needed. Therefore, any misunderstandings about the questions were able to be minimised and avoided.

While conducting the questionnaire, students were asked whether they wanted to volunteer for the observation and interview. Subsequently, they were all sent an email regarding that. Having received the reply from 10 students (see Appendix D & Section 5.3.2. for more details of participants), the researcher conducted an observation with each of them separately in the beginning, middle and last weeks of the course (see Table 7) via Camtasia (see Section 5.4.3.). Firstly, they were introduced to Camtasia and shown how to speak aloud about what they were doing and thinking, and a warming-up activity was performed (also, see Section 5.4.4.). Then they completed the activity in 15 minutes while being recorded through Camtasia and with the researcher sitting behind each of them without interrupting or making contact with them (for more, see Section 5.4.4.). Instead of the 10 minutes allocated in the pilot study, 15 minutes were

given to the participants for them to perform the activity in the main study (Van Someren et al., 1994). They were reminded that they did not have to accomplish the activity; in other words, they were free to do whatever they could in 15 minutes to enable the learning process via the EAP Toolkit during the observation. In the first observation session, they were told to carry out the activities found in the folder of Vocabulary for Academic Purposes within the EAP Toolkit. In the second observation session, they fulfilled the activities in Academic Writing. Those two LOs (learning objectives) completed in the first and second observation sessions were decided after considering the findings of the pilot study, as students in that study mostly preferred to choose these activities. However, in the last observation session, the students were told they could be free to choose which LO they wanted to follow. With this freedom, it was possible to observe how they were actually choosing and accomplishing an activity, which might show their learning actions, strategy and autonomy in learning online. Though one of them nicknamed Tase as shown in Appendix D could not attend the last session, she was included in the main study as the time interval between the first and second one seemed to be enough for interpreting and analysing data. However, Tasleem in the first observation session wished to have the extra time, 15 minutes more, to continue working on the activities. This was also added to data collection and analysed. In total, 450 minutes of recordings from all the observation sessions were collected, and, 29 think-aloud protocols were gathered from 10 students (see Table 8).

Table 8: The Number of Minutes and Transcriptions of Data Collected from Observation and Interview in the Main Study

Research Instruments	Number of Minutes	Number of Transcriptions
Observation	450	29
Interview	870	29

Immediately after each observation session, the semi-structured interview (see Section 5.4.5.) shown in Appendix F was conducted with 10 participants and recorded by an audio-recorder. Interviewing lasted 30 minutes; however, necessary time was provided for the participants to express their views and beliefs about their learning in e-learning environments. In total, 870 minutes of audio-recorded interview sessions and 29 transcriptions from 10 participants were collected (see Table 8). Briefly, their experiences of completing the activity while describing what they were doing and thinking was queried, as they might have been influenced by the think-aloud protocol and were not able to fulfil the tasks in the same way as usual. However, that limitation of think-aloud protocol method was intended to be overcome in the further observations, so the findings from these three interview sessions attempted to depict any possible changes for their

reaction to this method. Alongside that, their views on their learning and their managing their learning while using the EAP Toolkit and other OLRs were asked in all of three interview sessions, thus comparing the results from these three interview sessions could indicate any change in their perspectives and learning actions over time.

The questionnaire is a useful research instrument for gathering data on the views of the participants about the EAP Toolkit and other OLRs on a larger scale than in the interview. As the present study explores how learners handle their own learning in e-learning environments, observation and recording of their actions in these settings were essential for further information. After the observation, more complete facts about their perspectives could be achieved by means of further interviewing. All these three research instruments were drawn upon in the main study as stated above. However, in order to reach the conclusion, data needs to be analysed properly. Therefore, the next section outlines how both qualitative and quantitative data is analysed.

5.6 Data Analysis

As discussed in Section 5.4., the methods applied in the current study are both qualitative and quantitative. Therefore, data are analysed by using both qualitative and quantitative data analysis methods which are outlined in the next subsections.

5.6.1 Quantitative Data Analysis

In analysing quantitative data, two issues should be taken into account: the method for determining which statistical procedures are proper for which purpose and the method for interpreting the subsequent results (Bryman & Cramen, 1990). As stated in Section 5.2.1., quantitative research provides numerical data which can be analysed by using SPSS, which stands for Statistical Package for the Social Sciences (Quintero, Ancel, Cassie, Ceron, Darwish, Felix, He, Keshavamurthy, Makineedi, Nikalije, Pal, Salie & Tiwary, 2012). With SPSS software, two key statistical methods are used: descriptive and inferential statistics. The former can be applied to describe and summarise 'the basic features of a data set' (O'Leary, 2014, p.281), whereas the latter can be applied to generalize tested hypotheses (ibid.).

Having collected quantitative data from the questionnaires, both pre-and post-questionnaires were analysed using statistical methods. By means of using the computerized data analysis program SPSS, descriptive statistics, such as frequencies and percentages of the variables were calculated and included. Frequency and percentages tables were presented to include the distributions of the items in the questionnaire. Those tables represented how many and which participants responded to each item. Furthermore, inferential statistics such as Spearman's rank-

order correlation, McNemar's Test and Wilcoxon signed-rank test enabled the present study to determine the relationship between the variables and to test whether there was a statistical change in pre- and post-questionnaires. Overall, the responses of the participants to all the items in both pre- and post-questionnaires were compared statistically in order to summarise and describe data and show the relationships and changes in variables. This section having explained quantitative data analysis, the next section deals with qualitative data analysis.

5.6.2 **Qualitative Data Analysis**

In qualitative research, there are two main approaches deductive and inductive. The former 'begins with theories that are tested against new data', whereas the latter 'begins with specific data out of which more general idea or theories generated' (Hesse-Biber & Leavy, 2011, p.13). In this sense, in a deductive approach, themes may be based on pre-defined codes, whereas in an inductive approach, themes are produced from data through 'opening (unrestricted) coding' (Gale, Heath, Cameron, Rashid & Redwood, 2013; p.3). Considering those two approaches, the present study used both deductive and inductive approach through coding data drawn on the related literature in Chapters 2 & 3. The next discussion will be made on how the qualitative data was analysed based on those approaches.

A code in qualitative data analysis is 'a researcher-generated construct' (Saldaña, 2015, p.4) which is 'a kind of "translation" [*sic*] of your data in symbols' (Vogt, Vogt, Gardner & Haeffele, 2014, p.13). Miles and Huberman (1994) suggest pre-defined codes for research to make progress, whereas other researchers (Hammersley & Atkinson, 1995; Richards, 2003) think that defining codes while analysing data is better. Taking into account both those views, the present study analysed qualitative data obtained from observations and interviews by drawing upon predefined codes deductively and by generating codes inductively.

The researcher transcribed data from both observation and interview to analyse data. 29 transcripts for observation and interview were prepared separately (see Table 8 and Section 5.5.2.). Transcribing took 1 hour per half-hour of interview and 1 hour per fifteen minutes of observation, as suggested by ten Have (1999 cited in Bailey, 2008). In total, transcribing took 1740 minutes and 290 pages for interview and 1800 minutes and 90 pages for observation altogether. MS Word files were created for each participant according to the instrument. For transcribed data of interviews, Word files were named as, for example, Salar 1st Interview, Salar 2nd Interview, Salar 3rd Interview, and so on, in order to include the answers of Salar to each interview. For transcribed data of observations, both Camtasia recordings and think-aloud protocols were stored as one Word file for each participant and the transcript was named, for example, as Salar 1st Observation,

Salar 2nd Observation, Salar 3rd Observation and so on. In observation files (see the examples in Appendix J), the utterances of each participant (i.e. the think-aloud protocol verbalisations) were recorded with quotation marks, whereas paralinguistic features, for example, when they stopped speaking aloud, used gestures, mimics, etc., smiled or looked confused or surprised (when they did not utter but were thought to have performed actions that were worth being mentioned, when necessary) were written into texts. This was because incorporating 'what is not said might add to understanding of' (Charters, 2003, p. 74) transcribed data into the texts helps researchers 'to visualize what' (Peshkin, 2001, p.247 in ibid. p.74) is happening in a learning environment. Therefore, data from think-aloud protocols were combined into episodes from Camtasia recordings. The below extract exemplifies how transcription of Salar's first observation was done. Salar's utterances which were given through the think-aloud protocol were given with quotation marks, whereas paralinguistic features in the episode were recorded without quotation marks in order to discriminate his utterances from his use of paralinguistic features.

> *After the observer told Salar to do the activity, he started doing the activity from the introduction of 'introduction to vocabulary learning'. He read: 'OK. The first one is EAP Toolkit. Introducing, Introduction to vocabulary learning. As you continue to improve your use of English…'*

The transcripts were entered into a qualitative data analysis software program called QSR NVivo 10, which organises data and enables the researcher to arrange and manage the data by providing a search tool for the current study (Creswell, 2002), and 'to examine features and relationships in texts' (Gibbs, 2002, p. 11). Data was stored in NVivo software in order to be categorised into two folders such as 'interview' and 'observation' which includes both Camtasia recordings and think-aloud protocols as stated above.

After transcribing and entering data into NVivo, Figure 25 below illustrates that data was analysed by 'examining, categorising, tabulating, [and] testing' (Yin, 2003, p. 109) and codes were generated in 'the process of segmenting and labelling text to form descriptions and broad themes in the data' (Creswell, 2002, p. 266). Although the figure below represents the inductive approach of qualitative data analysis, the present study used both deductive and inductive approaches to analyse qualitative data. The next discussion will consider how codes were generated in this study following both approaches along with Figure 25.

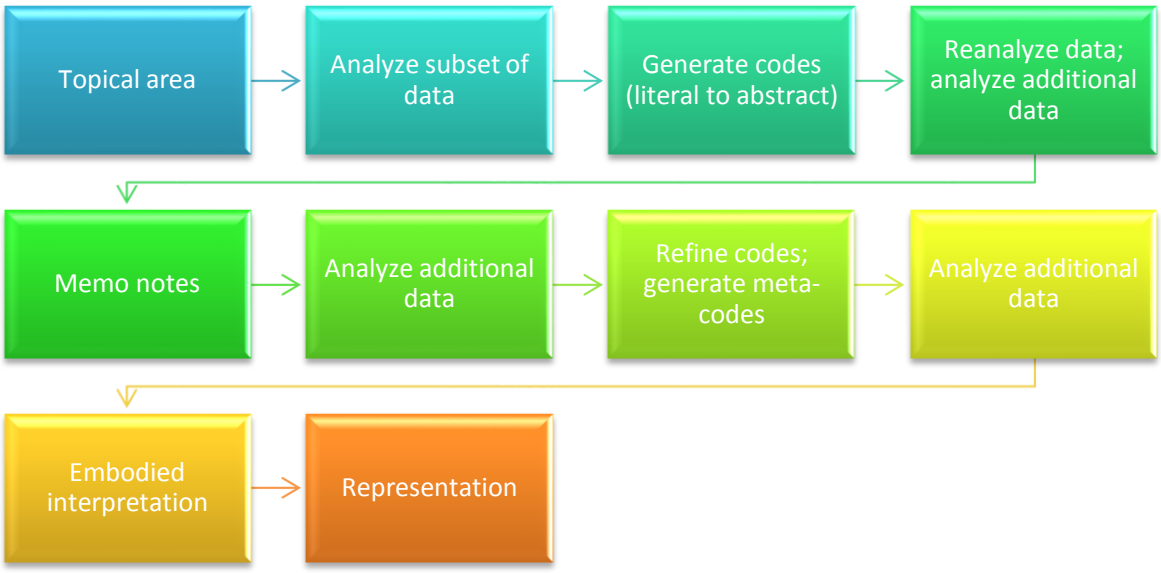


Figure 25: Qualitative Model of Research (adapted from Hesse-Biber & Leavy, 2011, p.9)

At first, the researcher created an initial 'start list' (Miles and Huberman, 1994, p.58) of codes based on the topical areas (see Figure 25). Table 9 below shows the main codes and sub-codes in the present study which were generated through deductive and inductive processes. In the deductive approach, predefined codes were generated not only from the research questions (Burla, Knierim, Bart, Liewald, Duetz & Abel, 2008; Miles & Huberman, 1994; Savenye & Robinson, 1996; Stokes & Urquhart, 2013), but also from the theoretical concepts (Burla et al., 2008) in order to explore the relation between the concepts within the theoretical framework (see Figure 3 in Section 2.1.; Bryant & Charmaz, 2007).

Next, codes defined from the research questions and the theoretical frameworks of the present study (i.e. scaffolding, learner autonomy and e-learning, see Figure 3) were refined and the inter-reliability of codes was assured. Although some experts ('Morse, 1994; Morse & Richard, 2002; Janesick, 2003' cited in Bradley, Curry & Devers, 2007, p.1761) think that 'a single researcher conducting all the coding is both sufficient and preferred' (ibid. p.1761), Miles and Huberman (1994) argue that inter-coder reliability should be evaluated and the inter-coder agreement should be 80 percent. Therefore, the researcher discussed codes with her supervisor (a second coder) and peers who are experienced in coding in similar topics (see Section 5.4.6), by explaining how codes were developed and what they were called (Campbell et al., 2013). Drawn on this discussion, codes were clarified and redefined. The researcher randomly chose at least 10 percent of transcripts (Hodson, 1999 cited in ibid.) obtained from Camtasia recordings. Then, both the researcher and the second coder coded these individually, compared results and discussed the differences and confusion (ibid.). We noticed that more sub-codes were needed to develop and

define codes in a clear way and thus some codes were redefined. The discussion aimed at ensuring the increase of the inter-coder reliability in order to validate 'subjectively-coded data' (Freelon, 2010. p.20). Having discussed and agreed on codes with the second coder, the researcher re-analysed the data. The data was looked at again in terms of answering the research questions according to the codes that the students most frequently discussed and mentioned (Creswell, 2005). Codes were re-analysed and reviewed at least five times by the researcher in total. The transcripts of each participant's observations and interviews were examined using deductive and inductive approaches to answer research questions.

Table 9 shows codes and sub-codes which were generated either deductively or inductively in the present study (for more detail and explanation, see Section 5.6.2.1.). As presented in the table, the sub-codes were categorised into different sub-sub-codes, as well. The main codes were deductively defined as scaffolding, learners' actions, perceptions and learner autonomy, whereas the sub-codes were scaffolders, scaffolding types, perceptions of the EAP Toolkit, other OLRs and the think-aloud protocol method, self-management and self-regulation, learning strategies, attribution and self-efficacy. Additional sub-codes were generated inductively. They were learning object choice, OLRs, doing the scaffolded activities and teacher support.

Table 9: Main Codes and Sub Codes in the Qualitative Data Analysis

Main Codes	Sub Codes
1) Scaffolding	**1) Scaffolding types:** conceptual, procedural, strategic, metacognitive, motivational-affective and technical, and implicit and explicit feedback **2) Scaffolders:** introduction, information/explanation, instruction, feedback, hyperlink and dictionary
2) Learners' Actions	**1) Learning object choice:** academic writing, vocabulary, reading and critical thinking, learning skills and grammar **2) OLRs:** online dictionaries, online libraries, discussion forums, online journals, mobiles apps, e-book, social networking web sites, online newspapers, movies and authentic links **3) Doing the scaffolded activities:** scrolling up and down, re-reading, skimming the activity, skipping performing the activity, interpreting scaffolders and choosing the right answer
3) Perceptions	**Perceptions of the EAP Toolkit, other OLRs and the think-aloud protocol method:** positive and negative
4) Learner Autonomy	**1) Self-management and self-regulation:** monitor, combine resources, repeat, implement, set goals, evaluate, plan, adjust, go back to another website and with the help of scaffolding **2) Attributions:** success and failure **3) Self-efficacy:** confident and neutral **4) Learning strategies:** cognitive, metacognitive, affective, meta-affective, sociocultural-interactive and metasociocultural-interactive **5) Teacher support:** yes and no

The researcher re-analysed data and additional data if needed, by considering codes and sub-codes in Table 9. The researcher generated additional codes, for example, 'interesting comments', 'paper-based learning', 'classroom teaching-learning' and 'previous learning in native language affects learning in target language'. As they were not connected with the main codes directly, they were not included in Table 9. However, it was thought that they might help this study to understand the actions the participants carried out when learning online (see RQ1 in Section 1.3.), the perceptions of their learning (see RQ2 in Section 1.3.) and the exercise of learners' autonomy (see RQ 3 in Section 1.3.). Also, the researcher established memos consisting of any thoughts that emerged during data analysis (Creswell, 2002; see Figure 25). New ideas emerging from the data were noted by constructing sub-themes.

Coding were carried out in NVivo by 'highlighting the specific quotation to be coded' in the text of 29 transcripts of interviews and observations, separately (Basit, 2003, p.149) rather than 'selecting segments of text using line numbering' (ibid. p.149). Because it would include unnecessary words if it was performed by selecting line numbering, as sometimes a quotation started and ended in the middle of the line. The researcher opened the first observation transcript of each participant, highlighted the quotation and clicked on 'Coder' in NVivo by selecting the pre-defined appropriate code or sub-code or generating a new sub-code (ibid.). All 29 transcripts of interviews and observations were coded in that way.

In order to give the embodied interpretation of data, coding queries in NVivo helped the present study to calculate the number of instances (NVivo 11, n.d.): e.g. their positive or negative perceptions of the EAP Toolkit can be seen in Figures 32 and 33. In order to represent and visualize data (Kumar & Phrommathed, 2005), Excel helped the present study to create charts and arrange tables for qualitative data. Based on coding the data, data was shown in bar charts by creating figures when giving the results. In general, those figures (represented in Chapters 6 & 7) illustrate the frequency of instances of the activity, codes or sub-codes. In figures, the horizontal axis, x-axis represents the participants in each observation or interview. As data from observation and interview was collected in three different times, each participant was named as (name) 1, (name) 2, (name) 3 (e.g. Salar 1 for Observation or Interview 1, Salar 2 for Observation or Interview 2, Salar 3 for Observation or Interview 3). The vertical axis, y-axis in these figures represents a value for the participants, the frequency of instances of codes or sub-codes used by the participants. Data was also interpreted by giving extracts from the think-aloud protocols of the participants (e.g. see examples 6.1, 6.2, 6.3 in Section 6.2.1.1. and so on) and interviews (e.g. see examples 6.25, 6.26 in Section 6.2.3. and so on) in results chapters 6 and 7.

Drawing on the above discussion of the qualitative data analysis, the sub-section below aims to provide examples of coding used in the present study based on Table 9.

5.6.2.1 Examples of Coding Used in the Present Study

Table 9 in the above section gives the main codes and sub-codes for analysing the qualitative data in the present study. This sub-section intends to provide examples of how coding was developed based on deductively pre-defined and inductively generated codes as shown in Table 9.

Four main codes in this study were pre-defined and categorised as scaffolding, learners' actions, perceptions and learner autonomy because of its research questions (Burla et al., 2008; Miles & Huberman, 1994; Savenye & Robinson, 1996; Stokes & Urquhart, 2013) and its theoretical concepts (Burla et al., 2008; Bryant & Charmaz, 2007; for the detail, see Section 5.6.2.). The first code, scaffolding was defined in order to answer the first research question:

> *RQ1) What actions do learners carry out when learning online, especially in scaffolded e-learning environments?*

The sub-codes of scaffolding were pre-defined, as well, and listed as scaffolding types and scaffolders. The sub-sub codes for scaffolding types drawn from the previous studies (Azevedo et al., 2003; Ellis et al., 2006; Hannafin et al., 1999; Hmelo & Guizdal, 1996; Tait, 2000; Watson, 2010; Yelland & Masters, 2007; also see section 4.2.2.) are conceptual, procedural, strategic, technical, metacognitive, motivational and explicit and implicit feedback. The following functions of each scaffolding type potentially provided in learning objects within the EAP Toolkit (see Section 4.2.2.) were considered while coding the transcripts of observations according to each scaffolding type provided in the EAP Toolkit and used by participants in this study (for the detail, see Section 4.2.2.; Hannafin et al., 1999):

- Conceptual scaffolding tells learners what to consider in the learning activity.
- Metacognitive scaffolding helps them how to think during learning.
- Procedural scaffolding provides methods for them to know how to accomplish the activity.
- Strategic scaffolding guides them to solve the problem and accomplish future activities.
- Technical scaffolding is provided with hyperlinks or weblinks in the learning objects or computer-based help such as online dictionaries or the internet.
- Motivational scaffolding builds up their motivation (i.e. the statements made by participants such as 'I am happy!', 'I am good!' or 'Congratulations!' can be given as examples of motivational scaffolding.).

- Explicit feedback is the direct answer to the questions in the activity, whereas the implicit feedback provides an indirect answer and learners have the responsibility of discovering what the answer is.

The sub-sub codes for scaffolders drawn from Watson (2010) are introduction, information/explanation, instruction, feedback, hyperlink and dictionary. The following characteristics of scaffolders potentially provided in learning objects within the EAP Toolkit were taken into account while coding transcripts of observations according to each scaffolder used by the participants (for detail, see Section 4.2.1.; Watson, 2010):

- Introduction is the first scaffolder learners encounter to intend to help them have a basic and general idea about the topic or learning object.
- Information/explanation is the second scaffolder in the learning object with the purpose of giving the detailed information about the learning activity.
- Instruction is the third scaffolder designed to aim them to know how to perform and accomplish the activity.
- Feedback is the last scaffolder to give an explicit or implicit answer about the activity or questions in the activity.
- Hyperlink and dictionary are additional scaffolders to assist them in checking the words or word groups in detail.

In order to further contribute to the first research question, the second code, 'learners' actions' was pre-defined, whereas its sub-codes were generated inductively and classified into three sub-sub-codes including learning object choice, OLRs and performing the scaffolded activities. In the last observation session, the participants were free to choose a learning object in the EAP Toolkit in order to observe their actions in choosing a learning object. Depending on their choice of learning object, five sub-sub codes of learning object choice were generated as academic writing, vocabulary, reading and critical thinking, learning skills and grammar. Sub-sub-codes of the second sub-code, OLRs were generated while analysing the transcripts of interviews in order to contribute to the understanding of the participants' actions in using OLRs. Based on the websites they said they used, the sub-sub codes were listed as online dictionaries (e.g. Google translate, Macmillan), online libraries (e.g. TDnet, Google scholar), discussion forums, online journals, mobiles apps, e-book, social networking web sites (e.g. Facebook), online newspapers, movies and authentic links (e.g. Google, A4ESL, EngVid, Englishtown, English4u, English Club, YouTube, UEFAP, TED.com, BBC Radio 4, British Council and BBC 6-minute English). The last sub-code, doing the scaffolded activity, was generated while analysing the transcripts of observations to observe their actions while learning in a scaffolded e-learning environment. Based on their actions while

carrying out the scaffolded activity, six sub-sub codes were generated as: scrolling up and down, re-reading (i.e. re-reading the question, instruction or feedback in the activity), skimming the activity, skipping performing the activity, interpreting scaffolders (i.e. scaffolders such as introduction, instruction or feedback) and choosing the right answer (by guessing, making connections between questions and by trial and error).

The third main code, 'perceptions' was pre-defined to answer the second research question:

> *RQ2) How do learners perceive their own learning online, especially in scaffolded e-learning environments?*

It has three pre-defined sub-codes in order to investigate participants' perceptions of the think-aloud protocol method, the EAP Toolkit and OLRs. The first sub-code, 'perceptions of the think-aloud protocol method' was included in order to analyse interview data and notice how the students felt about their learning while thinking aloud and if the think-aloud protocol method affected their learning while performing the scaffolded activities in the EAP Toolkit during the observation sessions (see Section 5.4.4.). The second sub-code, 'perceptions of the EAP Toolkit' was aimed at analysing their views in learning in the EAP Toolkit in both observation and interview sessions. Similarly, the third sub code, 'perceptions of other OLRs' was intended to analyse their views in learning with other OLRs in the interview sessions. Based on the participants' positive and negative statements about their perceptions of the think-aloud protocol method, the EAP Toolkit and other OLRs, the sub-sub codes were defined as positive and negative. For example, if the participant talked about the advantages and usefulness of OLRs, she or he was coded to positive or vice versa.

The last main code, 'learner autonomy' was pre-defined before analysing data because of the theoretical framework (see Figure 3) and the third research question as follows:

> *RQ3) In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments?*

It has four pre-defined sub-codes and one generated sub-code. One sub-code, teacher support was generated inductively during the qualitative data analysis process. That sub-code had two sub-sub-codes, yes and no. During the observations, if the participants asked to the researcher to help them, they were coded as yes, or vice versa. While being interviewed, they were directly asked if they needed any support from the teacher while learning online. Based on their answer, they were coded as yes or no.

Pre-defined four sub-codes were identified based on the components of learner autonomy (see Figure 6 & Section 3.2.; Benson, 2007) as follows:

- The first sub-code, self-regulation and self-management had sub-sub-codes which were defined based on their definition made by Zimmerman (2002) and Lamb (2010). Considering the interchangeable use of both concepts in studies (Day & Unsworth in Locke & Latham, 2013; Dörnyei, 2005; Jackson, Mackenzie & Hobfoll in Boekaerts, Pintrich & Zeidner, 2005), the present study used codes together and those codes are presented in the same figure. Its sub-sub codes were classified as: monitor, evaluate, plan, adjust, implement and set goals to analyse data from both observations and interviews of the EAP Toolkit. Additional sub-sub-codes arose during interviews of other OLRs and generated inductively as repeat, combine resources, go back to another website and with the help of scaffolding.
- The second sub-code, attributions had two pre-defined main sub codes; success and failure based on Weiner (1986). According to the participants' expressions about whether they felt successful or failed in completing the activity during observations and interviews, they were coded to either success or failure. An additional sub-code, 'both' was included during the analysis of interview data according to participants' attributions to both success and failure. Considering Weiner's (1986) four sets of attributions for success and failure (see Section 3.4.2.1.) and Phillipson and Phillipson (2010)'s study for parents' attributions (see Section 5.4.1.3.), sub-sub-codes of success and failure were defined and categorised as: luck, ability, effort and strategy. If they made their attributions of success to one of those sub-sub-codes, for example, strategy, they were coded to that sub-sub-code. This sub-code was also intended to answer the first sub-question of the third research question:

RQ3.1) To what do learners attribute their success and failure, especially in scaffolded learning environments?

- The third sub-code, self-efficacy had two sub-codes, 'confident' and 'neutral' which were defined in consideration of the previous studies on the relationship between attributions and confidence (Gobel et al., 2013), and learner autonomy and confidence (Chang & Ho, 2009). According to the participants' expressions about their confidence (e.g. they felt confident or did not feel either confident or unconfident) during observations and interviews, they were coded to either confident or neutral. That sub-code was also aimed at answering the second sub question of the third research question:

RQ3.2) What is learners' confidence about their own learning, especially in scaffolded e-learning environments?

- The fourth sub-code, learning strategy had six sub-codes drawing on Oxford's (2011b) learning strategies: Cognitive, metacognitive, affective, meta-affective, sociocultural-interactive and metasociocultural-interactive (for detail, see Section 3.2.3.). It is also purposed to respond to the third sub-section of the third research question:

RQ3.3) What learning strategies do they use, especially in scaffolded e-learning environments?

The following functions of each pre-defined sub-codes or learning strategy were identified in Oxford's (2011b) categorisation and used in the present study as its sub-sub-codes to analyse the qualitative data:

- the functions of metacognitive strategy: planning, self-monitoring, paying attention to cognition, self-evaluation, self-management, identifying problems and selective and directed attention (O'Malley & Cohen, 1990, cited in ibid.).
- the functions of cognitive strategy: going beyond the immediate data, using the sense to understand, reasoning and conceptualizing broadly.
- the functions of meta-affective strategy: paying attention to affect and evaluating affect
- the functions of affective strategy: activating supportive emotions, beliefs and attitudes
- the functions of metasociocultural-interactive strategy: planning for contexts, communication and culture
- the functions of sociocultural-interactive strategy: interacting to learn and communicate

The extract below from Salar's observation (see, also, Example 7.16 in Section 7.5.) gives an example of coding data to learning strategy.

> After reading the instruction section in the activity during the observation, the student, Salar thinks aloud and tells himself to pay attention to his problem. Also, he speaks aloud that he can increase his knowledge to accomplish the activity after reading instructions which are useful for him. He verbalizes his thinking like that:
>
> '*I learned a lot, because first thing, this is my problem as well, I want to focus it, now gradually I can fix it, reading instructions as well, because I missed a lot of words from the activity, here exercises, because I did not know how to apply, how to follow the exercises, because the instruction about it is very useful*.'

The transcript of both Camtasia recording which is shown without italics and quotation marks and the think-aloud protocols which are shown with italics and quotation marks in the above extract

was given in one file as explained in Section 5.6.2. With this, it was aimed to help the researcher analyse and code data as follows:

Salar reads aloud the instruction section in the EAP Toolkit (transcribed from Camtasia recording). He verbalises his thoughts about his learning (transcribed from the think-aloud protocols). He states that he wants to focus his problem. The use of 'focus' in his statement potentially shows that he wants to pay attention to his cognition (Oxford, 2011b). As indicated above, paying attention is a function of metacognitive strategy (ibid.) and a sub-sub-code in the present study, so he potentially develops that strategy. That extract of the transcript recorded with quotation marks was selected and coded under the categories of 'paying attention to cognition', metacognitive strategy and learning strategy.

Overall, each transcript was coded by selecting the extract, right-clicking on the highlighted quotation and choosing the appropriate code or sub-code (Basit, 2003). Extracts were sometimes coded to more than one code or sub-code. In the example below, a student nicknamed as Tase reads *feedback* (a scaffolder) during the second observation and verbalises her thoughts by stating that she did very well in the activity (see also Example 6.1 in Section 6.2.1.2.).

> *Yes this is a good one. Yes, I will show feedback. Good, bad, bad, good. Oh good! I did very well in this activity (smiling happily.).*

The above extract from her transcript was coded to as follows:

- feedback as a sub-sub-code of the scaffolder because she read the feedback section in the EAP Toolkit;
- motivational scaffolding as a sub-sub-code of scaffolding type because she was pleased as understood from her think-aloud protocol: 'Oh good! I did very well in this activity' and it was understood also from the Camtasia recording that she was smiling and she had a happy face;
- confidence as a sub-sub-code of self-efficacy, as she thought that she performed very well and that this potentially increased her motivation and confidence;
- success as a sub-code of attribution theory as she found herself to be good;
- self-management and self-regulation as a sub-code of learner autonomy because she seemed to be able to evaluate her learning. She checked her answers with the ones in the feedback section and assessed her progress by stating that she did very well.

Ultimately, the present study combined the results of both the qualitative analysis of qualitative data and of the quantitative analysis of quantitative data by interpreting the research (see

Chapters 6 & 7). By this means, triangulation could show similarities and differences and validate the data (Kimchi, Polivka & Stevenson, 1991; for more detail, see Section 5.4.6.). With Section 5.6. having clarified the analysis of both qualitative and quantitative data, the next section deals with ethical issues in the present study.

5.7 Ethical Issues

After introducing the methodological part of the present study, this section looks at ethical issues to be considered and clarified. As the study took place in an institution and involved the students, it was necessary to obtain an ethical approval from the university's administration to conduct the fieldwork. Therefore, the researcher submitted a full description of this research by means of the Electronic Research Governance Online system (ERGO) by attaching the ethics form or checklist, consent form, participant information sheet, research assessment form and research protocol.

The information sheet about the current research, and consent form were distributed to the participants reminding them that taking part in that research was voluntary, and they could withdraw from it any time. Maintaining the participants' privacy and confidentiality was assured. The anonymity of the participants in the questionnaire was assured by excluding a section giving their name in the questionnaire. However, this was underlined again during the observation and interview in order for the participants to feel free to perform the activity and answer the questions. Also, data from all these research instruments (see Section 5.4.) were ensured their keeping in password-protected areas such as a laptop or hard disk. In addition, the data obtained from the present study were used only to investigate the relationship between scaffolding and learner autonomy in e-learning environments in terms of looking at the participants' self-management, self-regulation, use of learning strategies, attributions for success and failure, and self-efficacy.

Consequently, ethical issues were raised and solved in the present study to ensure that the current research was conducted in an accepted and correct way. This section having explained every part of the methodology in the present study, the next section argues its limitations and reflexivity.

5.8 Limitations and Reflexivity

All the previous explanation has been given to clarify the methodology of the present study including the research design, procedures, instruments, data collection and analysis and ethical issues raised. However, the limitations of this study and reflexivity should be discussed in order to

ensure provision of both the correct context for this study and its appropriateness and effect and to provide suggestions for the future research. Therefore, further discussion will proceed on the study's limitations and reflexivity, respectively.

Although the sample size of the main study in the current research was larger than in the pilot study, the number of participants in the questionnaire, and observation and interview was restricted. 35 students in the questionnaire were not enough to generalize the research. Above all, the study was limited to only one university in the UK. Another limitation of this study occurred during the observation. As the students were not experienced in performing the activity not only while being recorded, but also while thinking aloud, they might not have felt as comfortable as they did at home. Attempts to overcome that limitation were made by providing a warming-up activity for the participants before the actual observation (see Section 5.4.4.). Finally, even though this research mainly focuses on the relationship between scaffolding and learner autonomy in e-learning environments, a more longitudinal study with a control group would be required to discern whether there is a difference between scaffolded and unscaffolded e-learning environments in promoting learner autonomy.

Along with the limitations of the present study, its reflexivity is the other significant issue to mention since the way "I", the present researcher interpreted and analysed the data, or decided to present the study as 'the researcher' is an element to discuss in terms of reflexivity (Guillemin and Gillam, 2004). Reflexivity is defined as 'the idea of awareness-that researchers are reflexive when they are aware of the multiple influences they have on research processes and on how research processes affect them' (Gilgun, 2010, p.1). In the same vein, as 'the researcher', I was aware that my background in coming from another nation, Turkey, might influence my interpretation of the findings. However, in order to interpret the data without any bias, I tried to avoid adding my viewpoints, beliefs or experiences, and discussed the codes with my supervisor and experienced peers in the process of analysing qualitative data (see Section 5.6.2.). Also, as an observer and conductor of the current study, I attempted to exclude and prevent myself from influencing the participants while they were carrying out the tasks in the Toolkit during the observation and observed without responding to any questions from the students which were not related to the misunderstandings of questions. This is because if I had answered them, my response would have affected the participants' views and thoughts during the administration of both questionnaire and interview.

To sum up, the limitations of the present study have been given. Also, a suggestion was indicated for further study (also see Section 9.3.). Moreover, the reflexivity was discussed in that as a researcher, I was aware of the need to exclude myself from affecting both participants and

results. The methodological issues of the present study were comprehensively argued and explained. Therefore, the next section concludes the current chapter.

5.9 Conclusion

The present chapter has firstly described how the research was designed in terms of both qualitative and quantitative research, which construes a mixed method research. The explanation of why the institution and the participants were chosen has been provided by referring to Chapter 4 for the context of the present study in terms of the EAP Toolkit and other online learning resources. The research instruments covering the questionnaire, interview and observation via the digital screen capturing software, Camtasia and the think-aloud protocol method have been presented along with the reliability, validity and triangulation of the research methods. The application of these instruments has been given in data collection including the pilot and main studies. It has been noted that the analysis of data from these instruments was performed qualitatively and quantitatively by utilising SPSS and NVivo data analysis software programs. Having discussed the ethical considerations, this chapter has discussed the limitations and reflexivity of the study. Overall, this chapter has outlined the methodological aspects of the current study in an effort to introduce as clear a description of the research as possible in order to aid comprehension of the following chapters. Considering this, the next two chapters will give detailed data about scaffolding, learner autonomy and the relationship between these two concepts in e-learning environments.

Chapter 6: LEARNING IN SCAFFOLDED E-LEARNING ENVIRONMENTS

6.1 Introduction

Chapters 6 and 7 present data collected in this study and an analysis of the findings from the pre- and post-questionnaires, digital screen capturing with video (Camtasia recordings), think-aloud protocols and interviews. Chapter 6 will answer the first and second research questions of the current study (see RQs 1 & 2 in Section 1.3.) with an exploration of learners' actions and perceptions of their own learning, especially in scaffolded e-learning environments. Chapter 7 investigates learner autonomy and will describe how learners actually exercise their autonomy, with the aim of answering the third research question (see RQ3 in Section 1.3.). It examines learners' self-management and self-regulation, their use of learning strategies, their attributions for success and failure, and their confidence (see Figure 6 and Section 3.2.). At the end of Chapter 7, the two main concepts of scaffolding and learner autonomy are brought together to examine the ways this relationship occurs, which is the final research question and the main focus of this study (see RQ4 in Section 1.3.).

Overall, the data shown in this chapter aims to give an understanding of how participants learn using an online resource, the EAP Toolkit, which has been designed to support learning through scaffolding (Watson, 2011; see also Section 4.2. for the detail) and by using other online learning resources (OLRs) chosen by the participants (for the review of OLRs, see Section 4.3.). This is intended to give an insight into how learners continue their learning through the use of OLRs which might or might not offer a scaffolded design structure for the same level. The chapter presents the triangulated analysis of both qualitative and quantitative data and exemplifies the findings with extracts from the data. Section 6.2. sets out to explain which actions learners perform when learning online, by looking at their experience and behaviour within scaffolded e-learning environments in terms of their use of scaffolding types and scaffolders (Section 6.2.1.), the pattern of activity within the EAP Toolkit and other OLRs (Section 6.2.2.) and the ways their individual activities in the EAP Toolkit are carried out (Section 6.2.3.). Then, Section 6.3. examines an analysis of their perceptions of both the EAP Toolkit and other OLRs and, specifically, scaffolding in online learning resources.

6.2 Learners' Actions when Learning Online, Especially in Scaffolded E-learning Environments

This section examines participants' actions in learning online in order to answer the first research question of the present study:

> *RQ1) What actions do learners carry out when learning online, especially in scaffolded e-learning environments?*

The analyses of the data from the Camtasia recordings, think-aloud protocols, interviews and pre- and post-questionnaires provide an understanding of learners' actions in terms of the scaffolding they draw upon (Section 6.2.1) and their use of the EAP Toolkit and other online learning resources (Sections 6.2.2. & 6.2.3).

6.2.1. Participants' Learning Actions in a Scaffolded E-learning Environment

This section aims to present an analysis of learners' actions when using scaffolding and of how learners use scaffolding types and scaffolders in the EAP Toolkit and other OLRs, if any. In order to do this, it draws on the qualitative data findings of the actions students perform when learning in scaffolded e-learning environments (see RQ1 above).

6.2.1.1. The Analysis of Scaffolding Types Participants Use in an E-learning Environment

Data from the digital screen capturing with video (Camtasia recordings) and think-aloud protocol methods in this section will investigate which scaffolding types learners use to learn in a scaffolded e-learning environment. In order to display the types of scaffolding, my analysis of scaffolding types provided in LOs in the EAP Toolkit (which participants were asked to complete and potentially performed during all of three observation sessions, as shown in Figure 26) will be presented (for more explanation, see the below paragraph). The data from Figure 26 are intended to facilitate the analysis of the participants' use of scaffolding types during observation sessions as shown in Figure 27. Figure 26 presents which scaffolding types were provided in LOs within the EAP Toolkit that the participants used during the observations, whereas Figure 27 shows which scaffolding types the participants used during the observations. Additionally, examples of each scaffolding type that are coded according to participants' actions will be shown.

Drawn on my analysis based on the studies (Azevedo et al., 2003; Hannafin et al., 1999; Hmelo & Guizdal, 1996; Tait, 2000; Yelland & Masters, 2007; see Section 5.6.2.1) and the discussion made on scaffolding types in the EAP Toolkit (see Section 4.2.2.), Figure 26 illustrates this analysis of

scaffolding types which are conceptual, procedural, strategic, metacognitive, motivational-affective and technical, and implicit and explicit feedback. It shows the different scaffolding types that are potentially covered by LOs in the EAP Toolkit, of which participants made use while carrying out the activities in the EAP Toolkit during three observation sessions. Data was calculated by analysing each LO and coding it according to its provision of scaffolding type (for the detail of scaffolding types provided in the EAP Toolkit, see Section 4.2.2.; for the data analysis, see Section 5.6.2.1.). The analysis of the data intends to observe and compare which scaffolding types LOs potentially provide (see Figure 26) and which types participants potentially use (see Figure 27). The vertical axis gives the number of instances of each scaffolding type and the horizontal axis shows the six scaffolding types and two feedback types identified during the analysis of LOs.

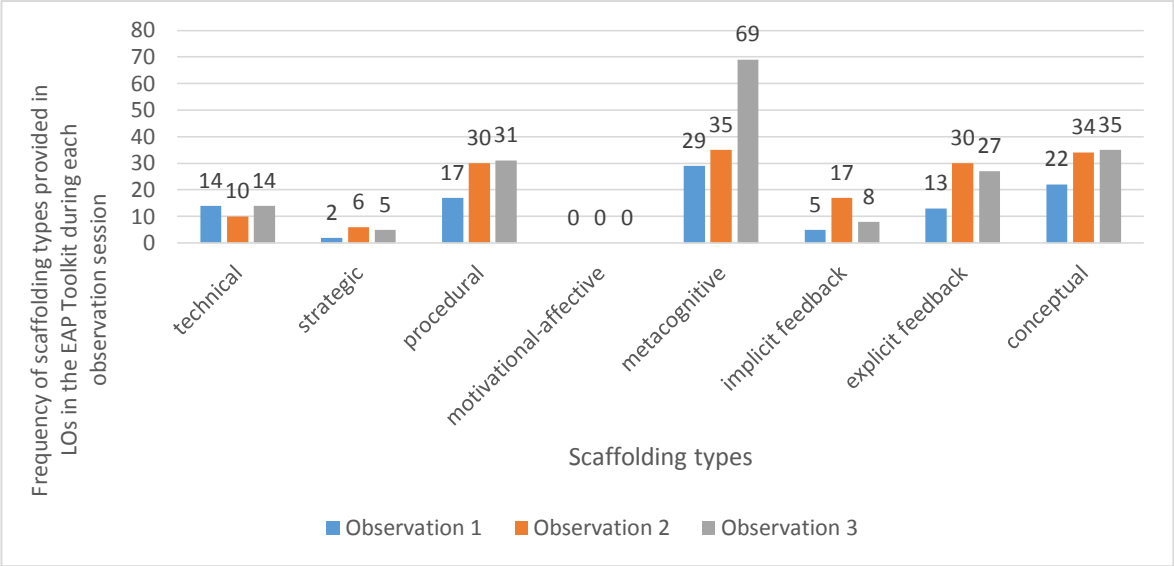


Figure 26: Scaffolding types the EAP Toolkit provided according to observation times

It can be seen that there are in total, 133, 91 and 78 instances of metacognitive, conceptual and procedural scaffolding respectively, thus comprising the most common forms of scaffolding types. That may be because the EAP Toolkit was designed to support academic study skills (Watson, 2010; see Section 4.2.). Metacognitive scaffolding assists learners in 'how to think during learning' (Hannafin et al., 1999, p.132; see Section 4.2.2.), whereas conceptual scaffolding guides 'what to consider' (ibid. p.132) and procedural scaffolding gives the methods for learners to use the tasks (ibid.). That potentially links to the aim of the EAP Toolkit which is to facilitate students' learning by providing support and scaffolding (Watson, 2010). It seems that metacognitive scaffolding is provided more than other scaffolding types in the EAP Toolkit (see Figure 26) because it has 'an initial role in finding and framing problems' (ibid. p.131), so users of the EAP Toolkit receive metacognitive scaffolding more often than other types. However, *motivational-affective scaffolding*, which provides encouragement (Mackiewicz & Thompson, 2014) for users to sustain and build up their motivation for learning (Yelland & Masters, 2007), does not appear in the data

(see Figure 26). This could thus be considered an element lacking in the EAP Toolkit, at least in the LOs accessed by the participants. However, the learners need motivational feedback, which is investigated elsewhere in this chapter (see also Section 6.3.2.).

Figure 26 also shows that explicit feedback (70 instances) is provided more than implicit feedback (30 instances). This might be because the EAP Toolkit includes model answers in the feedback to create the role of an 'automated tutor' (Watson, p.46; see also Section 4.2.). Users of the EAP Toolkit are potentially supported with conceptual, procedural, strategic, metacognitive and technical scaffolding, and with explicit and implicit feedback while learning in the EAP Toolkit. The analysis of the data in Figure 26 facilitates the research in order to examine and compare participants' use of scaffolding types in the EAP Toolkit while they were performing the activities during the observations (see Figure 27) with the range of scaffolding types the EAP Toolkit potentially provides.

Figure 27 illustrates the frequency of use of the scaffolding types by participants in each of the observation sessions. The vertical axis shows the number of instances of scaffolding types used by each participant and the horizontal axis shows each participant in the study and the scaffolding types they used in each of the observation sessions, from session 1 to session 3. The data from the Camtasia recordings and the think-aloud protocols were analysed by coding each participant according to their use of various scaffolding types. As represented in Figure 26 (for more information about the categorisation of coding, see Section 5.6.2.1.), six scaffolding types (i.e. conceptual, procedural, strategic, metacognitive, motivational and technical scaffolding) and two feedback types (implicit and explicit feedback) are presented in Figure 27.

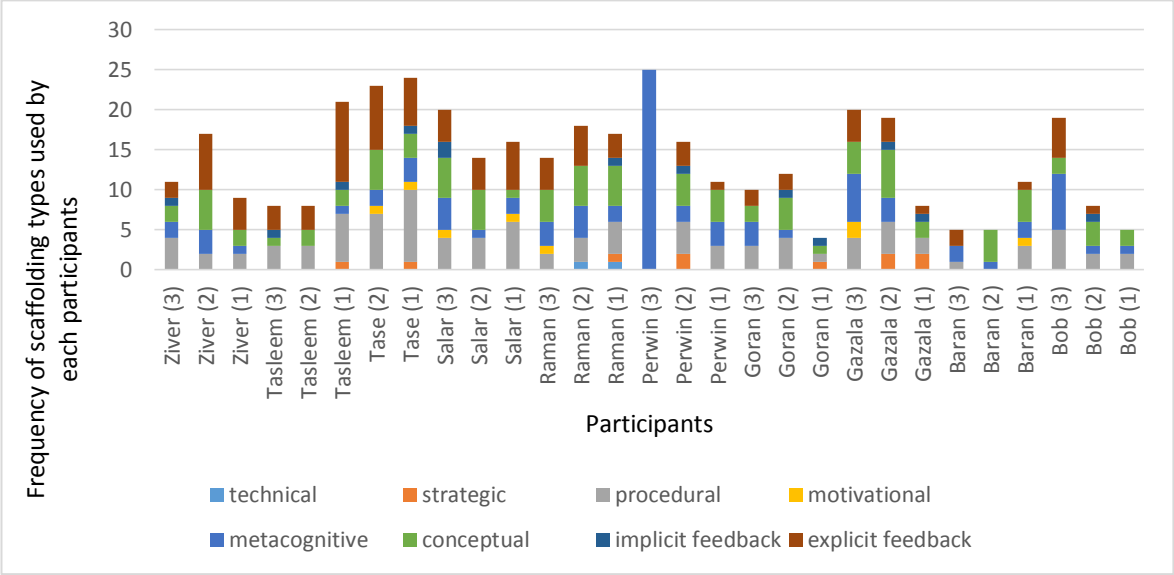


Figure 27: Scaffolding types participants used during observations

All participants were invited to start the session by working on the same learning object (LO) (see Section 5.5.2.) in the first and second observation sessions, whereas in the last observation they were free to choose which LO to use. Looking at Figure 27, all the scaffolding types, including technical, metacognitive, strategic, procedural, conceptual and explicit and implicit feedback (see Section 5.6.2.1.) provided in the LOs, are utilised by all the participants at some point. There seems to be no consistent pattern of use of scaffolding type, however, each participant uses at least three different scaffolding types in each session (except Perwin, who only reads the introduction in Observation 3). Different scaffolding types are used in all three observation sessions possibly due to the variation in the requirements of the different activities chosen and the differences in the learning actions required (for more detail, see Sections 6.2.2.1. and 6.2.2.2.). Any differences in use might also relate to levels of self-management and learner autonomy (see Section 7.2.). Tasleem, for example, uses strategic, technical, metacognitive, conceptual and procedural scaffolding and explicit feedback in the first observation whereas in the other two sessions, she merely uses procedural and conceptual scaffolding and explicit feedback. This might be because those scaffolding types were provided in LOs that Tasleem used during the observation sessions or because of her preference for reading those scaffolders.

The most used scaffolding types by the participants are metacognitive, procedural and conceptual scaffolding which relate to the scaffolding types available within each learning object where learners work consistently through the activity (see Figure 26). The frequency of these higher-order scaffolding types is possibly due to the academic nature of the EAP Toolkit and the support and scaffolding it sets out to provide. Metacognitive, conceptual and procedural scaffolding enable learners to discover how and what to think and the ways to utilise their learning objects and tasks (for more, see Sections 4.2.2. & 5.6.2.1.). It could be argued that in this way they replace the teacher. Feedback is also vital in their learning, perhaps as would be the case in more teacher-centred activities, as it provides explicit answers within activities as needed. Learners also seem able to provide motivational scaffolding for themselves (see examples 6.1., 6.2 & 7.25), although Figure 26 shows that this sort of scaffolding does not seem to be provided in the EAP Toolkit. However, no new scaffolding type has been identified in this data, except for those already identified in the literature (see Section 2.3.3.). In the following paragraphs, data for each of the scaffolding types are presented and discussed by analysing the think-aloud protocols and Camtasia recordings of each participant. The participants' think-aloud protocols will be shown with italics and the data from Camtasia recordings will be shown with brackets in order to show their paralinguistic features (for the detail about the qualitative data analysis, see Section 5.6.2.).

Although the Toolkit does not provide **motivational scaffolding** (see Figure 26), Figure 27 indicates the existence of some motivational scaffolding in that feedback in the EAP Toolkit

stimulates motivation. In other words, participants seem to self-scaffold motivationally. After looking at the feedback, they praise themselves and carry on the activity or LO. These behaviours are illustrated in example 6.1. in which Tase provides motivational scaffolding as her own feedback as she is noticeably pleased with her performance (Chapter 6, Example 1).

Example 6.1

Tase (2) *(Tase in Observation 2): Oh good! I did very well in this activity (smiling).*

…

Let's check. Oh, OK. I am happy with this.

Also, nearly half of the participants (Gazala 3, Raman 3, Salar 1 and 3 and Baran 1) use self-scaffolding to assess and give themselves feedback by providing praise such as '*Great*!', '*Good*!' or '*Congratulation for myself*!' during their learning processes. For example, in Observation 1, at first Baran thinks that he has failed to answer the question correctly. However, after looking at the feedback, he compares his answers and sees that he is right. For this reason, he gives himself motivational scaffolding by uttering '*Congratulation for myself*!' and '*That is good*', as seen in example 6.2 (for the relation to learner autonomy, see Sections 7.2. and 7.5. and Appendix P, and for discussion, see Section 8.4.).

Example 6.2

Baran (2*): Show feedback. And I think I am zero. Asset … and Banking, which one banking. Oh the one of banking yeah, the one of banking yeah. Congratulation for myself! The first, just one of the right. Second one is not right. And yeah third one is right. I just guessed. That is good.*

More than half the participants (Gazala 1 and 2, Goran 1, Perwin 2, Raman 1, Tase 1 and Tasleem 1) use **strategic scaffolding** which is incorporated in the feedback section in order to guide them in managing the activities. Thus, strategic scaffolding helps them to improve their learning strategies through feedback (e.g. see also Section 7.5.). For instance, Goran reads the feedback that gives strategic scaffolding or guidance in dealing with the questions. Before obtaining explicit feedback on his answer, he prefers to compare his understanding with the feedback, and tells himself what to do in order to support his learning, such as determining which word to choose and consider, as in example 6.3.

Example 6.3

Goran (1): *Now, I want to compare what I understand from this, this instruction before I look at feedback. I thought I had to determine some words bold, which, which I think they will be useful*

for some practical works. Also, I determined some words that I don't know the meaning of them. For example, toddler, I don't know the meaning of toddler, I don't know the meaning of heal. OK.

However, participants differ in their responses; for example, Tasleem receives similar feedback to Goran, as in example 6.3. But Tasleem wants to see explicit feedback rather than just implicit feedback that gives strategic scaffolding (see example 6.4.). This suggests that she is not autonomous enough to manage her own learning in this situation.

Example 6.4

Tasleem (1): *Also, they give me feedback now which shows that what words maybe useful, but it does not explain how I choose the word. It does not exactly show me what is wrong with the word I chose. It just explains the word, the important words, how important they be. It does not say my word is right or wrong. You may still have found and highlighted words and phrases that might be useful to learn. Yeah, it does not show that if I chose right word or not. It only tells me how to choose a right word.*

Moreover, all of the participants (Bob and Baran in 1 and 3; Ziver, Salar, Raman, Gazala and Goran in 1, 2 and 3; and Perwin, Tase, Tasleem in 1 and 2) utilise **procedural scaffolding** in the instruction section. This suggests ways of accomplishing the tasks (see Section 5.6.2.1.). In other words, they seem to understand the activities better after reading the instruction (see examples 6.5. and 6.6.), which is the intention.

Example 6.5

Gazala (1): *I understand it really.*

Example 6.6

Salar (1): *From the instruction, there is a way to use two times. Learning words by topic …*

Similarly, all the participants use **conceptual scaffolding** in the introduction, information/explanation and feedback sections, which helps them to consider the learning objective (for the explanation of conceptual scaffolding, see Section 5.6.2.1.) for that learning object (LO). For example, they are helped with understanding the learning point, correct themselves, and then proceed to the next activity (e.g. Perwin and Salar). They also spell out their understanding and tell themselves what they should be considering, as seen in example 6.7 (participants' words underlined in these examples).

Example 6.7

Bob (2): *All student writers should be aware of the importance of not plagiarising the work of another writer (reading aloud). Sometimes we start to, we start to write our essay. Maybe, we, maybe we can use some (articles) from some of us and writers. It is easy to pla-, plagiarism*.

Above all, all of them utilise the **metacognitive scaffolding** provided in the introduction, information/explanation and feedback sections in order to understand how to think (for metacognitive scaffolding, see Section 5.6.2.1.). Using this type of scaffolding, they tell themselves how to think. As Perwin demonstrates in example 6.8, she tells herself to choose key words so as to understand the essay title although she only uses one type of scaffolding, metacognitive scaffolding (reading the introduction) in the last observation (see the reason for this in Section 6.3.1.1.2.).

Example 6.8

Perwin (3*): In these activities you will identify the precise meaning of some of the more commonly used key words in essay questions and then consider some general problems concerning the interpretation of essay titles* (reading aloud). *Choose key words, after that, because we need to understand essay title. Second, improving your paragraphs with topic sentences* (reading aloud).

Although metacognitive, conceptual and procedural scaffolding are used by all the participants, and strategic and motivational scaffolding are used by six and five of them respectively, only one participant (Raman 1 and 2) draws on the **technical scaffolding** provided in the EAP Toolkit, such as hyperlinks (see Section 5.6.2.1). Raman clicks on the hyperlinks provided in the information/explanation and instruction sections in order to have a better idea of topics such as prefixes and suffixes. Nevertheless, some of the participants prefer to go beyond the help provided in the Toolkit. For example, Bob, Baran and Tasleem solve the problem of not understanding vocabulary items by planning to use other OLRs such as Google during the learning process. This indicates individual differences in preference for technical scaffolding (see suggestion for the provision of technical scaffolding in Section 6.3.1.1.2.) and in learner autonomy, evidenced when they go beyond the provided resource (see discussion about the use of OLRs for learner autonomy in Section 8.4.).

All the participants, except Baran, preferred to read both explicit and implicit feedback. Learners use **explicit feedback** to check their answers during all three observations. They compare their answers with the explicit feedback (see examples 6.9. and 6.10.), evaluate their learning, and proceed to the next activity (see example 6.11). With **implicit feedback**, they receive more information than only the answers (see example 6.12) and this potentially helps them engage

with the LOs and correspondingly improve their learning. Most importantly, as the following examples show, feedback helps the learners to improve their learning techniques and continue with the next task by giving explicit or implicit information about the answers (for the relation of feedback to learner autonomy, see Section 7.2.).

Example 6.9

Baran (3): *Show feedback tells me something, yes that is right.*

Example 6.10

Goran (2): *OK. Just I did a mistake in the first one. I made a mistake in the first one.*

Example 6.11

Raman (3): *There is just one word in the context I did not. It is OK. Good! I finish this part. Let's go to the next part.*

Example 6.12

Tasleem (3): *Human beings, I have to choose must or should, have been have been conscious of memories and purposes long before they made any explicit distinction between past, present, and future. OK, human beings, have been, I think should have been. I will check the answer. Human beings must have … The emphatic use of 'must' here implies logical necessity and is a better choice than 'should', which would weaken the statement (reading aloud). Ah, OK, should weaken the statement. Yes, I think for the last one, I understand more*.

Data from observations show that participants use different types of scaffolding in their learning process, as illustrated in Figure 27, but they do not identify any new scaffolding type. The use of scaffolding types suggests that learners can enhance their learning through scaffolding in different ways (for discussion, see Section 8.2.2.2.). Moreover, they provide scaffolding for themselves (i.e. self-scaffolding) as a form of motivational scaffolding when it is not provided in the scaffolded structured environment (see Section 4.2.2.). Also, feedback helps the learners to receive the information implicitly or explicitly and potentially increases their knowledge, motivation (see also Sections 7.3. & 7.4.) and self-management (see also Section 7.2.). With learners' use of scaffolding types having been identified, there is a need for further clarification about the scaffolding used in the present study. Therefore, the next section examines the use of scaffolders in the learning process.

6.2.1.1 The Analysis of Scaffolders Participants Use in an E-learning Environment

The previous section has shown how learners use scaffolding types to facilitate their learning, while the present section will look at learners' use of facilitators, named as scaffolders which are provided in an e-learning environment. Likewise, learners use different scaffolders to understand a topic better and continue to the next activity or section depending on their preferences, perceptions and the learners' autonomy. This section investigates learners' use of scaffolders in order to give a greater understanding of the actions they carry out when learning in scaffolded e-learning environments. Data from both qualitative and quantitative instruments may help to conceptualise that issue.

As the EAP Toolkit has been used as an example of a scaffolded e-learning environment, the scaffolders provided in LOs within the Toolkit were analysed and categorised into groups such as introduction, instruction, information/explanation, feedback, hyperlinks and dictionary sections, based on the indications in Sections 5.6.2.1. and 4.2.2. The analysis of the use of scaffolders by the participants can give further information about their learning within scaffolded e-learning environments. For instance, the participants might choose to read and follow the order (the introduction, information/explanation, instruction and feedback sections in the EAP Toolkit, see Section 4.2.2. for the detail) presented by each LO, or they might skip any single scaffolder or every scaffolder in a LO but complete the activity or task without looking at the scaffolder. Therefore, this section aims to show which scaffolders participants use and which ones contribute to an understanding of the actions they carry out when learning online as analysed more thoroughly in Section 6.2.3.

Figure 28 below represents the frequency of use of scaffolders by participants during the three observation sessions. The vertical axis shows the number of participants who used any scaffolder in an observation session, whereas the horizontal axis shows the scaffolders that were used by the participants in each of the observation sessions. Six scaffolders are presented here as introduction, instruction, information/explanation, feedback, hyperlinks and dictionary sections (see also Sections 4.2.1. & 5.6.2.1). As can be seen in Figure 28, the category of yes/ (scaffolder) introduction, instruction, feedback or explanation means the participant used that scaffolder. If it is no/ (scaffolder), that means the participants did not use it. The data were calculated by analysing the think-aloud protocols and Camtasia recordings of each participant according to their use of scaffolders.

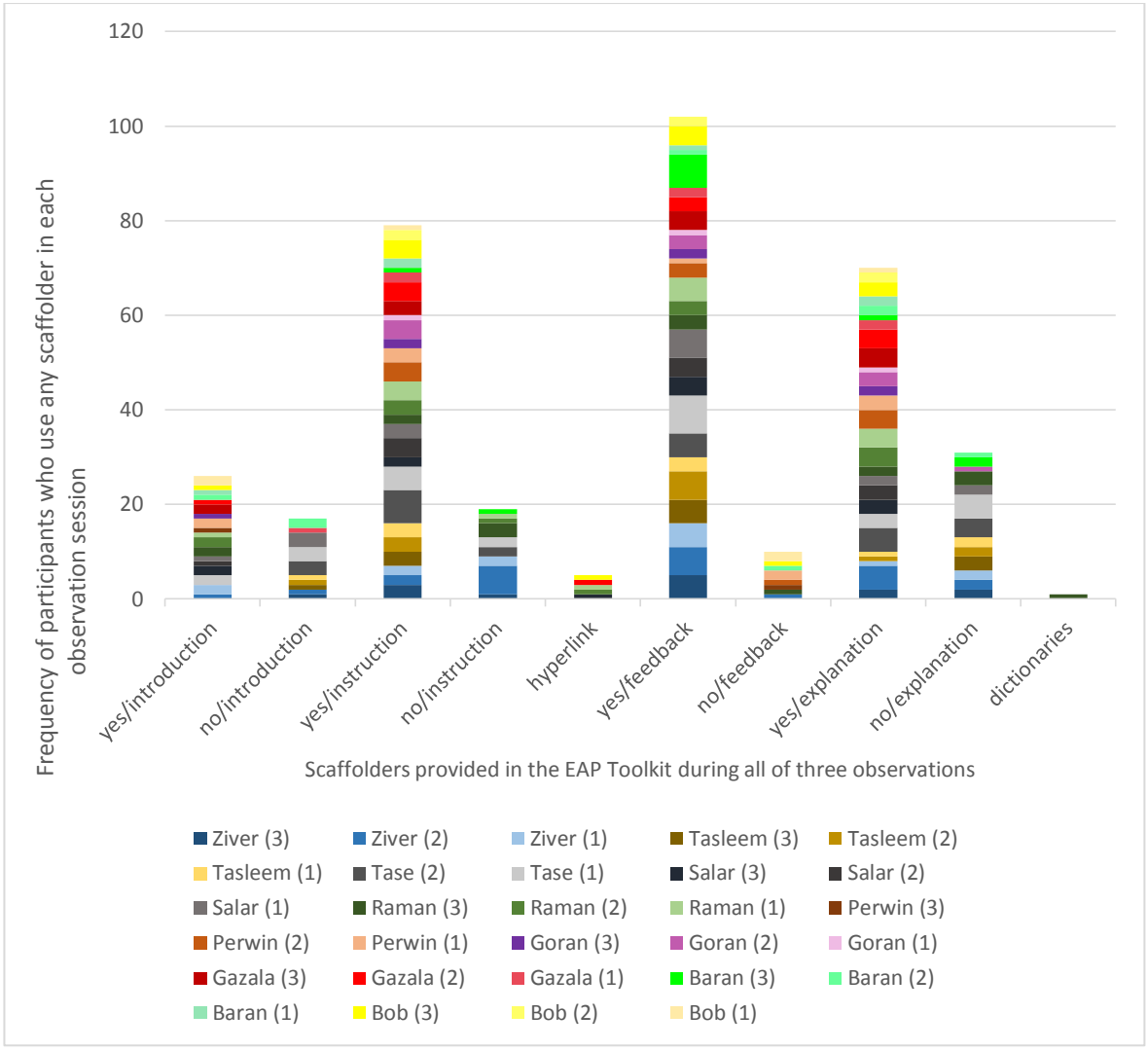


Figure 28: The number of instances of the use of scaffolders during observations by all of the participants

As demonstrated within the above figure, the participants use certain scaffolders such as:

- the explanation section (approximately 70 times) for receiving information about the topic,
- the instruction section (approximately 80 times) for understanding how to complete the activities and
- the feedback section (over 100 times) for checking their answers (for discussion, see Section 8.2.3.).

This shows that learners mostly need those three scaffolders to manage their solo learning. It indicates that learners need scaffolders to accomplish their tasks or proceed to a further activity because they are alone in an e-learning environment (see Section 7.5.).

All participants use at least three scaffolders in each observation, except Perwin (3), who only draws on the introduction section as she does not have the skill required to use the computer (e.g. to click on an LO to do the activities). However, except Raman 3, they do not use the dictionary contained in the EAP Toolkit. Also, hyperlinks are not used by the participants except by Raman in the first observation despite their presence. Still, they are utilised in the second observation by Raman and Gazala and in the last observation by Salar and Bob. This suggests that participants are keen to use scaffolders, although their inability to use the computer, combined with their learning preferences, might prevent them from fully using scaffolders (see Part c) of Section 6.3.1.1.2).

Moreover, a few of the participants search Google to hear the right pronunciation (Bob 1) and to translate English words into their native language (Baran 1, 2 and 3; Tasleem 1 and 2), the target language, or English (Bob 1 and 2) during the observation sessions. This implies that some participants require more scaffolders to further their learning, whereas others find the use of other OLRs in the learning process distracting (see Section 6.3.1.2.2.). In this sense, the designers of a scaffolded structured e-learning environment should consider learners' needs, especially when they are alone in taking control of their learning. That means that learning can be improved within an e-learning environment which provides scaffolding that is sufficient but effective for each learner. In this context, the selection of a scaffolder at the right time and in the right place, such as the provision of a hyperlink for the words in the activity, can be an example of effective scaffolding for consideration in e-learning environments (see Section 8.5.).

Most importantly, the feedback from the EAP Toolkit is used during each observation by nearly all participants on average 34 times (32, 36 and 34 times in Observations 1, 2 and 3, respectively). The use of feedback in Observation 3 is lower than in the previous observations possibly due to the absence of one of the participants, Tase. Similarly, quantitative data from the comparison between pre- and post-questionnaires shows that for 35 students, the use of feedback in other OLRs slightly increases over time (see Table 10 above). It seems that learners are able to evaluate, assess and monitor their learning on their own through feedback. This could indicate that their levels of self-management and learner autonomy improve with the use of feedback (e.g. see Section 7.5.).

Table 10: Frequency and Percentage of Receiving Feedback from Online Language Learning Resources Reported in the Pre- and Post-Questionnaires

Response	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
Yes	16	45.7	20	57.1
No	15	42.9	13	37.1
Not Applicable	4	11.4	2	5.7
Total	35	100.0	35	100.0

These two sections have examined participants' actions in using various kinds of scaffolders and the scaffolding types they use in scaffolding e-learning environments. The findings, mostly from Camtasia recordings and think-aloud protocols, show that they use different scaffolding types and scaffolders in order to facilitate their learning online where there is no human-based help (for discussion, see Section 8.2.3.). However, feedback within the EAP Toolkit and other OLRs seems to have a major impact on their learning. The next section presents an analysis of the individual's use of learning items within the Toolkit and other OLRs in order to further explore their actions.

6.2.2 Participants' Actions when Learning in Online Learning Resources

The previous section has looked at how learners use scaffolding provided in an e-learning environment and how learning happens through scaffolding, and has shown that learners have different experiences of using different scaffolders and scaffolding types. Similarly but broadly, this section intends to explore which actions and steps they enact while learning in e-learning environments by analysing the use of both the EAP Toolkit by using the case study of each student and those of other OLRs (see RQ 1. in Section 1.3.).

6.2.2.1 Participants' Learning Actions in Using Learning Items in the EAP Toolkit

Data from observations, interviews and questionnaires show that learners carry out different actions when learning online and in scaffolded e-learning environments. In order to illustrate this, the data from Camtasia recordings and the think-aloud protocols were analysed to examine each participant's use of LOs in the EAP Toolkit through indicating the duration of completion of each learning item and the order in which the person chooses to work through the LO. The times being spent on each LO are also compared for each participant. The tables in Appendix K illustrate the use of each learning item within the EAP toolkit in each observation session. Data from the questionnaire allow a comparison between observed phenomena and the wider group's use (35 participants in the questionnaire) of the EAP Toolkit.

Overall, participants vary considerably in their use of the EAP toolkit. This applies to their actions in spending time on each activity, in completing the activities, and in using the order of the scaffolders such as the introduction, information/explanation, instruction and feedback sections provided in the EAP Toolkit (see Section 4.2.1) over the three observation sessions (for details, see Appendix K). On average, participants spent between 1 and 17 minutes in Observation 1, between 1 and 6 minutes in Observation 2 and between 1 and 12 minutes in Observation 3 on each activity. Although they were asked to work on an activity for fifteen minutes during each observation session, one participant, Tasleem in Observation 1 (see in Appendix K) preferred to take longer in order to complete the activities. That might be because she enjoyed doing that activity (see their positive views on the EAP Toolkit in Section 6.3.1.1.1.).

Together with the data from the observations, the analysis of pre- and post-questionnaires helps to comprehend the wider group's (35 participants) actions in using the Toolkit. Data in Table 11 shows that the use of the EAP Toolkit increases over time (i.e. from 14 in the pre-questionnaire to 23 in the post-questionnaire of 35 participants).

Table 11: Frequency and Percentage of the Use of the EAP Toolkit Reported in the Pre- and Post-Questionnaires

Response	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
Yes	14	40.0	23	65.7
No	21	60.0	12	34.3
Total	35	100.0	35	100.0

Likewise, the frequency of use of the activities in the EAP Toolkit increases for weekly use (see Table 12 below). More than half of them (14 participants) who use the EAP Toolkit access the EAP Toolkit more than once a week in the post-questionnaire, whereas half of them (7 participants) who use the Toolkit do that in the pre-questionnaire.

Table 12: Frequency and Percentage of the Number of Times in which the EAP Toolkit is Used Reported in the Pre- and Post-Questionnaires

Number of times in which the Toolkit is used	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
More	0	0.00	1	2.9
Once a day	1	2.9	1	2.9
Once or twice a week	6	17.1	12	34.3
Only a few times	6	17.1	8	22.9
Never	1	2.9	1	2.9
Not Applicable	21	60.0	12	34.3
Total	35	100.0	35	100.0

Likewise, their actions in spending time on learning items in the EAP Toolkit vary over time. Table 13 below shows that 9 out of 35 participants report in the pre-questionnaire that they spend 30-45 minutes on the items, whereas 15 of the participants report similar actions in the post-questionnaire. 3 of the participants answer that they use the toolkit for less than half an hour each time in the pre-questionnaire, while 6 of them say the same thing in the post-questionnaire (see Table 13). That is probably due to the context of the present study, where participants are busy with their courses and assignments in the classroom (for the effect of classroom learning, see Section 6.3.1.1.2.).

Table 13: Frequency and Percentage of Number of Minutes in which a Learning Item in the EAP Toolkit is Spent Reported in the Pre- and Post-Questionnaires

Number of minutes in which a learning item is spent	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
More than one hour	2	5.7	2	5.7
30-45 minutes	9	25.7	15	42.9
Less than 20 minutes	3	8.6	6	17.1
Not Applicable	21	60.0	12	34.3
Total	35	100.0	35	100.0

This table suggests that participants are carrying out actions with regard to sparing time for the activities and continuing to engage with the activities while learning online. They spend less than 45 minutes on the activities as shown in both the qualitative and quantitative data but, as shown in the actual learning period, participants in the observations spend less than 17 minutes on each LO (for discussion, see Section 8.2.1.). In general, using one LO takes approximately 20 minutes, within which time learners (except Baran 2 and Raman, see Section 6.3.1.1.2.) do not report feeling bored or distracted (see discussion in Section 8.2.1.).

The reason for the difference in time spent on each activity is possibly linked to their preferences in carrying out learning actions while learning online. Some finish one activity before moving on to the next activity, while others do not finish it and instead read a scaffolder, or go straight on to the next activity. Furthermore, the learners sometimes show different actions in each observation (for details of each participant's use of learning items, see Appendix K). For instance, Bob follows the provided order; the introduction, information/explanation, instruction and feedback sections (see Section 6.2.1.2.) for the activity in all the observation sessions. Although he does not read any feedback in Observation 1, he uses the information/explanation, instruction and feedback sections in the academic writing folder in Observation 3. Conversely, Baran does not use the feedback for some activities in each of the observations. Although Baran prefers to express his feelings about each learning item rather than reading the introduction, explanation and instruction and then working on the activities (see Figure 35 and Section 6.3.1.1.) in Observation 2, he carries out the activities without reading the instructions found in the learning skills folder in Observation 3. Gazala follows the provided order and uses the information/explanation, instruction and feedback sections in all observations, while she omits one activity and skips one learning item in "vocabulary for academic purposes" in Observation 3. Goran improves his use of the activity in the last observation by accessing the introduction, explanation, instruction and feedback sections, and by working on both the activities in the reading and critical thinking folder, whereas he skips some sections in other observations. Perwin, however, prefers to read only the introduction to each learning item in the academic writing folder in Observation 3, while she performs all the activities in other observations. In the same vein, Salar benefits from all the scaffolder sections in both Observations 2 and 3, even though he skips the explanation for all activities and does not do one of the activities in the first observation. Although Raman prefers not to read the instructions in two activities in Observation 1, he uses all scaffolder sections in the second observation. However, he omits several sections of some activities in the "vocabulary for academic purposes" folder in the last observation. Unlike other participants, Tasleem chooses to spend half an hour on the activities in Observation 1 but without reading the explanation for most of the activities; however, he does do read it in the other observations. Ziver and Tase show the

same attitude to learning items in all the observations- skipping the introduction, explanation or instructions in a number of the activities. This reveals that the interactivity with the toolkit through scaffolding affects the time it takes to complete an activity and is also affected by learners' preferences in carrying out learning actions while learning online (see discussion in Section 8.2.1.).

This variance in their actions over the three observation sessions shows that the participants make different choices in terms of the amount of time they spend on each activity, how they use the introduction, information/explanation, instruction and feedback sections as scaffolders, and how they carry out the activity. It can be inferred from the tables (see sections a, b and c in Appendix K) that most participants follow the provided order for learning items in the EAP toolkit, whereas several of them, such as Baran in Observation 2, and Gazala and Perwin in Observation 3, prefer not to follow the order of activities, or the pathway proposed in the EAP Toolkit. In the same way, scaffolders such as the introduction, information/explanation, instruction and feedback sections, which are designed to help users to carry out the activities (see Sections 4.2.1. & 6.2.1.2.), are used in different ways; for example, Bob, Goran and Salar use these sections more than previously in the last observation.

Findings from the questionnaires reinforce those findings derived from the observations in terms of the variation of use over the research period. McNemar's tests in Tables 22 and 23 in Appendix L show that there is a statistically-significant change in the numbers using the EAP Toolkit between the pre-and post-questionnaires, whereas there is no statistically-significant difference in the numbers using online learning resources over the same period (the use of other OLRs is dealt with in the following section). In addition, the Wilcoxon signed-rank test which was implemented in order to discover whether there is a change or difference between pre- and post-questionnaires provides statistically-significant evidence that participants' median use of the EAP Toolkit at the beginning of the research period differs from that at the end, in that participants spend fewer minutes on each of the learning items in the Toolkit at the outset and use fewer of them (see Table 24 in Appendix M).

In Observation 3, participants were free to choose any folder of learning activities (i.e. including learning skills, academic writing, reading and critical thinking, listening and note-taking, communication skills, grammar for academic purposes, and vocabulary for academic resources - see Section 4.2.) to complete the activities (see Table 14 for the choices they made). Data in Figure 29 and Table 14 below were calculated by coding each participant to the folder or folders of learning activities according to their use. Table 14 shows that nearly all of the participants, except Salar, use one learning folder.

Table 14: Participants' Choice of Academic Learning Folders in the EAP Toolkit in Observation 3

Participants	Academic Learning Folders in the EAP Toolkit				
	Vocabulary	Reading	Learning Skills	Grammar	Academic Writing
Ziver			1		
Tasleem				1	
Salar		1			1
Raman	1				
Perwin					1
Goran		1			
Gazala	1				
Baran			1		
Bob					1
Total	2	2	2	1	3

Furthermore, Figure 29 (below) compares the percentage of the folder or folders of learning activities used during the third observation session. It can be seen that the participants mostly select academic writing (i.e. Salar, Raman & Bob), followed by vocabulary (i.e. Raman & Gazala), reading and critical thinking (i.e. Salar & Goran)and learning skills (i.e. Ziver & Baran), and one participant (i.e. Tasleem) chooses grammar. This is potentially because they are taught in an academic-based course and aim to improve their academic skills (see Sections 5.3.1. and 5.3.2.). However, none of the participants choose listening and note-taking, or communication skills (for learning activities provided in the EAP Toolkit, see Section 4.2.). The data from Table 14 and Figure 29 show that the EAP Toolkit offers the choices that match learners' needs and interests, thus the participants can make use of it to carry out their learning actions.

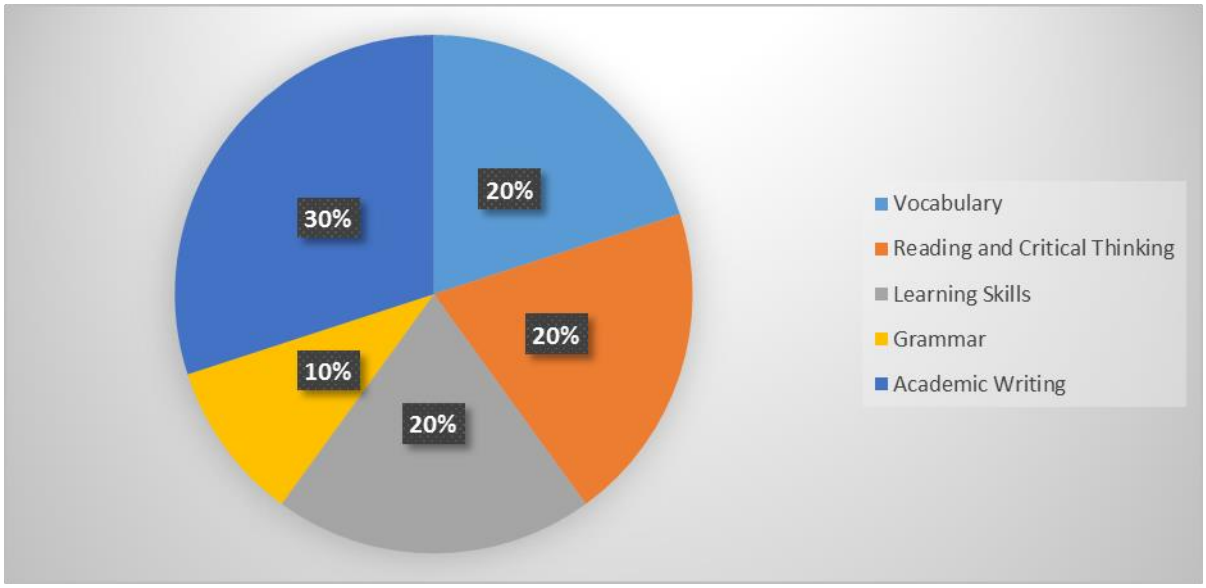


Figure 29: The Proportion of participants' choice of folders in the EAP Toolkit in Observation 3

This correlates with the data from the questionnaire, which show that the Academic Writing folder is the one most commonly chosen (see Tables 14 and 15) and is found to be the most useful (Table 16). The Vocabulary folder is the second most commonly chosen in the post-questionnaire (see Table 15) and is considered the second most useful in both questionnaires (see Table 16 and for more on this, see the recommendation in Section 9.3.).

Table 15: Frequency and Percentage of the Use of Academic Learning Folders in the EAP Toolkit Reported in the Pre- and Post-Questionnaires

Academic Learning Folders in the EAP Toolkit	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
Academic Writing	9	25.7	13	37.1
Reading	1	2.9	3	8.6
Listening	1	2.9	1	2.9
Vocabulary	1	2.9	6	17.1
Learning Skills	1	2.9	0	00.0
Grammar	1	2.9	0	00.0
Not Applicable	21	60.0	12	34.3
Total	35	100.0	35	100.0

Table 16: Frequency and Percentage of the most Useful Academic Learning Folders in the EAP Toolkit Reported in the Pre- and Post-Questionnaires

Academic Learning Folders in the EAP Toolkit	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
Academic Writing	6	17.1	9	25.7
Reading	2	5.7	3	8.6
Listening	1	2.9	3	8.6
Vocabulary	4	11.4	6	17.1
Learning Skills	1	2.9	1	2.9
Not Applicable	21	60.0	1	2.9
Total	35	100.0	12	34.3

To summarise, learners carry out various learning actions when learning within LOs in a scaffolded e-learning environment dependent on their needs and preferences when completing the

activities. Data from the Camtasia recordings and think-aloud protocols show that participants become more aware of scaffolders over time and of their need to engage with particular learning activities, especially in the area of academic writing. Participants' use of the EAP toolkit having been looked at, their wider experience and behaviour within e-learning environments are examined in the next section via their use of other OLRs.

6.2.2.2 Participants' Learning Actions in Using other Online Learning Resources (OLRs)

The above section having introduced the use of LOs in the EAP Toolkit, this section will present both qualitative and quantitative data which show the use of other OLRs by the participants. Data from both pre- and post-questionnaires (see Tables 17, 18, 19 and 20) are presented in order to examine 35 participants' use of computers, online applications and other OLRs, and the frequency with which they use these other OLRs. Also, follow-up interviews supply a deeper understanding of 10 individuals' use and learning within other OLRs (see Figure 30). The aim of this section is to investigate what actions learners carry out not just in scaffolded but also in unscaffolded e-learning environments by looking at their use of other OLRs (see RQ1 in Section 1.3.).

Tables 17 and 18 below indicate that the use of computer and online applications (measured in hours) in the wider group (35 participants in pre- and post-questionnaires) increases over time; that is, 7 of 35 participants use computer and online applications more than 5 hours per day in the pre-questionnaire, whereas 14 of them do so in the post-questionnaire.

Table 17: Frequency and Percentage of Use of Computer and Online Applications in Hours per Week Reported in the Pre-questionnaire

Number of hours	Use of computer		Use of online applications	
	Frequency	Percent	Frequency	Percent
12 or more	1	2.9	1	2.9
9-11	0	00.0	2	5.7
6-8	6	17.1	10	28.6
4-5	21	60.0	7	20.0
2-3	7	20.0	10	28.6
0-1	0	00.0	5	14.3
Total	35	100.0	35	100.0

Table 18: Frequency and Percentage of Use of Computer and Online Applications in Hours per Week Reported in the Post-questionnaire

Number of hours	Use of computer		Use of online applications	
	Frequency	Percent	Frequency	Percent
12 or more	0	00.0	0	00.0
9-11	3	8.6	6	17.1
6-8	11	31.4	3	8.6
4-5	13	37.1	7	20.0
2-3	7	20.0	16	45.7
0-1	1	2.9	3	8.6
Total	35	100.0	35	100.0

35 participants also replied to an open-ended question in the questionnaire (see Item 23 in Section 2 of the questionnaire in Appendix E) which is about which OLRs they use. They state that they use resources from the British Broadcasting Corporation (BBC) including Radio 4 and "6 Minute English", online dictionaries and social networking websites, and they use Google to find other language learning tools. Table 19 shows that 31 of 35 participants claim that they use these in the pre-questionnaire, whereas nearly all of them (34 participants) do so in the post-questionnaire.

Table 19: Frequency and Percentage of the Use of Online Language Learning Resources Reported in the Pre- and Post-Questionnaires

Response	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
Yes	31	88.6	33	94.3
No	4	11.4	2	5.7
Total	35	100.0	35	100.0

Even though there is a decrease in the frequency of the everyday use of OLRs over time, there is an increase in the frequency of the weekly use of OLRs over time. Table 20 below presents that more than half (21 participants) say that they use these resources every day, while 18 participants state this in the post-questionnaire. On the contrary, 10 participants use these resources once or twice a week, or only a few times in the pre-questionnaire, whereas more participants (15 participants) report using them once or twice a week in the post-questionnaire.

Table 20: Frequency and Percentage of how often Participants Use other OLRs Reported in the Pre- and Post-Questionnaires

Number of times in which OLRs are used	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
More than once a day	11	31.4	11	31.4
Once a day	10	28.6	7	20.0
Once or twice a week	8	22.9	15	42.9
Only a few times	2	5.7	0	00.0
Not Applicable	4	11.4	2	5.7
Total	35	100.0	35	100.0

The quantitative data on the use of a computer, online applications and other OLRs having been examined, the analysis of the interviews from 10 observed participants helps to provide greater understanding of which actions they carry out when learning within other OLRs.

Corroborating the results of the quantitative data, the qualitative data from interview shows that the participants use different OLRs. Figure 30 illustrates the other OLRs that the participants reported using during the interview. The data were calculated by generating codes according to their report of using other OLRs and then coding each participant to the identified code (see also section 5.6.2.1.). The vertical axis shows other OLRs used by the participants and the horizontal axis shows the number of instances of other OLRs used by the participants. Figure 30 shows that all the participants prefer to use a variety of OLRs. The most commonly used OLRs are EngVid, TED.com, the British Council resources including Word on the Street, apps on mobile phones, online journals and newspapers, e-books, Google and Google Scholar. All of the participants use at least four of these resources, which shows that they are motivated to use them. However, Salar, who reports drawing on seven online resources during the second interview, uses the most online resources. This implies that this participant has the potential ability to take full responsibility for his learning through the use of a variety of resources (for more, see discussion in Section 8.5.). A comparison of the usage of other OLRs reported by participants between the first and the last interviews shows that all participants utilise them less, except for Perwin and Gazala. This can be explained by the impact of a hectic exam period, indicating that learners' use of OLRs can be affected negatively by classroom examinations and that the use of OLRs can be enhanced to account for learners' needs when a suitable learning environment is set up for them.

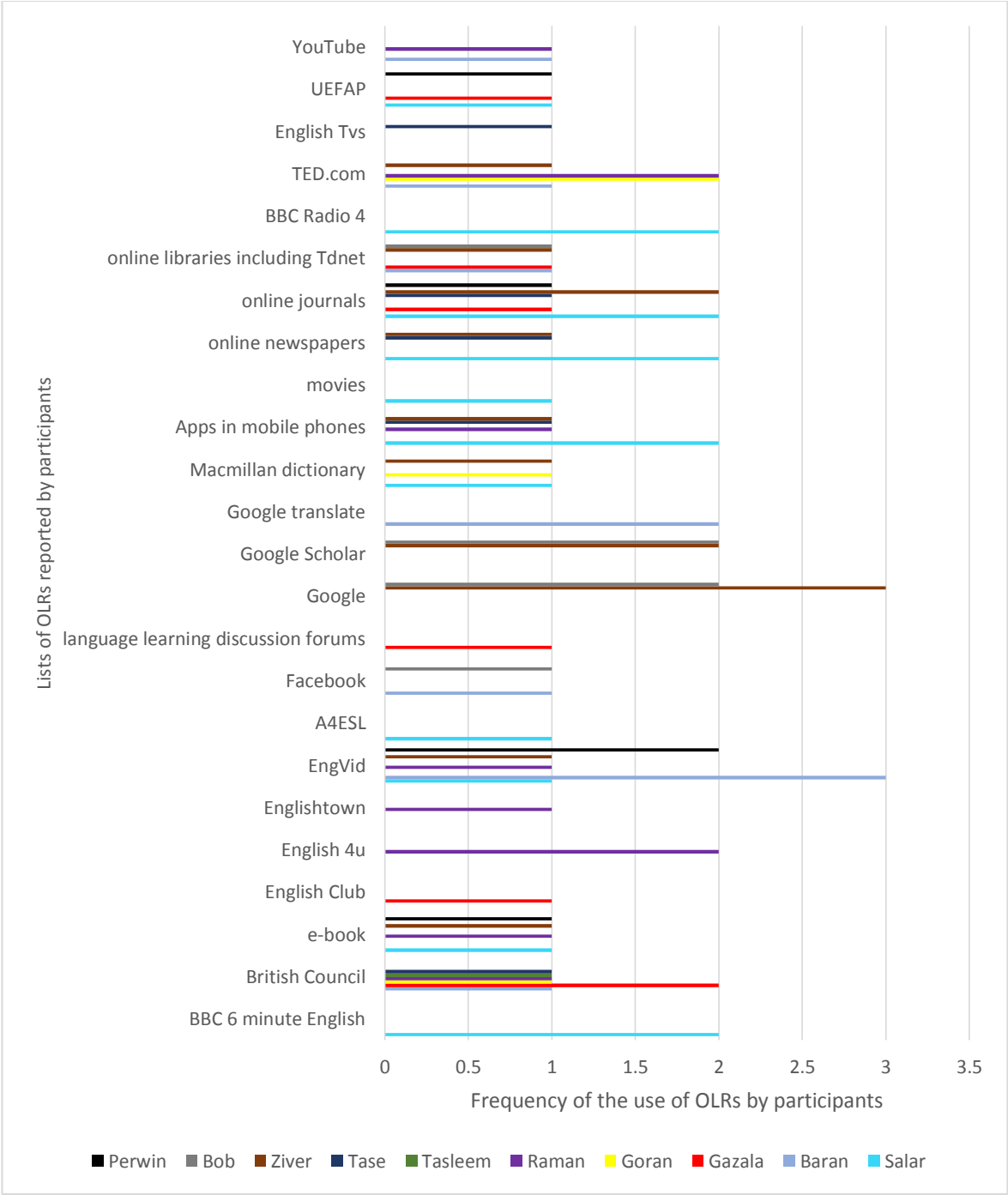


Figure 30: The report of participants on the use of online learning resources during all interview sessions

Figure 30 gives an overview of the lists of other OLRs reported as having been used by the participants during their spare time. Table 21 below categorises these resources according to whether or not they are scaffolded, whether they are used for content or language learning, and whether or not they are designed solely for learning. It shows that learners mostly prefer to use scaffolding OLRs. For instance, YouTube provides only subtitles, whereas other language learning websites, such as British Council resources including Word on the Street, Using English for Academic Purposes (UEFAP), BBC 6-minute English, EngVid (free English video lessons), English

town, English 4u, English Club, Activities for ESL/EFL Students (A4ESL) and apps in mobile phones, provide information and instruction on exercises (for web links of aforementioned OLRs, see Appendix Q). Among these learning websites, only A4ESL offers sections according to language proficiency levels, such as easy, medium and difficult, which helps learners choose exercises according to their level of learning. However, participants report that most of these resources lack implicit feedback (for the need for more scaffolding, see Section 6.3.1.2.2.). If learners are autonomous, they can use resources to scaffold themselves despite such resources not being designed for learning. The subtitles on YouTube, TED.com (for the web link of Ted.com, see Appendix Q) and in movies can be regarded as a scaffolder as they assist learners to understand the content and language. Along with potentially receiving self-scaffolding from these resources (as they are choosing to give scaffolding to themselves in self-directed e-learning environments) learners report receiving peer help from resources such as Facebook and forums on some language learning websites (e.g. Bob, Baran and Gazala in Figure 30).

As further indicated above, learners' actions in using other OLRs are influenced by classroom learning. For instance, they use resources for content learning, as reported in the last interview session. They mostly prefer online journals and libraries, e-books and searches on Google to look for papers, particularly in Google Scholar. However, they use a variety of OLRs for language learning to improve their skills. For instance, to support listening skills, Bob uses BBC news and podcasts on BBC Radio 4; Baran chooses the BBC website and EngVid; Gazala uses resources from the BBC and the British Council; Goran uses TED.com; Perwin mentions resources on the BBC such as iPlayer and news on the BBC website; and Salar indicates use of BBC Radio 4. Also, BBC news is regarded by Bob, Raman and Tase as an efficient online resource for providing practice and help with reading. Furthermore, with respect to improvement in writing skill, Baran says he uses EngVid; Gazala prefers the BBC and the British Council because of their reliability, as she thinks they are well-known; Perwin watches YouTube, which, she believes, teaches adjectives, nouns and the structure of academic writing; and Raman draws on Google in order to access a range of sources for improvement in essay writing ability.

Table 21: The Categorisation of OLRs Reported in the Interviews by Participants

OLRs	Scaffolding	Used for content learning	Used for language learning	Designed for learning
YouTube	√		√	
British Council	√		√	√
TED.com	√		√	
UEFAP	√		√	√
movies	√		√	
BBC 6 minute English	√		√	√
A4ESL	√		√	√
EngVid	√		√	√
Englishtown	√		√	√
English 4u	√		√	√
English Club	√		√	√
Language learning discussion forums	√		√	√
Facebook	√		√	
Macmillan dictionary	√		√	√
Google translate	√		√	√
Apps in mobile phones	√		√	√
e-book	√	√		√
English TVs			√	
online library		√		√
online journal		√		√
BBC Radio 4			√	
Google Scholar		√		√
Google		√	√	
online newspapers			√	

However, half of them (e.g. Salar, Tase, Perwin, Goran and Bob) state that other OLRs are very limited in providing opportunities for improving speaking skills. Nevertheless, Gazala notes that English Club is useful for that skill and the BBC website helps with pronunciation of words by enabling her to hear the words repeatedly and to speak with the correct pronunciation. Moreover, with regard to the enhancement of their knowledge of vocabulary, Gazala draws on

UEFAP and the transcripts provided of the videos of the OLRs; Raman takes advantage of TED.com and Salar uses 6 Minute English. Lastly, Baran feels supported in the boosting of his knowledge of grammar through using EngVid. Overall, the wide range of other OLRs exemplified in the above figure shows how they facilitate different aspects of learning for the participants.

It seems that all participants carry out different learning actions to promote their learning when learning within other OLRs and are capable of accessing these resources, if in varying degrees, despite the classroom learning and teaching not necessarily encouraging them to make use of them (for more, see discussion in Section 8.4.) and despite some of the resources not being designed for learning. Additionally, data from the questionnaires support the findings of the interviews in that participants in the wider group (35 participants) use other OLRs every day. It could be argued from the investigation of participants' use of other OLRs that they access learning actions in order to organise their learning in terms of their need for different skills while learning with other OLRs. This section having explained participants' actions in terms of using the EAP toolkit and other OLRs, the next section adds further information about the ways they carry out when learning online while using the activities in a scaffolded e-learning environment.

6.2.3 **The Way Participants Carry out the Activities in an E-learning Environment**

Sections 6.2.1. and 6.2.2. have shown that learners carry out various learning actions when learning online, especially in scaffolded e-learning environments. In the same vein, they exhibit contrasting and consistent actions during learning within the EAP Toolkit in all observation sessions. In the present section, the data gathered from Camtasia recordings and the think-aloud protocols in three observation sessions were calculated by coding each participants' actions with the appropriate label or labels which emerged during the data analysis. Codes were created as: re-reading the question, instruction and feedback; skimming the activity; skipping performing the activity; interpreting the introduction, instruction and feedback; the method they use to choose the right answer; commenting on their experience of performing the activities; showing their understanding of the activity; and scrolling up and down with the mouse (see also Section 5.6.2.1.). Additionally, extracts from participants' Camtasia recordings and think-aloud verbalizations are interpreted to further examine their actions. The aim of this section is to show the participants' different and similar actions used in completing the activities during all three observation sessions, dependent on their learning preferences (for discussion, see Sections 8.2.1. and 8.2.2.).

Learners often prefer to read the scaffolder sections and questions more than once. They seem to do this in order to comprehend the information, topic and question more thoroughly (e.g.

Tasleem in both Observation 2 and 3, Tase and Salar in Observation 1, Raman in Observation 2 and Goran in Observation 3). It could be argued that the re-reading of the scaffolders and the question facilitates learners' interaction with the EAP Toolkit so that they can enhance their learning by answering the question.

Primarily, learners seem to prefer to use the scaffolding provided in, for example, the introduction, instruction and feedback sections in order to clarify information for themselves or to demonstrate that they have understood it. In this context, the learners tell themselves which actions to consider and what to do within the LOs, as understood from the think-aloud protocols and Camtasia recordings. For instance, after reading the introduction, Ziver in Observation 2 advises himself to avoid plagiarism (see example 6.13.). Tasleem in Observation 1 guides herself to choose useful words in the first exercise (see example 6.14.), link the topics and items in the second exercise (see example 6.15.), and in the next activity, she guides herself to write the word rather than just choosing it (see example 6.16.) after reading the instruction. Additionally, feedback helps her to explain the use of 'might' to herself in Observation 3 (see example 6.17.).

Example 6.13

Ziver (2): *We will find out plagiarism here. In this writing, we have to avoid plagiarism*.

Example 6.14

Tasleem (1): *They want me to choose a word that is useful to learn*.

Example 6.15

Tasleem (1): *They want me to select topic that link the items in each set of words from the list below. They want the topic for these words; I have one, two, three, four, five words. They want me to connect to one topic*.

Example 6.16

Tasleem (1): *It wants me to say what, but it is close the activity I did before. But this one I have to write the word. Not choose, OK*.

Example 6.17

Tasleem (3): *OK, I think I can understand the feedback telling me that might is not used with this kind of meaning, because might is not sure, but I think the person in this sentence is sure, should have no problem*.

Together with the act of clarifying scaffolders for themselves, the learners prefer to articulate their thoughts in different ways after reading the sections. This seems to facilitate their learning by enabling them to focus on the learning itself. For instance, during the observations, they remember the topic they have already covered, or in which they have previously made a mistake. As illustrated in examples 6.18 and 6.19, Salar and Tasleem read the topic and tell themselves that they have the information about the topic. In example 6.20, Tase reads the topic and starts thinking about the mistake she made in the exam before. Participants also articulate their opinions in order to motivate themselves to accomplish the task. As seen in example 6.21, Tasleem encourages herself to succeed in completing the activity.

Example 6.18

Salar (2): *Plagiarism, I know it very well*.

Example 6.19

Tasleem (2): *When it is difficult to understand, I use quotation*.

Example 6.20

Tase (2): *I did a terrible mistake in my reading exam*.

Example 6.21

Tasleem (2): *From this activity, first activity, I think it is easier, all true or false. I hope I will do good*.

Furthermore, data from Camtasia recordings and the think-aloud protocols reveal that participants carry out learning actions designed to manage their learning by telling themselves what to study. For instance, Ziver, Tasleem and Tase in Observation 1; Salar, Tase, Tasleem and Ziver in Observation 2; and Salar, Ziver and Tasleem in Observation 3 tell themselves to look at the feedback or to go to the next activity, and Tase advises herself to first read the introduction in Observation 2 (see example 6.22.). It could be claimed that learners' action of directing themselves in their learning process can take the place of the teacher and learners could further their learning without the help of a tutor or peer.

Example 6.22

Tase (2): *Now it is my first time to do this activity, finding out about plagiarism. But I will read the subject first*.

Another way to understand their actions in accomplishing the activities and in using scaffolders provided in the Toolkit is to look at their use of 'OK', as this interjection tends to show that they have decided when to proceed to the next activity or read the next section to further their learning (for more, see discussion in Section 8.5.). This study has indicated that all the participants except Perwin use this interjection in all observation sessions in order to show their comprehension of scaffolding and scaffolders. Tasleem and Raman in Observation 3 and 2, respectively, articulate that interjection the most in order to assure themselves of their learning progress. In other words, they reinforce their knowledge of the explanation, instruction and feedback contained in the EAP Toolkit and seem to tell themselves to proceed to the next section or activity.

Another noteworthy aspect of learning about their actions in performing activities within the Toolkit can be observed by investigating the way they choose the right answer. Learners answer the questions by making connections between their previous and current replies (see example 6.23.) or between the previous and current questions (e.g. Raman and Tasleem in Observation 1); or by trial and error (Goran 3); or even by guesswork (Tase 2, Tasleem 3, Baran 3).

Example 6.23

Goran (2): *But if this one is acceptable, the first one is maybe cheating. OK*.

As learners are flexible within e-learning environments, they re-read the scaffolder sections, skim the sections before completing the activities (e.g. Salar in Observation 1 and 3), or skip doing the activities. In this study, half the participants avoid working on the activities during the observations for a variety of reasons. The difficulty of the selected learning activities prevents some participants from carrying them out. As seen in example 6.24., Tase avoids the activity because she finds it difficult to solve, due to lacking digital literacy (for discussion, see Section 8.2.1.). Also, she stresses in the follow-up interview that she skips the activity because she does not understand the topic. In Observation 2, she thinks the activities are useful but skips two of the nine questions. In this sense, she seems to be autonomous in deciding how many questions she needs to solve. Likewise, Baran and Ziver in Observations 1 and 2 and Salar in Observation 1 prefer to skip activities. Baran gives the reason for this as his inability to understand scaffolders such as the introduction and information/explanation sections. Salar also does this, once unintentionally in Observation 1. This might be because of their first two experiences of doing the activities in the EAP Toolkit. However, Perwin seems to lack autonomy in carrying out the activities as she reads the introduction in Observation 3 instead of doing the activities. This might be explained by her statement that she does not understand what she is meant to do even though she has completed the activities in the previous two observation sessions. It could be

argued that learners may have problems in e-learning environments because of the difficulty of the activities provided (for more, see Section 6.3.1.1.2.).

Example 6.24

Tase (1): *I am not sure what it is. Study this concordance … I will choose the other. It is difficult*.

Learners might scroll down and up the webpage with the mouse for a range of reasons. The data from the Camtasia recordings were analysed by coding the participants to 'scrolling down and up' if they took that action in order to accomplish the activities in the EAP Toolkit. Figure 31 represents the frequency of participants' scrolling down and up while they were performing the learning activities as LOs in the EAP Toolkit during all three observation sessions. The vertical axis shows the number of instances of scrolling up and down by each participant during the observation sessions, and the horizontal axis shows each participant in the study in each observation session.

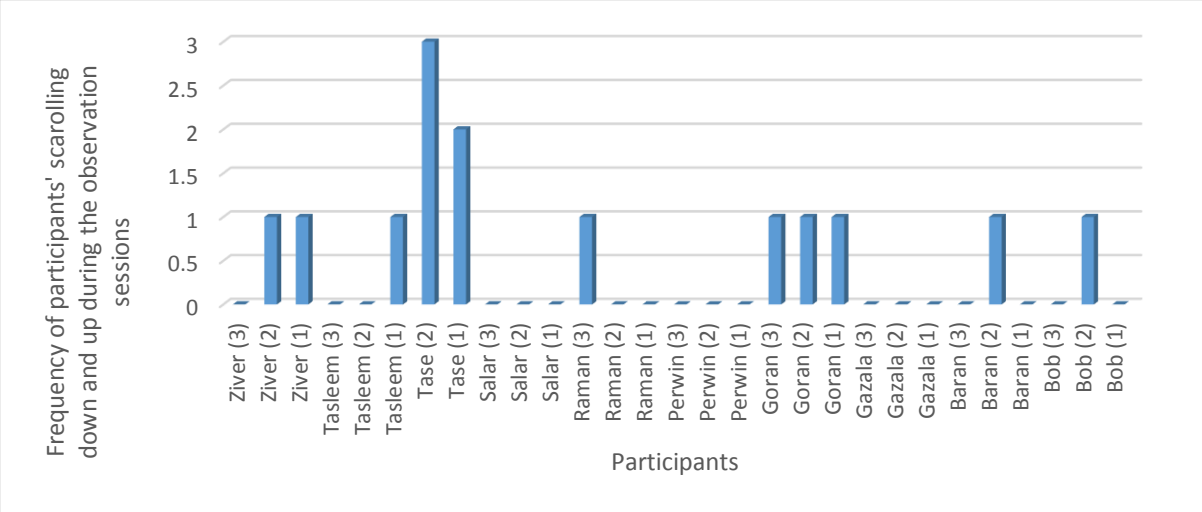


Figure 31: The frequency of participants' scrolling down and up in LOs in the EAP Toolkit during observations sessions

Participants, except Salar, Perwin and Gazala (see Figure 31), do this during observations. Their purpose is either to access an overview of the whole page at the start of the activity (see Ziver, Tasleem and Goran in Observation 1; Tasleem, Tase, Goran, Baran and Bob in Observation 2; and Raman and Goran in Observation 3) or to look at the feedback on the page first (see Tase in Observation 1). Moreover, half of the participants, such as Ziver, Tasleem, Salar, Raman and Gazala, prefer to follow the order presented in the EAP Toolkit, whereas Baran, Tase and Goran, and Perwin and Bob scroll in Observations 1, 2, 1 and 3, respectively. This implies that learners perform sequentially on some occasions (for discussion, see Section 8.2.1.), as the design of a scaffolded structured e-learning environment enables them to discover how to go through the

activities. In this sense, especially, reading the introduction section first helps them to be clear about the topic, as highlighted by Salar in example 6.25.

Example 6.25

Salar in Interview 1: *Design is helpful … good; still I know people are not following the introductions. Each design, if they want to help people, put introductions of the first. If people follow the introductions, the introductions should be clear, especially we are doing the, this EAP Toolkit for people who learn English [it] should be clear and easy to understand sentences, simple sentences, not complex. It is very easy because maybe my English skills, maybe for other people it is not easy*.

As learners are free to go through the activities, they can look over a whole activity at first by scrolling down and then up the page (e.g. Baran in Observation 2 and Tase in Observation 1 in Figure 31). This might be because they choose not to follow the instructions in order presented by the LOs in the Toolkit (for discussion, see Section 8.2.1.).

However, some of the learners would like to use an online learning resource to enable more than had been previously provided, in order to learn online more fully. As understood from the qualitative data instruments such as interviews and the think-aloud protocols, some of the participants prefer to see important vocabulary in bold and in a bigger font in the feedback sections (see example 6.26.) and to use videos and pictures in the activities (e.g. Raman in Interview 2, Salar and Ziver in Interview 1), whereas one participant finds listening useful when completing the activities in the Toolkit (see example 6.27. Some wish to receive audio assistance in e-learning environments (e.g. Raman in Interview 2) (for discussion, see Section 8.2.1.).

Example 6.26

Baran in Observation 1: *If you bold vocabulary, it is OK; you will focus what it is. If it is a small writing, you don't bold anything, you think it is not important, and you don't read it.*

Baran in Interview 2: *Yeah, not too long, but is, I think, because it is, the option is very big for writing, and feedback is very small, the word is very small, the kind because some have kind, word, there is small, and I just look at this word and I don't want to read all of them, because I am lazy, I can't …*

Example 6.27

Tase (2): *Because you listen to someone, and you get the information, which is good*.

Furthermore, participants can engage in contrasting learning actions when learning online. For instance, Goran in Interview 1 states that he applies what he has learned in e-learning environments by, for example, bringing non-academic passages into his academic learning, whereas in Interview 3, he claims that he prefers to have the general, main idea first. Additionally, Raman in Interview 3 indicates that he uses webs, videos, seminars and presentations for his learning so he can collaborate with others, whereas Tasleem in Interview 2 prefers to study alone online, as she finds classroom learning very distracting (see example 6.28.)

Example 6.28

Tasleem (2): *Trying to use the internet will be helpful. Because, as I told you before, in classroom, sometimes, all the other students and a lot of talking, a lot of opinion, but sometime you get confused. But when you do it by yourself in home, alone, no other people talking around you, I think it is very helpful*.

Consequently, learners vary in carrying out learning actions when learning with LOS in the EAP Toolkit. As shown in this section, when learning in e-learning environments, learners might:

- read the questions and scaffolders more than once,
- interpret the scaffolders in their own words to understand better,
- choose the right answer by guessing or making connections between answers or questions,
- comment on their experience of performing the activities,
- show their understanding of learning with the use of the phrase 'OK' to themselves,
- skim the activity,
- skip performing activities for various reasons,
- prefer to receive audio or visual aids, work alone or with others and
- apply their knowledge to new topics.

Considering the variation in carrying out learning actions in e-learning environments, the next section deals with participants' perceptions of learning with both the EAP Toolkit and other OLRs.

6.3 Participants' Perceptions of their Learning within the EAP Toolkit and other OLRs

The above section has answered the first research question of this study (see Section 1.3.), that is, to understand which actions learners perform when learning online, especially in scaffolded e-

learning environments. This section investigates their self-perceptions of their learning online and will respond to the second research question of the study:

> *RQ2) How do learners perceive their own learning online, especially in scaffolded e-learning environments?*

In order to do that, this section will examine their perceptions of their own learning, firstly online in the EAP Toolkit and other OLRs, and then in scaffolded e-learning environments.

6.3.1 Participants' Perceptions of their own Learning Online

This section aims to present data in two subsections. Firstly, it gives participants' perceptions of their own learning online in the EAP Toolkit and then in other OLRs. It presents data about their positive and negative views on each e-learning resource and aims to express their preferences and suggestions about learning online.

6.3.1.1 Participants' Perceptions of their own Learning within the EAP Toolkit

Data gathered from Camtasia recording, the think-aloud protocols, interviews and pre- and post-questionnaires have shown that participants have both positive and negative views about learning in the EAP Toolkit. Participants in the qualitative research express positive views on the Toolkit with regard to its representing a tutor through its giving of guidance, instruction, feedback, key points and interaction, and through enabling them to learn independently, improve their skills and practise various activities anytime and anywhere. Conversely, the EAP Toolkit is posited to lack sufficient scaffolding in terms of information, explanation of topics and feedback on answers, and to fail at providing an e-learning environment for collaboration and is also posited to fail to include multifarious activities that accommodate different learning preferences such as audio or visual helps. However, the comparison between pre- and post-questionnaires demonstrates that there is an increase over time in positive views within the wider participant group on the usefulness of the EAP Toolkit.

This section gives findings from both qualitative and quantitative instruments about participants' perceptions of their experience using the EAP Toolkit. Firstly, it provides a deeper understanding of their spoken opinions, experiences and perceptions of the EAP Toolkit by means of data from both Camtasia recordings, the think-aloud protocols and interviews. Then it analyses and compares data giving views on the Toolkit as gathered from pre- and post-questionnaires. In this context, the analysis of participants' perceptions of their experience of learning with the EAP Toolkit attempts to answer the second research question of the present study, which investigates

how learners perceive their own learning online, especially in a scaffolded e-learning environment (see section 1.3.).

As explained in Section 5.4.4., participants were asked to speak about what they were doing and thinking while learning with the EAP Toolkit. However, their learning with the Toolkit might be negatively impacted by the think-aloud protocol method. That is, that method might have an adverse influence on their learning. In order to explore this, the participants were questioned about their experience during the interview. One of them, Bob, expresses his feelings both during the first observation and in the interview by stating that he has not adapted to reading aloud, as it is the first time he has experienced this and on some occasions he keeps silent and does not speak.

Although they are noticeably more familiar and comfortable in the last observations, some of the participants have positive opinions on using the think-aloud protocol method and report this during the interview. Despite his negative opinion, Bob comments in Interview 1 that speaking gives him more confidence and better concentration for the activities. Similarly, Goran and Perwin respectively find the method useful in terms of practicing and monitoring independent speaking. In addition, Gazala finds the method useful. During Interview 2, Baran, Raman and Tasleem respectively report that talking aloud helps them to improve speaking, to focus and to carry out the activities at home in the same manner. Similarly, Bob thinks that he concentrates better with the think-aloud protocol, and Perwin in the last interview feels that it has improved her vocabulary and speaking skills.

Figure 32 illustrates the frequency of participants' feelings about their experience of learning with the EAP Toolkit in the interview sessions. The vertical axis shows the instances of participants' positive or negative responses to their experience in the think-aloud protocol method, and the horizontal axis shows the participants who responded during the three interview sessions. After each observation session, each participant was asked to discuss their feelings about their experience in performing the activity while thinking aloud (see Section A in Appendix F). Data was analysed by coding their answers to either positive or negative or both based on their feelings about their own experience of learning in the Toolkit while thinking aloud. The figure shows that the participants, including Ziver, Tasleem, Tase and Raman, who had negative attitudes at the beginning, change to having positive opinions in the last interviews. This does not include Baran, who reports that tiredness, timing, stress and worry about his accomplishing the activity and being recorded have a negative impact on him. Although half of the participants (Ziver, Tasleem, Tase, Raman and Baran) have negative views on learning within the Toolkit while thinking aloud in the first interview, all of them (with the exception of Baran) have positive views in the third

interview. In summary, their perceptions of performing the activities in the EAP Toolkit through the think-aloud protocol increase positively over time.

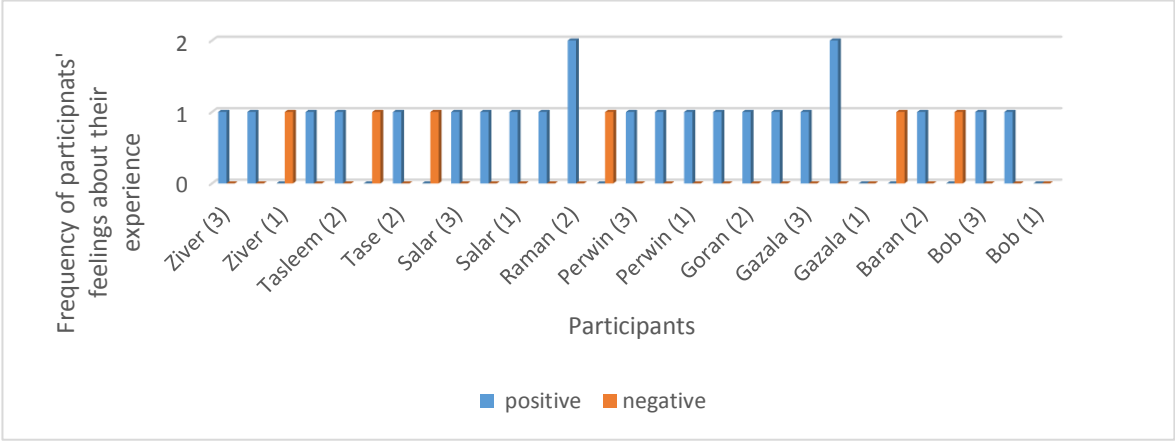


Figure 32: Participants' feelings about their experience of learning in the EAP Toolkit from interview data

Along with questions concerning their feelings about the experience of doing the activity with the think-aloud protocol method, additional questions about their expectations of the activities are asked during the interview:

2. *What did you expect to learn before doing the activity?*
3. *After finishing, did you learn what you expected?*
4. *Did you learn anything which you did not expect to learn?* (in Appendix F)

The aim of asking the above questions is to contribute to an understanding of the participants' perceptions of their own learning in the EAP Toolkit. The responses to these questions were used to analyse whether they learned what they expected or didn't' expect after performing the activities in the EAP Toolkit during each observation session. Figure 33 below presents the frequency of the participants' negative or positive response to the skills they expected to learn, whereas Figure 34 below shows the frequency of the participants' negative or positive responses to items they did not expect to learn. The vertical axis shows the instances of their expectations about learning within the EAP Toolkit, whereas the horizontal axis shows each participant that responded during each interview session. Data from the three interview sessions were coded as 'yes' or 'no' based on their answers. Figure 33 represents that participants in the follow-up interviews state they have learned the items they expected while carrying out the learning activities in the EAP Toolkit. Likewise, Figure 34 displays the participants stating that they have learned other, unexpected things while completing the activities in the Toolkit. However, some of the participants' responses overlap. In other words, Ziver, Tasleem and Gazala in Interview 1, Goran in Interview 2 and Tasleem, Raman, Perwin, Goran and Gazala in Interview 3 answer that

they gained both expected and unexpected knowledge about the topics. Raman in Interview 2 and Perwin in Interview 1 claim they did not learn anything unexpected, whereas they did in the last observation. Others develop their learning either as expected, as in the case of Tase and Bob in Interview 1, Perwin, Gazala, Baran, Salar in Interview 2, Salar and Bob in Interview 3; or unexpectedly in the case of Ziver in Interview 3, Ziver, Tasleem and Tase in Interview 2, and Salar in Interview 1.

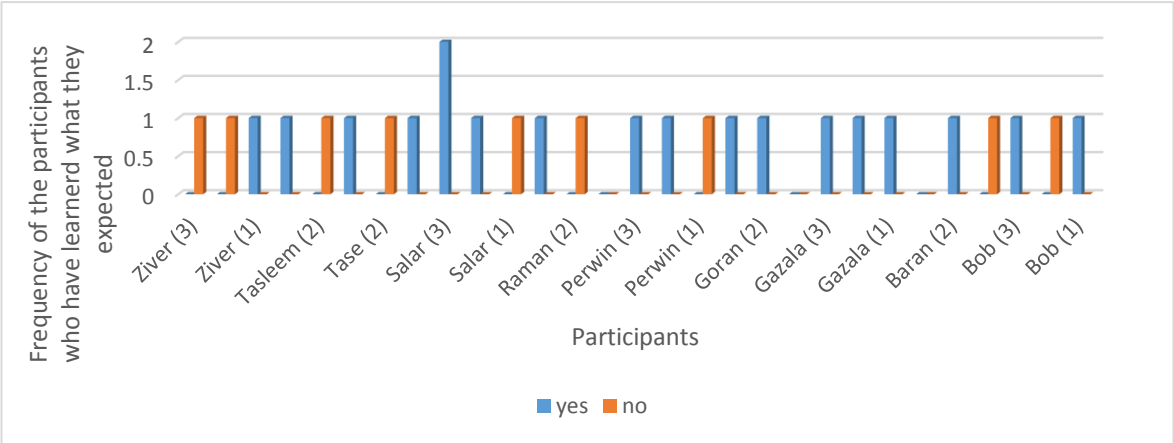


Figure 33: Participants' responses from interview data on if they have learned what they expected while doing the activities in the EAP Toolkit

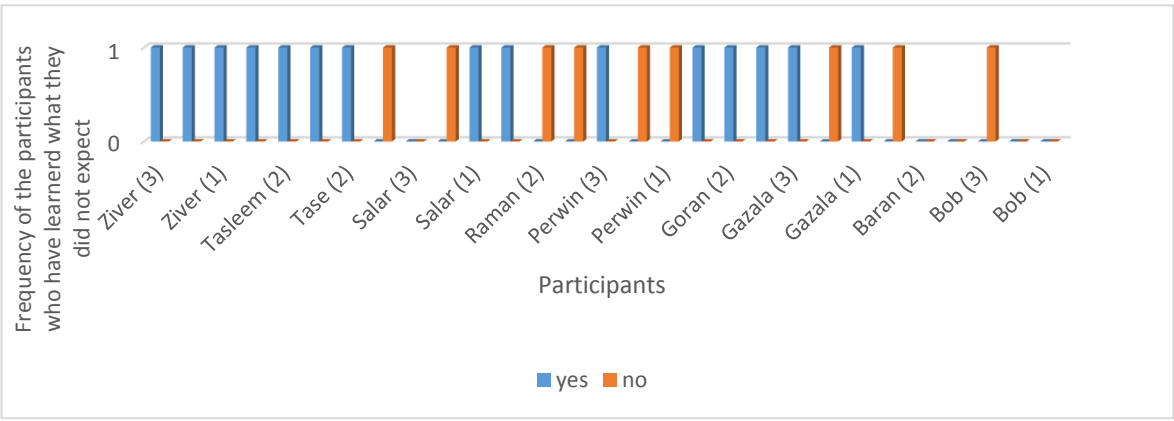


Figure 34: Participants' responses from interview data on what they have unexpectedly learnt using the EAP Toolkit

Furthermore, the participants' views on the EAP Toolkit and activities in LOs are also questioned and examined to contribute to the second research question of the present study. During observations using the think-aloud protocol method, some participants (i.e. Ziver, Tasleem, Tase, Salar, Gazala & Baran) express their perceptions of the Toolkit and activities, whereas all of them talk about their perceptions of the EAP Toolkit during the interview, as asked during each interview session (see Questions 2, 3, 4, 6, 7, 8 & 9 in Section B in Appendix F). Figure 35 presents the frequency of the participants' perceptions of the EAP Toolkit during each observation session

and Figure 36 indicates the frequency of their perceptions of the EAP Toolkit during each interview session. The vertical axis shows the instances of their perceptions, while the horizontal axis shows each participant. Data were analysed by coding their responses as positive and negative based on their statements. Those perceptions will be shown in the next subsections dealing with their positive and negative views of the EAP Toolkit, respectively.

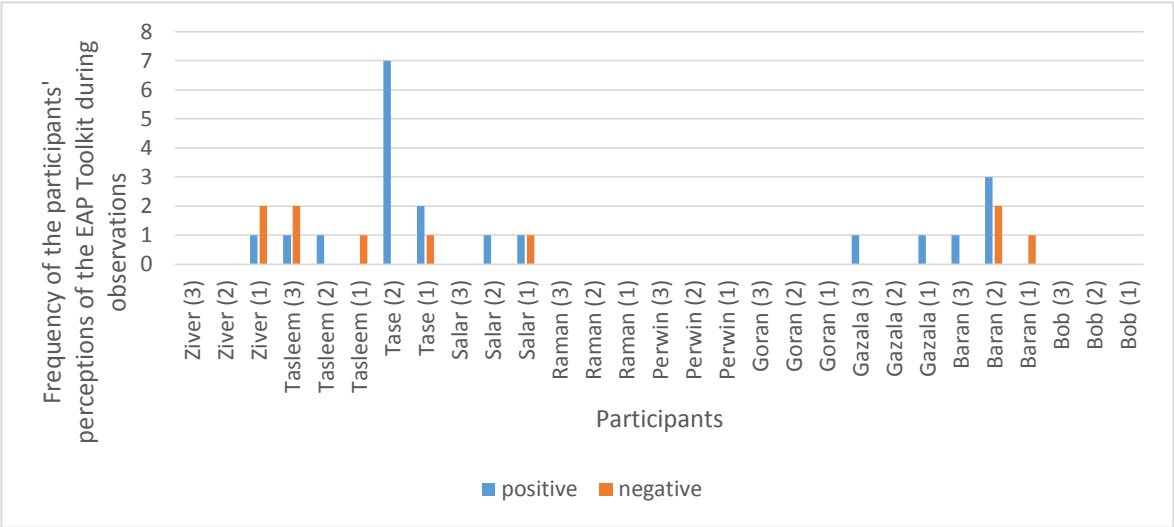


Figure 35: Participants' perceptions of the EAP Toolkit during observations

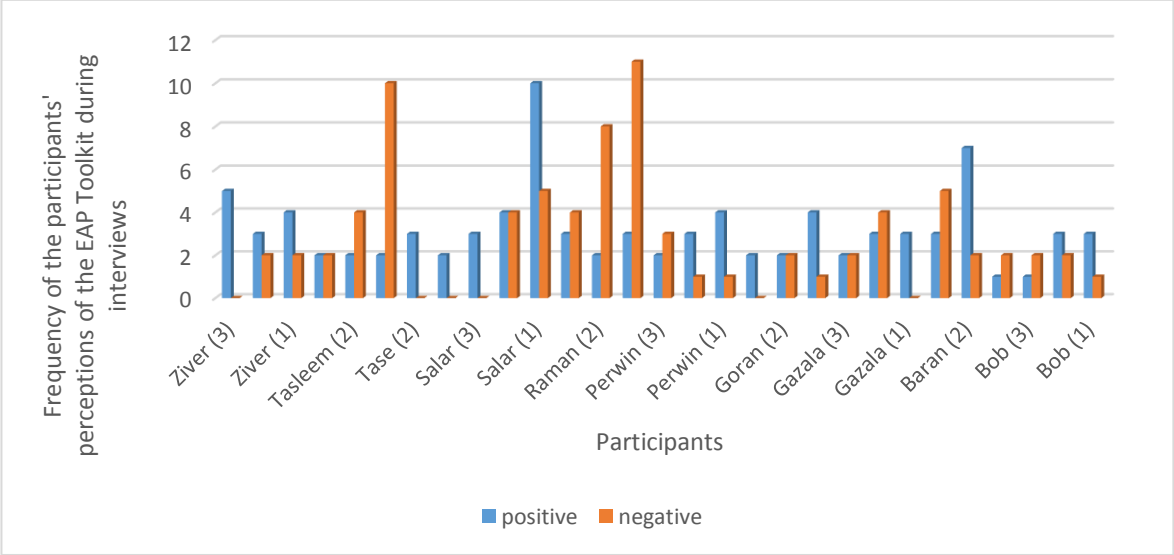


Figure 36: Participants' perceptions of the EAP Toolkit reported in interviews

6.3.1.1.1 Positive views of the EAP Toolkit

The positive feelings expressed during both observations and interviews are listed within different groups including tutor, practices and independent learning. More than half of them (6/10) consider these helpful during observations (see Figure 35), while all of them assert the positive sides of the Toolkit during interviews (see Figure 36), as given in the subsections below.

Additionally, the analysis of the wider group (35 participants in the questionnaire), including the comparison between pre- and post-questionnaires, indicates that learners develop positive beliefs about the EAP Toolkit over time.

a) The Toolkit as a Tutor

Data drawn from the qualitative research instruments shows that participants view the Toolkit as a tutor, because the Toolkit:

- provides information for helping with learning both inside and outside the classroom,
- increases knowledge,
- enhances academic skills in terms of instruction,
- provides a glossary
- gives guidance on the use of many activities
- presents methods for enabling learners to complete the learning tasks,
- identifies the main points about the target topics
- describes note-taking methods
- gives advice on improving learning
- allows interaction and feedback to correct and explain topics
- offers guidance on brainstorming.

To explore this concept, this section presents the findings and provides examples from the observations and interviews.

Learners increase their knowledge of the topic after using a scaffolder by, for example, reading the information/explanation in an LO, which indicates that this activity helps them to recall what they have learned (e.g. Salar in both Observation1 and 2 and Baran in Observation 2). This also helps with their classroom learning, as Tase explains in example 6.29, remarking that she can obtain information about her personal research project (PRP) from the Toolkit, and is especially helpful with classroom exams (e.g. Salar 1, Ziver 3 and Raman 3 in interviews) and with different learning skills. Raman in Interview 3 draws attention to the fact that he finds the Toolkit helpful in preparing for his reading exam and in improving his skills such as listening, note-taking, summarising, paraphrasing and quoting (see example 6.30.). Moreover, Baran 2, Salar 3 and Goran 3 report in interviews that the Toolkit reminds them of their learning both inside and outside the classroom.

Example 6.29

Tase (2): *This activity is very good, because it gives me information about what my PRP is*.

Example 6.30

Raman 3: *In general, I try to use it. Because I have reading exam, I have for PRP. Also, it is close together. When you want to prepare for PRP, you have to, sometimes, summarise it, sometimes, paraphrase, and sometimes, as a quote, you have to use it, and also, this terms of note-taking is dependent on, I think you can use also in listening. When you find in listening, when a lecture talks something, emphasise something as it is important, you have to find key points from listening, it is also important. I think they are all related together.*

Above all, the activities seem to help learners with deciding what to consider for their learning. Audio-files in LOs support learning by giving new information (Tase and Tasleem in Observation 2). For instance, Tasleem enhances her knowledge of the uses of quotation by thinking about quoting longer sentences (see example 6.31), paraphrasing without plagiarism (see example 6.32) and using 'will' (see example 6.33). Likewise, Baran in Observation 3 stresses that the Toolkit provides information about different academic skills. Corroborating the results of observations, data from interviews show that the Toolkit is useful in providing information (e.g. Salar 1, Perwin 2, Tase 2 and Tasleem 2).

Example 6.31

Tasleem (2): *I found a lot information I didn't know about quotation and paraphrasing. I know that I quote just one word, small word. Now I know that I can quote long sentences, one or two sentences or long paragraph. It says here.*

Example 6.32

Tasleem (2): *This information is helpful. This is giving how to make a paraphrase without plagiarism*.

Example 6.33

Tasleem (3): *will, will hmm this is the first time I have seen will in this position*.

In addition to the information section, Ziver highlights the usefulness of the instruction section in both Observation 1 and Interview 2. Furthermore, Bob in Interview 1 finds the Toolkit useful in offering a glossary. Moreover, Goran in Interview 2 thinks that the Toolkit guides learners to find many activities on the target topics, whereas Salar in Interview 1 believes that it offers methods for accomplishing the activities and helps his understanding of "summarising" by means of highlighting the main points and by brainstorming. Furthermore, Raman in Interview 1 says that the Toolkit tells users how to take notes, while Perwin in Interview 1 states that it advises them to

understand and improve their learning, as a tutor does. Also, Ziver in Interview 3 talks about the Toolkit's help in activating the brain in the same way as a puzzle, as seen in example 6.34.

Example 6.34

Ziver (3): *Part time, leisure time, you can open the EAP to activate your brain, you have to activate your brain. Using it in time pleasure sorry time leisure, opening some subjects, whatever them, you will solve the puzzles, it is a type of puzzles you can say*.

Moreover, the Toolkit is efficient in facilitating learners' interaction in the same way as a classroom tutor in that learners can read, practise and look at the feedback as directed by the Toolkit (e.g. Salar in Interview 1 in example 6.35). Above all, the feedback is regarded as a "tutor" because it checks their answers (e.g. Ziver in Interview 1 in example 6.36). By this means, learners can ask the feedback whether or not their answer is correct and in turn interact with the Toolkit, as they do with a tutor.

Example 6.35

Salar (1): *It is like a tutor. You know, if you want, just read, like I read here, this activity is going to practice, this is interacting, this is interacting with me, within the text, but if the learner is not, this is, go to the feedback*.

Example 6.36

Ziver (1): *When you choose, you don't know whether it is OK or not, this is correct or not correct. This is you have chosen, then you have to ask someone this is correct or not. Nobody there, but feedback is our tutor. Feedback will answer these questions*.

Also, more than half of them (7/10) agree that the Toolkit gives feedback along with an explanation, thus further supporting their understanding and enabling them to proceed to the next activity or LO (Ziver, Salar, Raman, Goran and Perwin 1, Ziver, Tase, Tasleem, Salar, Perwin and Raman 2, and Tasleem 3). For instance, Tasleem in Interview 3 expresses the usefulness of the feedback in helping her to better understand the difference between "should" and "must" (see example 6.37).

Example 6.37

Tasleem (3): *It [feedback] helps me that it is important to understand the false sentence to know that which one is 'should'. There is a difference because I always use 'should' and 'must' in the*

same sentence. I don't feel like there is a difference between them. But I think this exercise it explains a little how difference between them.

b) The Toolkit for Practice

In addition to performing like a tutor, the Toolkit is considered helpful in providing practices for improving learning and different skills and in providing various learning activities at anytime and anywhere in a well-designed environment.

For instance, the Toolkit promotes learning by enabling learners to practise activities. According to Tase's comment during the observation in example 6.38, she can keep the information in her mind as repeated practice makes the knowledge permanent.

Example 6.38

Tase: *This is good. Because sometimes you try to remember the information, but when you do this, it makes you, it is like solid information. You can do the activity and it becomes something concrete in your mind. This is good*.

Moreover, the Toolkit improves their understanding of what takes place in learning environments. As stated during the interview by Baran (3) in example 6.39, new students who come to study by using the Toolkit can adapt their learning to a new learning environment.

Example 6.39

Baran (3): *In my opinion, use, every student wants to learn English, this period; they need to use online resources, BBC or EngVid, or EAP Toolkit. The students first time came here. Because, they must understand what is happening here. And exactly EAP Toolkit. I think I recommend all of the students. … The first time (?) they came here. Just two weeks, three weeks use the EAP Toolkit to understand what happens here*.

Also, during interviews, Goran and Tase 1, and Gazala 2 think the Toolkit increases practice by providing a great deal of information about different skills or about one particular skill (Tase, Salar, Bob and Raman 1, and Gazala and Goran 3). Furthermore, the Toolkit is considered to promote academic skills (Tasleem and Ziver 3) and to improve not only language learning (Baran and Goran 3, Tasleem, Salar and Tase 2, and Tasleem, Tase, Gazala and Perwin 1) but also knowledge of its academic context and the university's regulations (Ziver 2).

Above all, the Toolkit is described as ready to use, enjoyable (Salar 2), exciting (Tase 2), easy (Baran 2), convenient (Bob and Goran 2) and clear (Bob 2 and Goran and Ziver 1) during interviews. In this sense, its design is stressed as being helpful. According to Salar 1 and 2, the

design of the Toolkit makes it easier for users to perform the activities. Not only the design, but also the availability of and access to the Toolkit are considered better than similar aspects of other OLRs, especially in terms of feedback. Some of the other OLRs charge a fee for this, as stated by Raman in Interview 3. In addition, Raman 3 claims that it is good for gaining basic knowledge (Raman 3), whereas Tasleem (1) says it is appropriate for advanced learners.

c) The Toolkit for Independent Learning

The above-mentioned views show that participants mostly agree on the usefulness of the Toolkit in terms of its similarity to a tutor and its help with their practice. Furthermore, some of the participants stress its usefulness in enhancing independent learning in e-learning environments where learners are self-directed or supported by assistance provided within the OLRs (for a theoretical review, see Section 3.3.1. and for discussion, see Section 8.2.2.).

For example, during the interviews, Baran 2, Raman 3, and Ziver 3 plan to use the Toolkit in the future, especially during the holiday, so it can be inferred that it encourages learners to use it later on.

Furthermore, several participants think that the Toolkit helps learners to study without a tutor (Perwin and Salar 3, and Tasleem 1) and to know what to do in the next stage of their learning process (Raman 1). They improve their learning and increase their concentration in a scaffolded structured e-learning environment more than in the classroom. For instance, Tasleem in Interview 2 states that she can take her time to read and solve the questions in e-learning environments, whereas learning in the classroom might sometimes be distracting because of her classmates talking. Moreover, it enables learners to find their weaknesses and also their language level, and then to improve on them (Salar and Tase 1), as seen in example 6.40.

Example 6.40

Salar (1): *First thing, if you have for international students, this is the third one, is easy to use. That is for international, I am international. I will show you. Here, from here, you can find where is my language, where is weakness, this is good, already classified here*.

Along with their opinions about their experiences, as expressed during the observation and interview, the pre- and post-questionnaires indicate whether there is a change in the 35 participants' perceptions of the Toolkit between both questionnaires. The participants' rating of the EAP Toolkit in questionnaires for a wider group of 35 participants is presented in Tables 29 and 30 (see Appendix R). It was measured using a 5-point Likert scale (see Section 5.4.1.2.). Of 35 participants, 24 participants rate the questionnaire items (15, 16, 17, 18 & 19) in the pre-

questionnaire in Table 29, whereas 23 participants rate them in the post-questionnaire shown in Table 30. Others prefer not to give their responses as they state that the responses do not apply to them. As can be seen in both tables, more participants in the post-questionnaire than in the pre-questionnaire agree that the EAP Toolkit:

- is enjoyable to use (i.e. the increase of the number of the participants from 6 in the pre-questionnaire to 8 in the post-questionnaire)
- is easy to use as they receive sufficient online help (from 8 to 11)
- helps them to understand a learning point (from 7 to 16)
- reinforces their prior learning (from 8 to 14).

It remains the same in both questionnaires that 8 participants agree that the EAP Toolkit provides good feedback (e.g. answers/comments).

The next section deals with the negative views of and suggestions for the Toolkit.

6.3.1.1.2 **Negative Views of the EAP Toolkit**

The previous section shows positive views of the EAP Toolkit by giving the findings and examples from observations and interviews. Here, Figures 32 and 33 present the negative attitudes to the Toolkit expressed in interviews and in the think-aloud protocols held during the observation sessions. Half of the participants prefer to talk about those aspects during the observations, while nearly all of them except Gazala 1, Goran 3, Salar 3, Tase 1 and 2 and Ziver 3 make recommendations and express their feelings about negative aspects of the Toolkit. The participants' perceptions are categorised into the aspects of design and scaffolding within the Toolkit, and other issues to consider such as the hardships caused by the activities and the effect of classroom learning.

a) The Design Aspect of the Toolkit

Participants during interviews and observations discuss the design aspect of the Toolkit by giving suggestions about the background, style and placement of the activities, and the feedback provided in the Toolkit.

Learners carry out different actions while performing the activities in the EAP Toolkit (for data, see Section 6.2.3.). Because of this, some of them prefer to work on activities in LOs that have been designed with consideration of audio and visual assistance. For example, Baran suggests in the first observation that bolding vocabulary is very important for focusing (see Baran's quotation about visual learning in example 6.26 in Section 6.2.3.). Similarly, Tasleem in Interview 1 highlights

the need for visual aids with pictures and games to enhance his practice, as pointed out in example 6.41.

Example 6.41

Tasleem (1): *You listen to the question, and the question says like press the picture, you go to the picture and you will take it and you press the picture, then it will tell you that this is the correct picture. You can, like practise more, and you learn more from more the document in the desktop*.

Also, Tasleem in Interview 2 gives a recommendation about the style of words in the Toolkit by saying that examples in the feedback should be in italics. Moreover, Baran in Interview 1 remonstrates that the font of the LO modules should not be so small.

Together with the style of the LOs, the program's background has a tendency to influence learning. Raman in Interview 1 recommends that a new background is necessary for learners to possibly feel more confident, while Salar in Interview 1 suggests that the colour of the background should be dark.

Along with suggestions about the style and background of the LO, a few of the participants offer specific views on the feedback provided in each LO within the Toolkit in terms of the place and type of feedback given. For instance, Tase in Observation 1 prefers to receive feedback after each question, as some of the activities include this. However, she wishes to receive it after finishing questions in one activity and then receive further feedback for all questions in the activity. In the same vein, Salar in Interviews 1 and 2 suggests that the LO should contain feedback after completing the question, as 'easy-going' students might look at the feedback before finishing. Furthermore, learners prefer to receive both implicit and explicit feedback in e-learning environments, as suggested by Tasleem in both Observations 1 and 3, in that explicit feedback should be provided for all activities and more explanation should be supplied in the feedback. Additionally, the ease of using the Toolkit to find what learners are looking for, such as using hyperlinks provided in the information section (see Figure 16 in Section 4.2.1.), is important, as suggested by Raman in Interview 1 in example 6.42.

Example 6.42

Raman (1): *It is not friendly, if I want to get information, like here, as we see prefixes and suffixes, there is a sign for attachment and maybe you change the face of, ermm, it is linked to some vocabulary words, I have to research the word, prefixes from this list, and it maybe take time, takes time and maybe you will be bored, you cannot continue because some other websites they give you the meaning of the words at the same time. Maybe there is another goal behind this one*

they want to, but just prefixes to review some other vocabularies which important to give, this is academic vocabulary, academic wordlist you can (unclear), you can focus on this vocabulary for your course, but if you, but I can say that it is not more friendly.

It can be inferred from the above-mentioned data that the design of an online learning resource has an impact on learning as learners differ in taking actions to learn online regarding their preferences in receiving audio-visual assistance, having different backgrounds, style and the placement of learning tasks and feedback in e-learning environments.

b) The Need for More or Less Scaffolding from the Toolkit

Along with learners' different actions in completing the activities in Section 6.2.3., learners think that the design of the EAP Toolkit plays an important role in their learning online, although they differ in their preference for the specific activities, feedback (see the previous a) section) and help from OLRs. Following this, data from interviews reveal that participants in the present study prefer to receive more or less scaffolding in the forms of conceptual, metacognitive, strategic, procedural and technical types of scaffolding, and in explicit feedback.

1. Conceptual scaffolding: All the participants except Tase prefer to be told what they need to consider in order to receive more information about the topics (for conceptual scaffolding, see Sections 2.3.3., 4.2.2. and 6.2.1.1.). For instance, Raman 1 and 3, Salar 2 and Tasleem 1 suggest that the EAP Toolkit should be improved by the provision of more information for learners to help them understand topics better, while Raman and Goran 1, Raman, Goran and Perwin 2, and Raman, Perwin, Bob and Gazala 3 recommend that the scaffolding should include more exercises designed to encourage them to continue and proceed with the activities, and to set up a dynamic learning environment. Moreover, Raman 1, Tasleem, Gazala and Salar 2, and Baran 3 state that it should provide more examples in order to improve understanding and to help with remembering the topics.

Although Bob 2 believes that the Toolkit fails to provide basic knowledge, so that a tutor is needed for this aspect, Salar 2 suggests that the Toolkit could add a short introduction for reading samples so that learners can understand the topic better at the start (see example 6.43).

Example 6.43

Salar (2): *For writing, I think, if you put some links of some samples of essays, exactly for the understanding the title of essay, if you put some sample of essays, not the whole essay, maybe only introduction, or how to manage your essay will be better like listening of tutors. How we listen the tutors to define plagiarism to show us, how it could detect the plagiarism, you can put*

some listen to tutors in the writing, telling you about the title of essays for writing maybe will be better or not.

2. Metacognitive scaffolding: Similarly, all the participants except Tase prefer to have guidance on how to think during the learning process (for metacognitive scaffolding, see Sections 2.3.3., 4.2.2. and 6.2.1.1.). For example, Baran 3 suggests that this should inform learners about every skill, for example, about how to manage time in each skill.

3. Strategic scaffolding: Learners need guidance on how to deal with present and future learning activities and tasks (for strategic scaffolding, see Sections 2.3.3., 4.2.2. and 6.2.1.1.). Similarly, participants in the present study prefer to receive more scaffolding to increase their knowledge. In this sense, their suggestion about strategic scaffolding overlaps with their ideas for conceptual scaffolding since they talk about the need to receive scaffolders such as information (Raman 1 and 3, Salar 2 and Tasleem 1), explanation, and examples and exercises in order to help them remember the topics (Raman 1, Tasleem, Gazala and Salar 2, and Baran 3) and move on to the next activity (Raman and Goran 1, Raman, Goran and Perwin 2, and Raman, Perwin, Bob and Gazala 3).

In addition, the participants claim they need guidance from feedback to enhance learning. After completing the activities, all of them (Ziver and Raman 1, Tasleem, Gazala and Goran 2, and Bob, Baran, Gazala, Perwin and Tasleem 3) except Tase require help with increasing their knowledge with more feedback and explanation. In contrast, Tasleem (1) and Baran (2) think that the feedback takes too long to read to discern whether the answer is right, and so finds it boring. These contrasting views about the amount of feedback might be a result of different learning actions (see Section 6.2.3.) and might also depend on the individual learner's activities. Despite mentioning receiving help from the Toolkit, Raman 1 places emphasis on receiving help from other people, as the Toolkit does not provide an online environment such as a forum where one can ask other people questions, as stated by Raman 1.

4. Procedural scaffolding: Some participants talk about the need to know the methods for performing learning activities in the Toolkit (for procedural scaffolding, see Sections 2.3.3., 4.2.2. and 6.2.1.1.). However, they have contrasting views about these. Whereas Baran 3 and Ziver 2 think that the Toolkit provides excessively long introductions and instructions so that learners subsequently skip reading these instructions, Bob (1) says that the Toolkit provides very few instructions. This suggests that the difference in the amount of scaffolding required is dependent on a learner's needs or preferences.

5. Technical scaffolding: In addition to other types of scaffolding such as conceptual, procedural and metacognitive, technical scaffolding, which is related to help from computers or help based on online learning resources, is crucial for enabling learners to take charge of their solo learning (for technical scaffolding, see Sections 2.3.3., 4.2.2. and 6.2.1.1.). However, Salar in Interview 1 remonstrates that the Toolkit contains hyperlinks which tend to distract learners, as seen in example 6.44.

Example 6.44

Salar (1): *But another thing is weak in the EAP Toolkit, let me show you, that is maybe, my only idea this one, this link inside the texts, maybe this one. When I am new student here, very new, this is my first thought the first two weeks here, when I do exercises, I can show you critical thinking, maybe skim-reading, I have never used that one. If you find something here, link, I will click on the link, my mind will gooooo with this link, and I will not remember where I have been before. This is maybe avoid*.

As indicated in Section 6.2.1.1., during the observation only one student, Raman, preferred to use technical scaffolding by clicking on hyperlinks provided in LOs in the EAP Toolkit. It might be inferred from the cases of Salar and Raman that learners differ even as to whether or not they prefer to use technical scaffolding (for discussion, see Section 8.2.2.).

6. Explicit feedback: The EAP Toolkit provides either both explicit and implicit feedback, or one of them, after completion of the activities (see Section 6.2.1.1.). However, during interviews, more than half the participants in the present study (Tasleem 3, Tasleem, Ziver, Baran and Gazala 2, and Tasleem, Perwin and Raman 1) preferred to see and use explicit feedback that helps learners to check whether they are right or wrong. For instance, Tasleem states that she wishes to see if she is right, as she is very tired after solving the question (see example 6.45).

Example 6.45

Tasleem (1): *I read the question and then solved it, I become so tired, yes and my brain started to, like, I just wanted to see this is right or wrong*.

c) More Issues to Consider in the Toolkit

In addition to the design and scaffolding aspects of the EAP Toolkit, other issues are raised during interviews and observation with regard to the activity's hardships and also with regard to classroom learning by participants.

1. Hardships due to the activity. As learners have different learning actions and preferences (see Section 6.2.3.), some of the participants offered their recommendations and stated their preferences during observations and interviews. For instance, Salar in Observation 1 finds the activity very hard. Nevertheless, he continues to work on the activity. However, Ziver in Observation 1 regards the activity as too full of words, so he skips completing it. Similarly, Raman and Tasleem in Interview 1 agree with Ziver and Salar on the difficulty of the activity. Both Raman and Tasleem state that the time allocated the activity is limited for the first time, so the students avoid completing the activity (Raman 1). Tasleem describes her situation as one of learning quickly due to the Toolkit, as stated in example 6.46.

Example 6.46

Tasleem: *I think they who make this program want me to learn English very fast*.

Following this, she recommends that it should be categorised according to learning levels as '*someone wants to use it but has a bad English, all the words will be very difficult to understand*' (Tasleem 2).

From another perspective, Baran in Observation 2 stops reading the activity aloud as he thinks it is enough for him; otherwise it would be a waste of time. In this sense, he decides when to stop or to continue and move on to the next activity.

Raman in Interview 3 criticises the Toolkit for its failure to provide a range of activities, so that a learner cannot work with it for a long time. He thinks the Toolkit is repetitious, with the activities being performed many times in a way that becomes boring and tiring (Raman 1 and 3). Above all, he defines this as static due to its limitations in providing help to promote learning (see example 6.47).

Example 6.47

Raman: *This one is static, more just you have it, limit, limited, question, answer, but if it is dynamic, it gives you more opportunities for navigation; nevertheless, it should be more dynamic* (Raman 1, 2, 3) *which means that as a data base to encourage the students to answer the question, you know encourage the students as a match, as a game, give opportunity and encourage students to stay with the start from the easy to the difficult one*. (Raman 2)

Additionally, Bob in Interview 2 recommends that the Toolkit should contain activities to improve spoken English.

2. The effect of classroom learning: Nearly half of the participants during interviews state that classroom learning takes up their time so they consequently do not have time to improve their learning with the Toolkit (Tasleem 1 and 2, Raman 2, Perwin 3, and Ziver 2 and 3).

3. Problems arising from their use of the computer: Even though the participants express their recommendations during the observations and interviews, most of them either display difficulties during the learning process or mention problems arising during learning with the Toolkit. Therefore, these problems are highlighted in order to understand their experiences. It is observed that a few of the participants have difficulty in using the computer when going to another LO (Salar 1 and Ziver 3), to the next activity (Salar 1), or to the activity that follows after reading the introduction (Perwin 3). They also have trouble with choosing, clicking and dragging (Bob 3, Goran 1 and 3), and look tired (Baran 1) and confused while doing the activity the first time (Bob and Tase 1) and while finding the answer (Goran 3).

4. Personal problems: During interviews, Perwin emphasises that stress, age and health problems negatively influence her learning. Similarly, Ziver highlights the effect of both stress and hunger on his learning and understanding of the topics.

In this sense, participants suggest that the Toolkit should provide more scaffolding in the sections containing feedback and information/explanation about the topic. Also, it should include more activities including audio-visual help. It should both improve speaking skills, for instance, by setting up a discussion forum, and should be designed with an interactive background perhaps in a dark colour, and with italic bullet points and a suitably large font.

Overall, participants seem to be affected negatively by the think-aloud protocol method and by their inexperience in carrying out the activities in the Toolkit during early use. But over time, they become familiar with speaking aloud and using the Toolkit, as shown in the qualitative data. Also, most of them think that they learn both the elements they expect and those they do not expect. With this, the participants mean that they increase their knowledge of topics they are introduced to and from which they are free to choose to study further. They highlight that the Toolkit has a positive impact on their learning by means of scaffolders that they use to complete the task through receiving guidance (see Section 6.2.1.1.).

Feedback plays a crucial role in tutoring the learners in the same way as a teacher by providing interaction. Above all, they indicate that they are encouraged to use various activities within the EAP Toolkit in future solo learning and are supported in both classroom learning and for gaining awareness of their continuing learning and their weaknesses. Additionally, the Toolkit's design is effective for accomplishing the activities. However, personal burdens such as stress, age and

health issues, and classroom teaching cause them to discontinue performing the tasks in the Toolkit, and they suggest some improvements for the Toolkit to enable them to use it more fully. Although some of the learners require more feedback, a few prefer less. Furthermore, they say that the Toolkit should be made more dynamic by providing activities ranging from the easiest to the most difficult. Moreover, it should additionally improve speaking and collaboration with their peers or other people and provide more scaffolding that considers learners' different learning styles, for example, by providing audio files or pictures. Even though some agree on the efficiency of the Toolkit's design, nearly half of them (Tase, Raman, Baran and Salar) support the idea of improving its design in terms of the font, background, audio-visual aids and colours. Additionally, the difference between pre- and post-questionnaires reveals that the positive views of the wider group on the EAP Toolkit increase over time. Positive and negative statements as presented above only give an understanding of a scaffolded e-learning environment; however, the present study considers other OLRs as well. Therefore, the next section deals with the participants' perceptions of their learning within other OLRs in order to answer the second research question of the present study.

6.3.1.2 Participants' Perceptions of their own Learning within other OLRs

The abovementioned findings indicate the participants' perceptions of their own learning in the EAP Toolkit and classify these into positive and negative views. Similarly, participants in both interviews and questionnaires express their positive and negative views on other OLRs described in Section 6.2.2.2. and Figure 30. In interviews, the participants find those resources useful because they provide a range of activities, practices and e-books which improve learners' reading and listening skills. This, they claim, supports them in studying on their own by enabling them to check their answers by themselves, while enjoying the time they spend learning with those resources and concentrating on learning at any time and place. However, one of them (Tasleem 3) compares these OLRs with the Toolkit in that they offer school-level teaching. They also find them lacking in attention to academic learning and intercultural content, as some content contrasts with the learners' cultures and does not provide enough scaffolding and interaction with other people. However, the comparison between the pre- and post-questionnaires shows that a wider group of 35 participants find these resources more useful over time. For this reason, a deeper explanation of their experience of other OLRs attempts to advance the perspectives on their learning in e-learning environments as explored in the present study. In the same way, data from interviews and from the differences found between pre- and post-questionnaires are expected to shed light on the participants' views about their favourable and unfavourable experiences of learning with other OLRs.

Figure 37 presents the frequency of participants' perceptions of other OLRs during each interview session. It shows, similarly to Figure 36, their expression of negative and positive views during the three interview sessions, and their responses were coded as negative or positive. The vertical axis shows the instances of their perceptions and the horizontal axis shows each participant in each interview session.

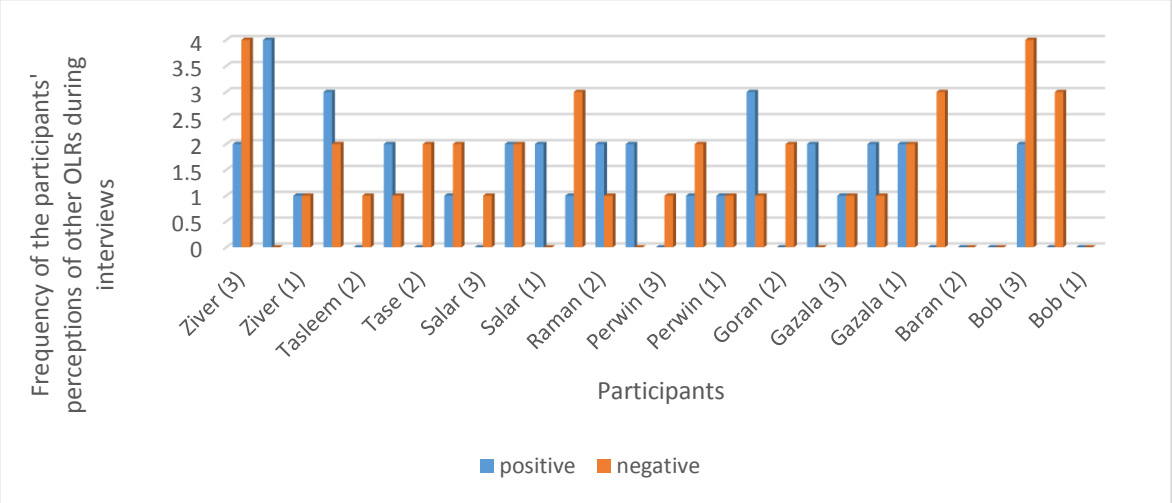


Figure 37: Participants' perceptions of other OLRs reported in Interviews

6.3.1.2.1 Positive views about other OLRs

Participants during interviews express views on other OLRs which are similar to their views on the EAP Toolkit in terms of the practices and independent learning, but they differ in finding other OLRs flexible for learning, whereas the EAP Toolkit resembles a tutor in providing information, instruction, guidance and feedback. Additionally, the pre- and post-questionnaires give a similar analysis regarding the EAP Toolkit, as shown below at the end of this section.

a) Other OLRs for Practices

Overall, participants think that other OLRs provide many resources (Raman 3 and Tasleem 1), enable many practices (Raman 1 and 2) and improve their listening, reading, writing and speaking skills (for details, see Section 6.2.2.2.). Moreover, Salar 2 favours other OLRs for their clear accents which help in understanding English.

Above all, Tasleem 3 compares other OLRs with the EAP Toolkit, and finds that the former are neater and better-designed than the latter, as other OLRs teach at school level, rather than university level. A few of the participants (Salar and Tasleem 1 and Raman 2) believe that other OLRs make them more act focused so that they can complete more activities.

b) Other OLRs for Independent Learning

Similarly, some participants claim that other OLRs encourage them to study by themselves (Raman and Salar 1 and Tasleem 3). Tasleem 3 describes her situation of being able to study those resources at any time and place, as shown in example 6.48.

Example 6.48

Tasleem (3): *You are at home at the weekend, I can use from home and sometimes, you don't feel very good, and you can just choose them. You don't have to come to school and attend the class. You can just do it anytime you want it*.

Also, Goran and Ziver 1 say that other OLRs help them to monitor their progress. Their motivation is enhanced by using other OLRs because these enable learners to feel satisfied and happy and to have fun (Ziver 2 and Goran and Tasleem 3).

c) Flexibility of other OLRs

Although participants do not mention directly the use of the EAP Toolkit for its flexibility, a few of them (Baran 2, Raman 3, Ziver 3) talk about their plan to use it in their future outside the university, which implies that flexible learning can occur within the EAP Toolkit (see Section 1.2.3.). In the same vein, participants agree on the provision of other OLRs for flexible learning by means of e-books, and the convenience and accessibility of these resources. Salar and Ziver 2 say that other OLRs contain e-books which do not include heavy and few books; rather, the limitation appears when borrowing books from the library (Ziver 2) and these OLRs enable them to read and listen to the books anywhere (Salar 2). Also, Goran 3 agrees that these OLRs are easier than books to study and receive information from. Additionally, Goran and Tasleem 3 regard other OLRs as convenient and accessible.

Similarly, both pre- and post-questionnaires show that participants see other OLRs as useful. The participants' rating of other OLRs that they use for learning is presented in Tables 31 and 32 (see Appendix R). It was measured using a ranking question (i.e. rating from 1 not useful to 5 very useful; see Item 25 in Section 2 of the Questionnaire in Appendix E). Of 35 participants, 31 rated the questionnaire item in the pre-questionnaire, whereas 33 participants did so in the post-questionnaire. Others stated it was not applicable for them. Slightly more participants (25) regard them as useful in the post-questionnaire (see Table 32), while 22 of them claim this in the pre-questionnaire (see Table 31). Others (9 of them in the pre-questionnaire and 8 of them in the post-questionnaire) find the OLRs moderately useful.

With the participants' positive views on other OLRs having been explained, the next section examines their negative views of other OLRs.

6.3.1.2.2 **Negative views on other OLRs**

As with the EAP Toolkit, participants draw attention in interviews to deficiencies in other OLRs, giving recommendations for other OLRs to provide more scaffolding and activities, and talking about personal problems and the effect of classroom learning.

a) The Need for more Scaffolding in other OLRs

Participants in interviews give recommendations concerning the need to provide different scaffolding types in other OLRs. In order to see whether their answers are right and to increase their learning, they seem to require conceptual, metacognitive, procedural, technical and strategic scaffolding. Nearly all of them (Bob, Baran, Gazala, Goran, Tasleem, Tase, Salar and Perwin) place emphasis on feedback. Baran 3 prefers to receive feedback after each question. Moreover, some of the participants wish to obtain feedback (Perwin 1, Bob and Goran 3, and Tase 2) which specifically gives the right or wrong answers (Goran 2), explains why the answer is right (Gazala 1 and Tasleem 3) and adds new information (Tasleem 2).

Also, more than half of the participants talk about help in other forms than feedback, suggesting that other OLRs could assist their learning with scripts, pronunciation, samples, instruction, explanations, a dictionary and additional practices if needed (Goran and Bob 3; Gazala, Tasleem and Salar 2, and Tase 1). More interestingly, Gazala 1 draws attention to the reliability of other OLRs by comparing them with the EAP Toolkit. She thinks that other OLRs need to be reliable in terms of the information, as some of them seem not to be.

b) More Activities to be Provided in other OLRs

Although nearly half the participants (Salar 1, Ziver 1, Raman 1 and Tasleem 1) talk about the difficulty of the activities in the EAP Toolkit, participants in interviews raise different issues to be considered in the case of other OLRs. For example, they think that other OLRs should provide resources for specific academic subjects (Perwin and Ziver 3) and academic skills (Tasleem 3) and offer free resources (Raman 3, Tase and Perwin 2, and Ziver 1) and e-books (Perwin 2).

As they offer their suggestions for the EAP Toolkit, they similarly draw attention to the need for other OLRs to offer ways to enhance a learner's speaking skills. For this purpose the OLRs should enable interaction with other students (Tasleem 1 and Salar and Bob 2) and provide a discussion forum (Raman 3), and could improve writing by requiring learners to type more, which in turn would also improve spelling (Tasleem 3). Moreover, Raman 2 expresses his concern about the

different accents provided in the resources, whereas Ziver 3 finds some resources remote from his culture. Additionally, Raman 3 notices the time-wasting caused by advertisements included in other OLRs.

c) Personal Problems

Along with their approach to other OLRs during interviews, slightly more than half of the 10 participants conveyed their feelings about the trouble they face in the process of learning from those resources, similar to the personal concerns expressed in relation to the EAP Toolkit. Perwin mentions problems caused by her age, health, the organisation of her timetable and differences in learning styles in the UK. Also, in the same way as in his previous interview, Ziver stresses that fatigue affects him adversely.

d) The Effect of Classroom Learning

Another concern similar to that raised in relation to the EAP Toolkit is the effect of classroom learning on e-learning. Goran (1), Salar (3) and Tase (2) assert the negative influence of classroom learning and exams. As they are busy with homework and exams in classroom, they use the Toolkit less.

The abovementioned data inform the participants' positive and negative perceptions of their experience of learning with both the Toolkit and other OLRs. Although most of them highlight that they are encouraged to manage their learning by means of scaffolding and the Toolkit's design as provided in e-learning environments, some of them would still prefer more scaffolding and assistance from these resources in studying on their own. Considering all the aforementioned findings in the subsections of Section 6.3., the section has tried to explain and clarify learners' perceptions of their own learning online. The next section presents the participants' perspectives, especially of their own learning in scaffolded e-learning environments, which will contribute the second research question of the present study (see RQ2 in Section 1.3.).

6.3.2 Participants' Perceptions of their own Learning in Scaffolded E-learning Environments

During the observations, participants draw on both scaffolders and types of scaffolding at different rates (see Section 6.2.1.). They also emphasise the need for scaffolders and the provision of scaffolding, in that they find the EAP Toolkit useful in providing scaffolding, but still say that they might need more scaffolding in the Toolkit (see Section 6.3.1.1.2.) and suggest that other OLRs (see Section 6.3.1.2.2.) should provide different forms of scaffolding. It can be understood that scaffolding plays a crucial role in their learning. As stated in observations and interviews,

scaffolders (see Section 6.2.1.2.) provided in the Toolkit and other OLRs enhance their learning. However, among scaffolders, feedback has a significant impact on their learning, as affirmed by participants in qualitative research instruments, by developing strategies that enable them to plan, assess, monitor and evaluate themselves and improve their learning. Similarly, a wider group's views given in questionnaires corroborate the qualitative results in that their positive feelings about the feedback in both the Toolkit and other OLRs increase over time. Yet, during observations, two of them (Perwin and Baran) criticise the feedback in the Toolkit for not offering a user-friendly learning environment.

Following this, data (see Section 6.3.1.2.) draw attention to scaffolding in e-learning environments. Also, the present study focuses on the relationship between scaffolding and learner autonomy in e-learning environments. Therefore, this section elaborates on the findings on scaffolding by investigating participants' views on the EAP Toolkit in terms of scaffolders such as the introduction, information/explanation, instruction, feedback, hyperlinks and dictionary. Even if the participants make no comments about them in the learning process of the EAP Toolkit, follow-up interviews are conducted to explore these issues. Besides data from observations and interviews, the difference between the pre- and post-questionnaires is noted in order to establish any changes in their views about the scaffolding provided in e-learning environments. Hence, their perspectives on each scaffolder that has been reviewed in the Section 6.2.1.2. are investigated, in order to understand their perceptions of their own learning in OLRs, including the EAP Toolkit and other OLRs. Thus, this investigation can respond to this study's second research question about how learners perceive their learning online, especially in scaffolded e-learning environments.

As a scaffolder, the *introduction* section is seen as a starting point for learners to receive information about the topic (e.g. example 6.49). Also, they receive further guidance from the Toolkit and find the activities very easy because of the introduction (e.g. Salar in Interview 2).

Example 6.49

Baran in Observation 1: *I think introduction to vocabulary learning, with this approach, we can do vocabulary*.

As for the impact of the *information/explanation* section in supporting learning, it is found to help the learners understand their weaknesses and carry on with the activities (e.g. Salar in Observation 1 in example 6.50). To a slightly greater extent, participants such as Bob 2 and 3, Gazala 1, Perwin 2, Raman 2, Salar 1 and Tase 2 find that section helpful and well-made during the interviews, in that it gives new information and knowledge and provides them with key words

about the activities and also knowledge of what to do in the next stage. Nevertheless, Tasleem in Interview 1 finds it boring and time-consuming, as she feels she needs to read it before doing the exercises.

Example 6.50

Salar (1): *Good. This was my wrong thing.*

Likewise, both Ziver and Baran in Observation 1 dislike the *instruction* section, because they claim that it is too long to read. By contrast, nearly all of them (Bob 2 and 3, Gazala 1, 2 and 3, Goran 2, Perwin 2, Raman 1 and 3, Salar 1, 2 and 3, Tase 1, Tasleem 3 and Ziver 1 and 3) opt for it, and some of them list the benefits of the instruction, as it:

- guides them in applying one's English ability to that topic (Bob 2), doing the exercise (Bob 3), and finding the main point (Salar 1);
- gives specific and clear assistance which helps them to understand it more easily (Bob 2);
- improves their English with the audio files alone (Bob 2); and
- helps them to track their learning during the learning process (Bob and Ziver 3 and Gazala 1 and 2).

The section most commented on is *feedback*. Figure 38 below shows their perceptions of feedback, measured using their think-aloud protocols during each observation. Their statements about feedback were coded as positive or negative based on whether they favour or disfavour the feedback. The figure reveals that they mostly have positive beliefs about it, especially in Observation 3, although Tase and Tasleem make some statements about deficiencies in the feedback. Most of them find feedback helpful during the observations, as it:

- helps them to understand their mistakes (Salar 1 and 2, Goran 3, Tasleem 1, 2 and 3);
- adds new information (Tasleem 3);
- guides them to correct themselves (Perwin 3, Raman 2, Salar 1 and 2, Tase 1 and 2, Tasleem 1, 2 and 3, Ziver 1 and 3) and assess themselves (Baran 1 and 3, Gazala 3, Salar 1, 2 and 3, Tase 1 and 2, Tasleem 1, 2 and 3, Ziver 1, 2 and 3); and
- supports them so as to increase their motivation (Baran 1, Gazala 3, Raman 3, Salar 1, 2 and 3, Tase 1 and 2, Tasleem 2 and 3).

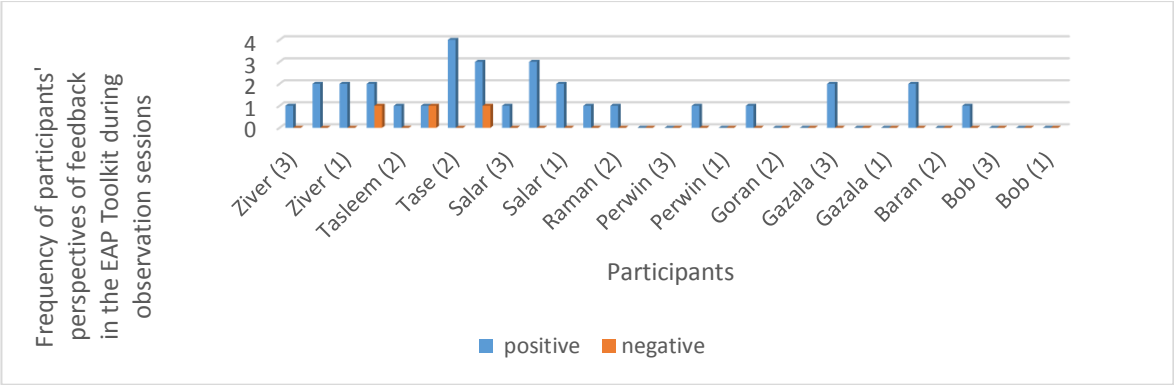


Figure 38: Participants' perspectives on feedback in the EAP Toolkit during observations

In addition, all of them express their feelings about the feedback in detail during the interviews by noting that it:

- helps them to write the correct answer by giving some strategies (Salar 1 and Gazala 1), explanations (Goran 1), and indications of whether the participants' answers or their guesses are right (Perwin and Raman 3);
- helps them to improve themselves by suggesting that they 'go back and use another [task]' (Salar 1);
- benefits them in seeing whether their notes are related by providing the transcripts for audio files (Salar 2);
- provides exact feedback by tracking them (Salar 1);
- enables them to save time in understanding the topic (Perwin 2);
- increases their understanding and improves their learning (Goran 1 and 3, Perwin 2, Raman 1, Salar 1 and Ziver 3);
- offers them the chance to find the answers on their own (Salar1);
- supplies explanations of the answers (Goran 1 and 3, Perwin 2, Raman 2, Tasleem 3 and Ziver 1 and 3);
- directs them by showing a way to learn vocabulary (Gazala 1); and
- supports them in assessing themselves (Gazala 3, Goran 3, Raman 2 and 3, Salar 1, Tase 1 and 2, Tasleem 3 and Ziver 1).

Notwithstanding the benefits of the feedback, some of the participants mention the aspects they wish to see improved, or the problems they encounter in terms of the feedback (see Figure 38). For example, Tase (1) prefers to receive feedback after each question in the activity. Tasleem (1 and 3) highlights the need for more explanation and explicit feedback during the observation. Additionally, Baran says during Interview 2 that he does not see the feedback section, while Perwin indicates during Interview 1 that she does not understand how to use the feedback.

As a scaffolder, the section containing *web links, glossary and dictionary* aims to enhance the participants' learning (see Section 6.2.1.2. and Figure 15). Despite this, only Raman prefers to utilise the dictionary during Observation 3 rather than other online dictionaries such as MacMillan or Oxford, and confirms the use of that section during all his interviews. Others state that they either use other dictionaries (Perwin 1, Salar 1 and 3, Tase 2, Tasleem 1, 2 and 3 and Ziver 2 and 3) or do not prefer to (Bob 2 and 3, Goran 1 and 3 and Salar 2). Some of them (Bob 1, Gazala 1 and 2, Perwin 3, Tasleem 1 and Ziver 1) say that they do not notice that section. Meantime, Baran chooses Google Translate to look up words as it provides the option of giving the meaning in his native language.

Hyperlinks are provided in either instruction or feedback to assist the participants' learning (see Section 6.2.1.1. and Figure 16). A few participants including Bob 3, Gazala 2, Raman 1 and 2 and Salar 3 prefer to benefit from it during the observations. On the one hand, the hyperlink of the audio file's transcript helps them to follow their reading while listening (Gazala 2), as indicated in the interview. On the other hand, the same participant in the next interview prefers to manage her own knowledge of vocabulary without looking at the hyperlink. Baran says in Interview 2 that he does not realise it was provided with the hyperlink and Bob (2) stresses that he would use it if he was working on an activity at home.

Together with the findings about the scaffolders obtained from observations and interviews, the questionnaires give information about them in a broader setting of 35 participants. Participants' perceptions of the Toolkit overall and scaffolders in the pre- and post-questionnaires is presented in Tables 33 and 34 (see Appendix R) respectively. It was measured using ranking questions (i.e. rate from 1 not useful to 5 very useful; see Items 6, 7, 8, 9, 10, 11 & 12 in Section 2 of the Questionnaire in Appendix E). Although 21 of 35 participants state that the items are not applicable for them in the pre-questionnaire (see Table 33), 12 of them give that answer in the post-questionnaire (see Table 34). As can be seen in both tables, they have more positive views in that:

- 14 of them in the post-questionnaire rate the Toolkit useful, compared to 6 of them in the pre-questionnaire;
- 12 of them in the post-questionnaire find the web links useful, compared to 6 of them in the pre-questionnaire;
- 11 of them in the post-questionnaire find the glossary link useful, compared to 7 of them in the pre-questionnaire;
- 9 of them in the post-questionnaire find online dictionaries useful, compared to 6 of them in the pre-questionnaire;

- 14 of them in the post-questionnaire find the feedback useful, compared to 7 of them in the pre-questionnaire;
- 11 of them in the post-questionnaire find the information useful, compared to 8 of them in the pre-questionnaire; and
- 12 of them in the post-questionnaire in the post-questionnaire find the explanation useful, compared to 5 of them in the pre-questionnaire.

Even though the EAP Toolkit is used as an example of a scaffolded e-learning environment, through which users' actions and perceptions of their own learning in scaffolded learning environments are questioned and observed, a deeper investigation is required; so the interview is conducted in order to understand their perspectives on their learning through scaffolding provided by other OLRs, which are introduced in Section 6.2.1.2. The scaffolders in other OLRs are described as *transcripts, subtitles, sub-lists, online dictionaries, instruction, information, feedback* and *explanation*, all of which enhance their learning. They think that:

- transcripts help them to improve vocabulary by making the words clear and visible for learners (Salar 1 and 2, Perwin 2 and Gazala 2) and to feel confident (Perwin 2);
- subtitles enable them to connect what they have heard and read (Goran 2);
- sub-lists include words with which they can accomplish exercises (Tase 1);
- online dictionaries enable them to handle their learning without the support of anyone (Gazala 2, Goran 3 and Salar 1);
- instructions guide them to find ways to overcome problems (Gazala 3, Goran and Salar 2);
- information offers assistance with pronunciation, vocabulary and listening, to help in understanding idioms and synonyms (Raman 2);
- feedback supports their learning (Baran 1, 2 and 3, Gazala 1, 2 and 3, Goran 1, Perwin 1 and 2, Raman 1 and 3, Salar 1, Tase 1, Tasleem 1, 2 and 3, Ziver 1, 2 and 3) in terms of testing, scoring and self-assessment (Goran 1 and 2, Perwin 1 and 2, Raman 1, Tase 1, Tasleem 1, 2 and 3 and Ziver 1), identifying their level (Gazala 1), providing links for checking their grammar (Perwin 2), encouraging them to study more and go to the next activity (Perwin 2 and Raman 1), and helping them to feel confident (Raman 1);
- explanation increases their understanding of the tasks they are to do (Tasleem 2); and
- examples provided before the exercises facilitate their solution (Perwin 1).

Similarly, the comparison of pre- and post-questionnaires (see Tables 35 and 36 in Appendix R) indicates that on a larger scale, over time, the participants improve their positive opinion of feedback supplied in other OLRs. 8 of 16 participants who receive feedback in other OLRs rate it useful in the pre-questionnaire, while 13 of 20 participants who receive feedback in other OLRs do this in the post-questionnaire.

Overall, learners obtaining scaffolding from both the EAP Toolkit and other OLRs have the opportunity to improve and handle their own learning and motivation in e-learning environments according to their perspectives. This is revealed by data gathered not only by qualitative research methods such as Camtasia recordings, the think-aloud protocols and interviews but also by the quantitative research method including the pre-and post-questionnaires. The issue of taking responsibility for their learning in those environments is explored in detail in the next chapter.

6.4 Conclusion

The results from the Camtasia recordings, think-aloud protocols, interviews and pre- and post-questionnaires shown in this chapter have intended to answer the first and second research questions of the present study which are restated below:

> RQ1) What actions do learners carry out when learning online, especially in scaffolded e-learning environments?
>
> RQ2) How do learners perceive their own learning online, especially in scaffolded e-learning environments?

With regard to the first research question, data show that learners carry out different learning actions when learning online, especially in scaffolded e-learning environments. Regarding their learning in a scaffolded e-learning environment, they draw on multifarious scaffolders and scaffolding types in order to facilitate their learning online. They mostly use metacognitive, conceptual and procedural scaffolding types (see Section 6.2.1.1.) and the information/explanation, instruction and feedback sections as scaffolders (see Section 6.2.1.2.).

On the one hand, each learner carries out different learning actions in following the order of the activities and in completing activities in the EAP Toolkit (see Section 6.2.2.1.). Some of the learners prefer to complete the learning activity as provided in the order by the EAP Toolkit, whereas others prefer to simply read scaffolder or accomplish the exercise. Some of them read the questions or scaffolders more than once, interpret what they have read and comment on their performance in order to comprehend their learning, and scroll up and down on the page in order to facilitate their learning online (see Section 6.2.3.). On the other hand, most of the participants use scaffolders more frequently over time, spend less than 20 minutes on one LO within the EAP Toolkit during observations and prefer to use the Academic Writing folder in the Toolkit, which corroborates the result from questionnaires. Although classroom learning and exams can prevent them from using the resources, the use of the EAP Toolkit increases over time (see Section 6.2.2.1.) but their use of other OLRs remains the same over time (see Section

6.2.2.2.). Similarly, they carry out different and more consistent actions when learning in other OLRs. They use multifarious OLRs every day which scaffold learning, enhance content-learning and language learning and are not always designed for learning.

With regard to the second research question, learners have positive and negative perceptions of learning online; especially in scaffolded e-learning environments (see Section 6.3.). They perceive that their own learning online improves as OLRs:

- represent a tutor by giving guidance, instruction, feedback, key points and interaction;
- help them to learn independently;
- enhance their learning skills, especially reading and listening skills; and
- provide multifarious e-books, learning activities and practices available at any time and place.

However, they perceive that their learning online will improve more if OLRs:

- provide a greater level of scaffolding (e.g. more information and explanation about the topic and feedback);
- create an e-learning environment for collaborating with others;
- are designed to include various learning activities with regard to different learning actions and preferences such as audio or visual materials; and
- consider academic learning and inter-cultural contents.

Regarding their own learning in scaffolded e-learning environments, the participants perceive that:

- the introduction section as a scaffolder enables them to receive basic information about a learning activity, so learners can see it easy to accomplish;
- the information/explanation section guides them in what to do next in the learning activity, so they can understand the key points and their weaknesses;
- the instruction section assists them in completing the activities; and
- the feedback section improves their knowledge of topics and enables them to evaluate their understanding, so their motivation increases;
- transcripts, sub-lists and online dictionaries enhance vocabulary learning; and
- subtitles help them to revise the items they have listened to.

On the contrary, they perceive that their own learning in scaffolded e-learning environments is impeded if they receive too-long scaffolding and unclear scaffolders.

However, to answer the main question about the relationship between scaffolding and learner autonomy in e-learning environments, it is necessary to respond to the third research question,

which is concerns the ways in which learners exercise their autonomy, especially in scaffolded e-learning environments. This will be dealt with in the subsequent chapter alongside an analysis of the components of learner autonomy.

Chapter 7: LEARNER AUTONOMY IN SCAFFOLDED E-LEARNING ENVIRONMENTS

7.1 Introduction

As introduced in the previous chapter, this section forms the second part of the data chapters. Chapter 6 has attempted to answer the first and second research questions about participants' actions and perceptions of their own learning online, especially in scaffolded e-learning environments. Furthermore, based on data from the Camtasia recordings, think-aloud protocols, interviews and pre- and post-questionnaires, this section attempts to answer the third research question and its sub questions:

> *RQ3) In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments?*
>
> > *RQ3.1) To what do learners attribute their success and failure, especially in scaffolded learning environments?*
> >
> > *RQ3.2) What is learners' confidence about their own learning, especially in scaffolded e-learning environments?*
> >
> > *RQ3.3) What learning strategies do they use, especially in scaffolded e-learning environments?*

As indicated in Section 3.2., the components of learner autonomy are defined as self-regulation, self-management, learning strategies, attribution theory and self-efficacy (see Figure 6). Therefore, the present section contains the analysis of the participants' self-management and self-regulation, use of learning strategies, the attributions for their successes and failures, their confidence and their need for support from teachers in e-learning environments, respectively, in order to respond to the third research question. Ultimately, it presents an examination of the relationship between scaffolding and learner autonomy in e-learning environments, which forms the last research question of the present study:

> *RQ4) What is the relationship between scaffolding and learner autonomy in e-learning environments?*

By this means, it can shed light on the research interest as illustrated in Figure 3.

7.2 Participants' Self-management and Self-regulation

Data from both interviews and observations including Camtasia recording and the think-aloud protocols in this study indicate that learners can make plans, carry out implementation, adjustment and evaluation; set goals; monitor their learning and combine resources in e-learning environments. These are all concepts based on the literature review (see Sections 3.2.1. and 3.2.2) and are used as codes in the analysis of self-regulation and self-management (see Figures 39, 40 and 41). This tends to reveal that learners can manage and regulate their learning in e-learning environments and in turn, can take responsibility for their solo learning (see Sections 3.2., 3.2.1. and 3.2.2. for the relationship between learner autonomy and self-management and self-regulation). Accordingly, this section investigates learners' self-regulation and management within both the EAP Toolkit and other OLRs by means of data from both observations and interviews. By doing so, it gives an understanding of their autonomous learning in e-learning environments and contributes to the third research question:

> *RQ3) In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments?*

Figure 39 below displays the frequency of use of self-management and self-regulation by participants in each observation session. Data from the transcripts of Camtasia recordings and the think-aloud protocols were analysed based on those codes, by looking at the participants' actions or spoken comments, to 'monitor', 'plan', 'set goals' and 'evaluate' their learning. The vertical axis shows the number of instances of self-management and self-regulation used by each participant in all the three observation sessions, and the horizontal axis shows each participant and the self-management and self-regulation they used in each observation session.

Figure 39 indicates that that the participants show different attitudes to regulating and managing their learning. Most of them (Ziver, Tasleem, Tase, Salar, Raman, Goran and Gazala) tend to exhibit self-management and self-regulation, whereas Bob and Baran show self-regulation, but Perwin does not show either of these. Although the majority, such as Tasleem, Tase, Salar, Raman, Goran, Gazala, Ziver and Bob, increase their autonomous learning in later sessions compared with their first observation, Baran and Perwin do not (see Figure 39). Moreover, half of them (Bob 2, Baran 1, Goran 1, Tasleem 2 and Ziver 1) evaluate their progress and performance, whereas most of them (Gazala 3, Goran 2 and 3, Raman 2, Salar 1 and 2, Tase 2, Tasleem 1, 2 and 3 and Ziver 1 and 2) monitor their learning after observing feedback from the learning process with the Toolkit.

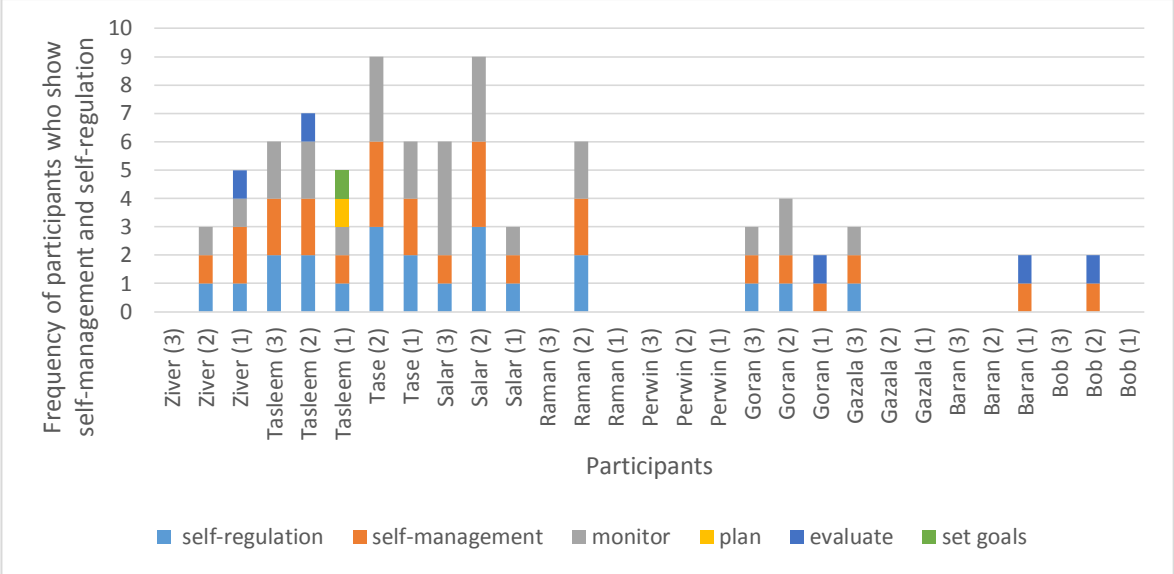


Figure 39: Participants' self-regulation and self-management with the EAP Toolkit during observations

Feedback has a crucial role in scaffolding and enhancing self-management. As seen on the Camtasia recordings, some participants read the feedback and then think aloud their learning progress. Based on the data from the think-aloud protocols, examples 7.1 and 7.2 give a contribution to an understanding of how they manage their learning. For instance, Bob in Observation 1 can evaluate his learning with regard to whether he has understood the topic (see example 7.1). Salar in Observation 3 can monitor his learning by checking for himself whether he has answered questions correctly (see examples 6.2, 6.9, 6.10 and 7.2). Additionally, feedback helps them to make a plan for completing their next activity (e.g. Tasleem Observation 1).

Example 7.1

Bob (2): *Solved. So we can now know what the plagiarism is*.

Example 7.2

Salar (3): *Fact, yeah good. In the UK, football is less popular now than it used to be. It is opinion. Where is your statistics about it? I am good in opinion and fact, believe me! People who live in the North of Britain are friendlier than those who live in the South. It is opinion. Where is your evidence? On average, people in Britain are living longer. Maybe statistics. Fact, this is a fact, yeah.*

Furthermore, Figure 40 below presents the frequency of use of self-management and self-regulation by participants during the interviews. While being questioned about their learning in the EAP Toolkit (see Section B in Appendix F), some of the participants talked about how they regulate and manage their learning. Likewise, the codes used in data analysis of observations

above are taken to analyse participants' self-management and their self-regulation of their learning with the Toolkit. However, two additional codes were generated for self-regulation drawn from Zimmerman's (2002) definition, as some participants seemed to demonstrate this. Each statement and answer they gave was coded as 'evaluate', 'plan', 'adjust', 'implement', 'monitor' and 'set goals'. The vertical axis shows the number of instances of self-management and self-regulation used by each participant within the EAP Toolkit in all the three interview sessions, and the horizontal axis shows each participant and the self-management and self-regulation they used within the EAP Toolkit in each interview session.

Figure 40 shows that nearly all of the participants in interviews (Bob, Baran, Gazala, Goran, Perwin, Raman, Salar, Tasleem and Ziver) claim to use different methods of handling their learning on their own in an e-learning environment after receiving help from the EAP Toolkit. Data from Figures 39 and 40 reveal that there is a difference in their experiences and self-reports about their learning. Some of them seem to manage and regulate their learning during the learning process (see Figure 39), whereas others mention their self-management and self-regulation during interviews (see Figure 40). For example, Ziver 3, Raman 1, Perwin 3, Gazala 2, Baran 3 and Bob 1 describe their experience of learning with the EAP Toolkit as encouraging their learning, although they do not show this during observations as obtained from Camtasia recordings.

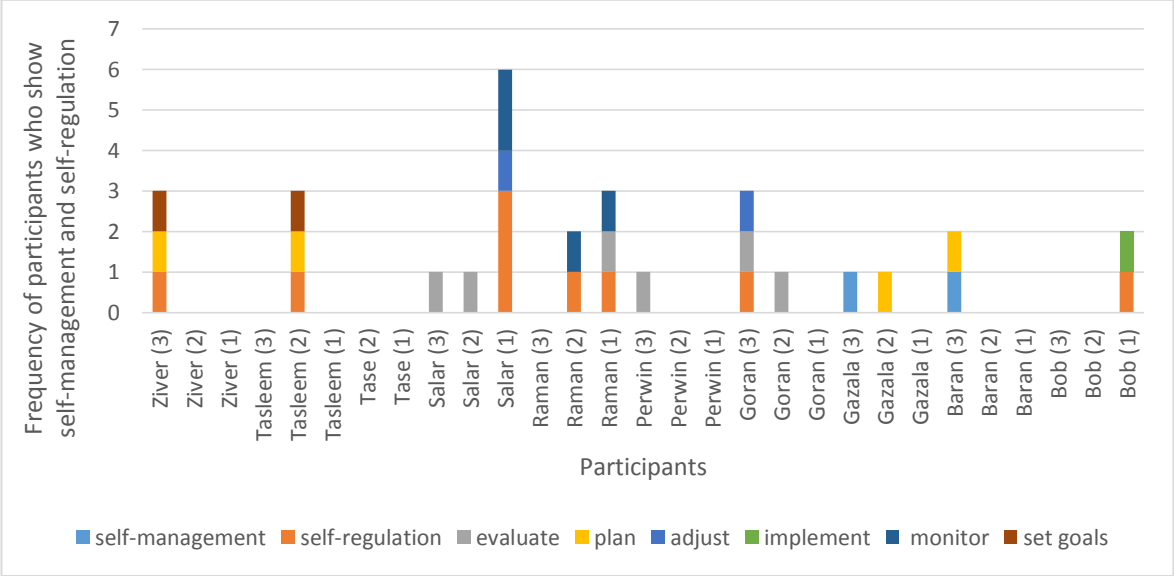


Figure 40: Participants' self-regulation and self-management within the EAP Toolkit reported in interviews

In order to manage their learning with the EAP Toolkit, the participants state during the interviews that they mostly draw on feedback. For example, nearly half of them (e.g. Baran 3, Gazala 2, Tasleem 2 and Ziver 3) make a plan for what they should do on holiday or after finishing the activity. Furthermore, some of them (Raman 1 and 2 and Salar 1) monitor their learning by

remarking that they obtain their score and check themselves after looking at the feedback, whereas others (e.g. Goran 2 and 3 and Salar 2 and 3) evaluate their performance by commenting on their successes and failures. In order to regulate their learning, they use an online dictionary (e.g. Goran 3), implement their own strategy for better reading by starting the stopwatch (Bob 1), or accomplish the task through scaffolding provided by the instructions (Goran 2).

Similarly, Figure 41 below represents the frequency of participants' self-regulation and self-management while they are being interviewed to talk about their learning with other OLRs. Comparing Figures 39 and 40 with Figure 41, which shows their self-regulation and self-management in other OLRs, there are differences seen in both. Although similar codes for Figure 39 and 40 were used for 'evaluate', 'plan', 'adjust', 'implement', 'monitor' and 'set goals', sub-codes for 'adjust' were generated as 'combining resources', 'going back to another website', 'repeating' and 'with the help of scaffolding'. The vertical axis the number of instances of self-management and self-regulation used within other OLRs by each participant in all the three sessions, and the horizontal axis shows each participant and the self-management and self-regulation they used within other OLRs in each interview session.

Figure 41 illustrates that all of the participants in interviews talk about how they are scaffolded or encouraged to improve their learning in other OLRs by making plans, implementing, adjusting, monitoring and evaluating their learning, less frequently shown in Figures 39 and 40. Also, some of them (e.g. Ziver 2 and Goran 3) have a greater tendency to manage their learning while using other OLRs, while others (e.g. Baran 2 and Bob 3) demonstrate this solely in other OLRs.

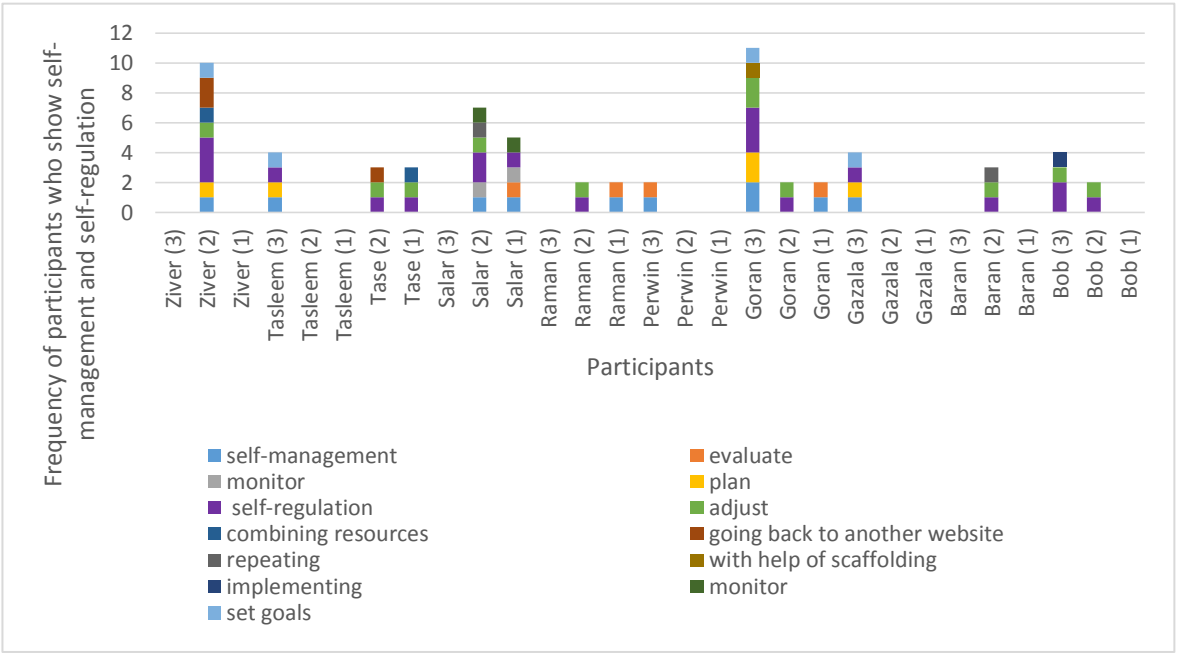


Figure 41: Participants' self-regulation and self-management within other OLRs reported in interviews

While using OLRs, participants manage and regulate their learning by

- planning what to do during a holiday or after performing all the tasks (e.g. Gazala 3, Goran 3, Tasleem 3 and Ziver 2),
- evaluating their learning by comparing their answer with the correct one (e.g. Goran 1, Perwin 3, Raman 1 and Salar 1),
- monitoring their ability to simultaneously listen and write (Salar 1 and 2),
- adjusting their learning by combining resources during learning (Tase 1 and Ziver 2) or by finding their own ways to communicate with people (i.e. Salar 2 talks with a bus driver to improve his speaking skill),
- benefiting from another resource (Tase 2 and Ziver 2),
- replaying audio files (Salar 2),
- looking at the questions again after reading the feedback (Baran 2),
- using the subtitles as a scaffolder for understanding the discussion (Goran 3) and
- implementing their own strategy (Bob 3, as occurred similarly in the Toolkit), by deciding when to improve their performance to practice with other OLRs (see example 7.3).

Example 7.3

Bob (3): *I can choose the easy websites like BBC Learning English. If my ability improves, I can choose the harder one such as BBC News or the podcasts.*

Overall, learners can manage and regulate their learning through scaffolding or on their own by making plans, conducting implementation, adjustment and evaluation, setting goals, monitoring and by combining resources in the learning process inside e-learning environments. Analysis shows that the ability to manage their learning increases, especially as reported at the third time of the observation and interview, as can be seen by looking at the frequency of the figures above. It can be concluded that scaffolders such as feedback encourage their learning in e-learning environments. The participants' self-management and self-regulation in e-learning environments having been investigated, the next section further examines learner autonomy by looking at their attributions for success and failure in both e-learning environments and in classroom-based learning.

7.3 Participants' Attributions for their Success and Failure

Another related component of learner autonomy is attribution theory (see Sections 3.2. and 3.2.4.1.). Considering the study by Gobel et al. (2013, see Section 3.5. for detail), which finds that learners who make internal attributions (see Table 4 in Section 5.4.1.3.) are autonomous, the

present study investigates the participants' attributions for success and failure in both online and classroom-based learning environments in order to answer the first sub-question of the third research question:

> *RQ3.1) To what do learners attribute their success and failure, especially in scaffolded learning environments?*

Both qualitative and quantitative data in the present section reveal that participants in the present study attribute their success to effort and strategy, whereas failure is attributed to lack of ability and effort in e-learning environments. However, learning in the classroom seems to have an impact on the attributions by the wider group (35 participants) in the pre- and post-questionnaires. Therefore, this section looks at the attributions for their success and failure during the observations (see Figure 42) and interviews (see Figures 43 and 44). Considering Weiner's four sets of attributions for success and failure (see Section 3.4.2.1.) and Phillipson and Phillipson (2010)'s study for parents' attributions (see Section 5.4.1.3.), codes were generated as: success and failure and sub-codes which encompass luck, ability, effort and strategy were produced under each code (see Section 5.6.2.1.). Data from Camtasia recordings, the think-aloud protocols and interviews were analysed by coding each participant according to their statement in the qualitative and quantitative instruments. Together with the findings from the qualitative data instruments, pre- and post-questionnaires indicate learners' attributions for success and failure not only in e-learning, but also in classroom-based learning environments on a larger scale.

Figure 42 below presents the frequency of use of attributions by participants in each of the observation sessions. Data from Camtasia recordings and the think-aloud protocols was measured using codes such as success and failure as stated above. The vertical axis shows the number of instances of attributions used by each participant, and the horizontal axis shows each participant and attributions they used in each of the observation sessions.

It shows that few participants make attributions for success and failure. Information was gathered from participants' actions in the Camtasia recordings and how they spoke aloud in the think-aloud protocols after they looked at the feedback section provided in the EAP Toolkit as a scaffolder. The statements made by participants, for example, 'it was wrong, I made a mistake' (said by Goran 2) for failure and 'Oh good! I did very well in this activity.' and 'I got all of them right.' (said by Tase 2) for success, are coded under failure and success. It seems that feedback enables the learners to attribute their failures to lack of ability to solve the questions (e.g. Baran 3, Goran 2 and 3, Raman 3, Tase 1 and 2, Tasleem 2 and 3 and Ziver 1) or to feel successful (Baran 1, Gazala 3, Goran 2, Raman 2 and 3, Salar 1 and 3 and Tase 1 and 2).

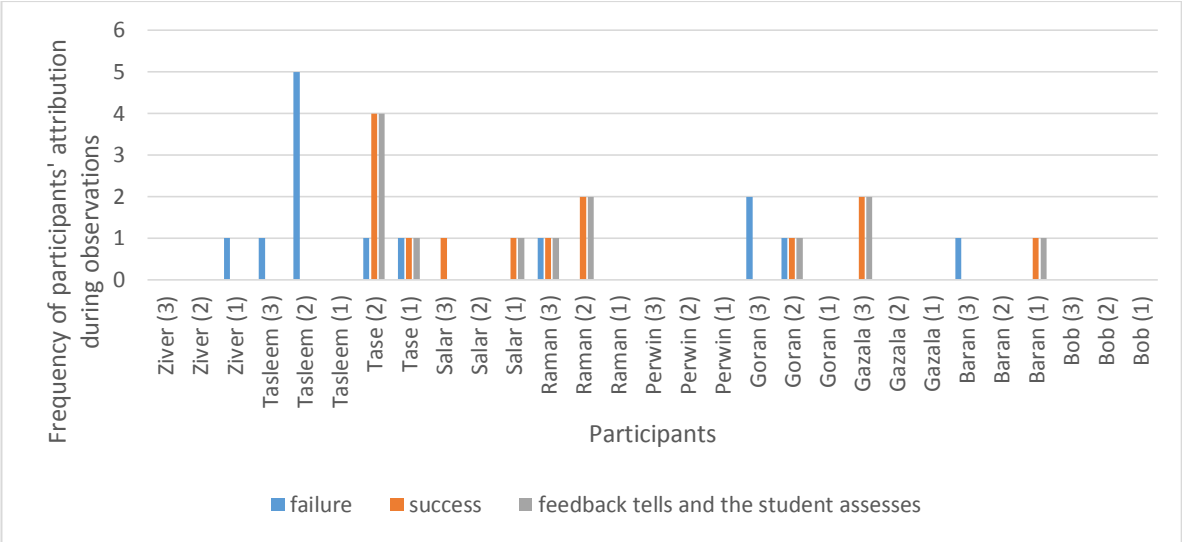


Figure 42: Participants' attributions for their success and failure during observations

However, follow-up interviews help the present study to explore their attributions for failure and success both with the Toolkit and other OLRs more thoroughly, as shown in Figures 43 and 44 below respectively. During the interviews, participants were asked:

> *Why were you successful or unsuccessful while doing the activity in the EAP Toolkit and in other OLRs?* (see Appendix F).

Figure 43 presents the frequency of use of attributions in other OLRs reported by participants in each of the interview sessions, while Figure 44 illustrates the frequency of use of attributions in the EAP Toolkit reported by participants in each of the interview sessions. The vertical axis shows the number of instances of attributions reported to be used by each participant, and the horizontal axis shows each participant and the attributions they reported using in each of the interview sessions.

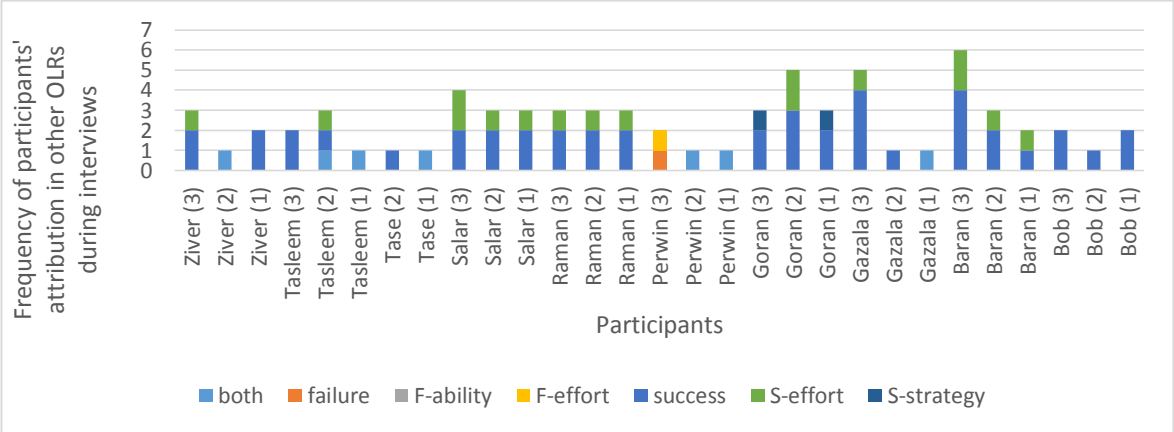


Figure 43: Participants' attributions for their success and failure in other OLRs reported in interviews

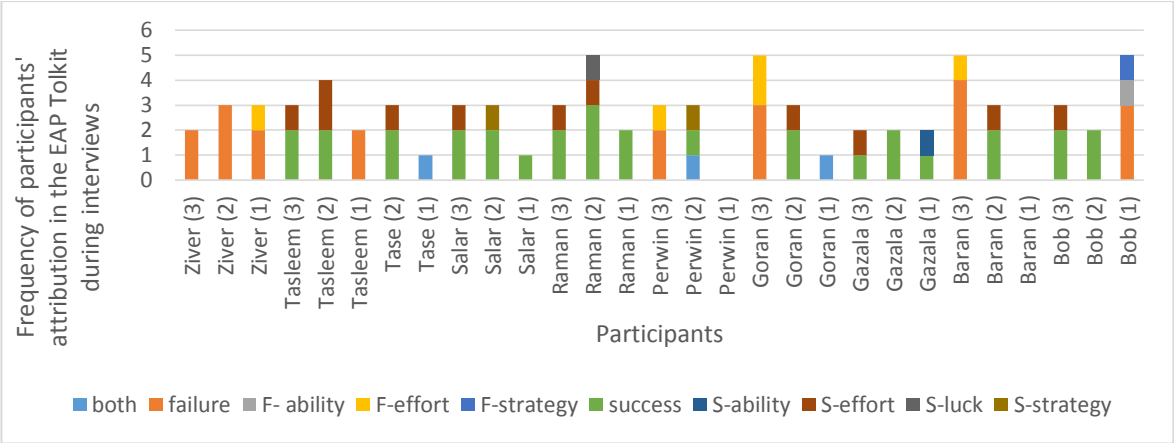


Figure 44: Participants' attributions for their success and failure in the EAP Toolkit reported in interviews

Figures 43 and 44 show that some participants feel both successful and unsuccessful in e-learning environments such as with the Toolkit (Goran 1, Perwin 2 and Tase 1) and other OLRs (Gazala 1, Perwin 1 and 2, Tase 1, Tasleem 1 and 2 and Ziver 2). They attribute failure to:

- lack of ability (Bob 1),
- lack of effort (Baran 3, Goran 3, Perwin 3 and Ziver 1),
- lack of strategy (Bob 1),
- lack of experience (Bob 1),
- lack of concentration (Baran and Ziver 3),
- lack of understanding (Tasleem 1),
- tiredness and stress with using the Toolkit and
- lack of effort with using other OLRs.

Similarly, most of them attribute their success to:

- making an effort with the Toolkit (Bob 3, Baran 2, Gazala 3, Goran 2, Raman 2 and 3, Salar 3, Tase 2, Tasleem 2 and 3) and with other OLRs (Baran 1, 2 and 3, Gazala 3, Goran 2, Raman 1, 2 and 3, Salar 1, 2 and 3, Tasleem 2 and Ziver 3),
- previous ability (Gazala 1),
- luck (Raman 2),
- strategy (Perwin and Salar 2) and scaffolding from the feedback and examples in the Toolkit, and
- strategy (Goran 1 and 3) and scaffolding from instruction and feedback in other OLRs.

It can be understood that the participants mostly make internal attributions (see Table 4) for their success and failure.

If we look at their attributions for success and failure (see Section 3 in Appendix E) on a larger scale, the pre- and post-questionnaires reveal the findings of 35 participants' attributions tend towards luck, ability, effort and strategy, and to teachers' influence on learning in the EAP Toolkit and other OLRs (see Tables 37, 38, 39, 40, 41 and 42 in Appendix R), which is measured using a 5-point Likert scale (see Section 5.4.1.3.).

Participants' attributions for their success in the EAP Toolkit and other OLRs in the pre- and post-questionnaires are presented in Tables 37 and 38, respectively. Data from 35 participants' questionnaires show that:

- 11 and 13 of them complete the activities in the EAP Toolkit and other OLRs respectively, attributed to luck in the pre-questionnaire, whereas 12 and 13 of them observe this in the post-questionnaire;
- 9 and 13 of them respectively carry out the activities in the EAP Toolkit and other OLRs well due to their ability in the pre-questionnaire, while 13 and 17 of them make this attribution in the post-questionnaire;
- 22 and 30 of them make progress in the activities in the EAP Toolkit and other OLRs, respectively, due to their efforts in the pre-questionnaire, whereas 23 and 27 regard it as an attribute in the post-questionnaire;
- 26 and 31 of them complete the activities in the EAP Toolkit and other OLRs well, respectively, due to the strategy they use in the pre-questionnaire; while 23 and 27 of them do this in the post-questionnaire.

It could be argued from both Tables 37 and 38 that their attributions for success to the elements of luck and ability in both resources increase very slightly, whereas attributions to effort and strategy decrease very slightly over time. However, more than half of the participants attribute their success to effort and strategy in e-learning environments at both times.

Participants' attributions for failure in the EAP Toolkit and other OLRs in the pre- and post-questionnaire are presented in Tables 39 and 40, respectively. Data from 35 participants' questionnaires indicate that:

- 1 and 3 of them do not perform the activities well in the EAP Toolkit and in other OLRs, respectively, because they claim they are unlucky, whereas 3 and 4 of them state this in the post-questionnaire;
- 13 and 18 of them perform the activities in the EAP Toolkit and other OLRs respectively, due to inability, while 18 of them consider this a factor in the post-questionnaire;

- 19 and 24 of them do not finish the activities in the EAP Toolkit and other OLRs, respectively, due to a lack of effort in the pre-questionnaire, whereas 16 and 21 of them observe this in the post-questionnaire;
- 12 and 16 do not make progress in the activities in the EAP Toolkit and other OLRs, respectively, because they do not use effective strategies in the pre-questionnaire, while 15 and 18 of them think this is a factor in the post-questionnaire.

Similarly, their attribution for failure towards lack of luck increases very slightly over time. However, as understood from both Tables 39 and 40, the number of participants who attribute failure to lack of luck does not outnumber others who attribute lack of success to lack of ability, effort and strategy. More than half of them they state that they attribute their failures to lack of ability, effort and strategy in e-learning environments.

In order to deduce whether classroom teaching or learning influences their learning in e-learning environments, four questions are asked in the questionnaires about the effect of classroom-based learning on their success with both the EAP Toolkit and other OLRs. Their attributions to teacher's influence in their own learning online are presented in Tables 41 and 42. Data from 35 participants show that:

- 23 and 27 of them, respectively, claim they complete the activities in the EAP Toolkit and other OLRs well, due to the teaching they receive in the class in the pre-questionnaire, while 22 and 28 state this in the post-questionnaire;
- 27 and 21 of them respectively, perform the activities in the EAP Toolkit and other OLRs well, due to the methods they have learned in class in the pre-questionnaire, while 27 and 23 of them think this in the post-questionnaire.

It could be argued from both Tables 41 and 42 that their attributions for success towards the teacher's influence in learning online stays unchanged over time. More than half of them agree that classroom teaching helps them to complete the activities in the Toolkit and online resources, and methods learned in the classroom facilitate their learning online.

In conclusion, the participants make internal attributions such as ability, effort and strategy towards their success and failure in learning online, especially in scaffolded e-learning environments, which offers an answer to the first sub-question of the third question and leads to a contribution to answering the third question. Considering the study by Gobel et al. (2013, see Section 3.5.), learners who make internal attributions for success and failure are more autonomous. In the present study, data shows that participants have a tendency to take control of their own learning online (for discussion, see Section 8.4.). However, teachers' influence cannot

be ignored when learning in those environments. In order to understand their learning independently both online and in the classroom, the next section explains their confidence in and beliefs about their learning in both environments.

7.4 Participants' Self-efficacy

This section aims to contribute to the third research question of the present study by answering its second sub-question (see Section 5.4.1.4.):

> *RQ3.2) What is learners' confidence about their own learning, especially in scaffolded e-learning environments?*

As a component of learner autonomy, self-efficacy has a link with attribution theory (see Section 3.2.4.2.). In a similar vein, the present study corroborates the link between the participants' attributions for success and failure, and their confidence in e-learning environments. As seen in Appendix N (see Tables 25, 26, 27 & 28 in Appendix N), a Spearman's rank-order correlation was run in order to determine the relationship between 35 students' attributions for success and failure, and their self-efficacy. There is a statistically-significant positive correlation between attributions for success and failure in the EAP Toolkit, and participants' confidence and belief in using the EAP Toolkit, whereas this is not found in relation to using online learning resources. Furthermore, findings from both observations and interviews indicate that success has a substantial impact on their confidence in e-learning environments. Considering this, the present section explores participants' beliefs about handling the tasks in both classroom and e-learning environments, especially in terms of the help available within those environments. Firstly, it scrutinises their confidence in the process of performing the activities in the Toolkit during the observations and in interviews, and then indicates the changes, if any, in their beliefs about their confidence between pre- and post-questionnaires on a larger scale.

As recording learners' confidence during the observations depends on them expressing their feelings by thinking aloud, there is not enough data on that issue obtainable from observations. Only two of the participants who feel successful show their confidence during observations. For example, Salar 3 (see example 7.4) and Tase 2 (see example 7.5) show the increase in their confidence in the learning process by stating that they are good at the topic.

Example 7.4

Salar (3): *I am good in opinion and fact, believe me!*

Example 7.5

Tase (2): *I will show feedback. Good, bad, bad, good. Oh good! I did very well in this activity.*

Taking into account the lack of comments on their experiences during the observations, a follow-up interview enables the present study to explore participants' confidence at a deeper level. Figures 45 and 46 below illustrate the frequency of participants' beliefs about their confidence in learning with the EAP Toolkit and other OLRs, respectively, during the interviews. The vertical axis shows the number of instances of self-efficacy stated by participants and the horizontal axis shows each participant and self-efficacy (confident or neutral) they stated in each of the interview sessions. 10 participants were asked the following question during the three-time interview sessions (see Appendix F and Section 5.4.1.4.):

> *How does the support from the Toolkit and online learning resources affect your belief and confidence in your own learning? How confident do you feel? Did it make you feel more confident?*

Their responses to the question were analysed by coding the answers to either confident or neutral (see Section 5.6.2.1.). As none of them make any negative statement about their confidence, the code 'unconfident' is not included. They mostly talk about their confidence as seen in both figures below. Only a few of them say that they do not feel confident or unconfident while learning with the Toolkit (Baran 3, Goran 2 and 3 and Tasleem 1) or with other OLRs (Ziver 3).

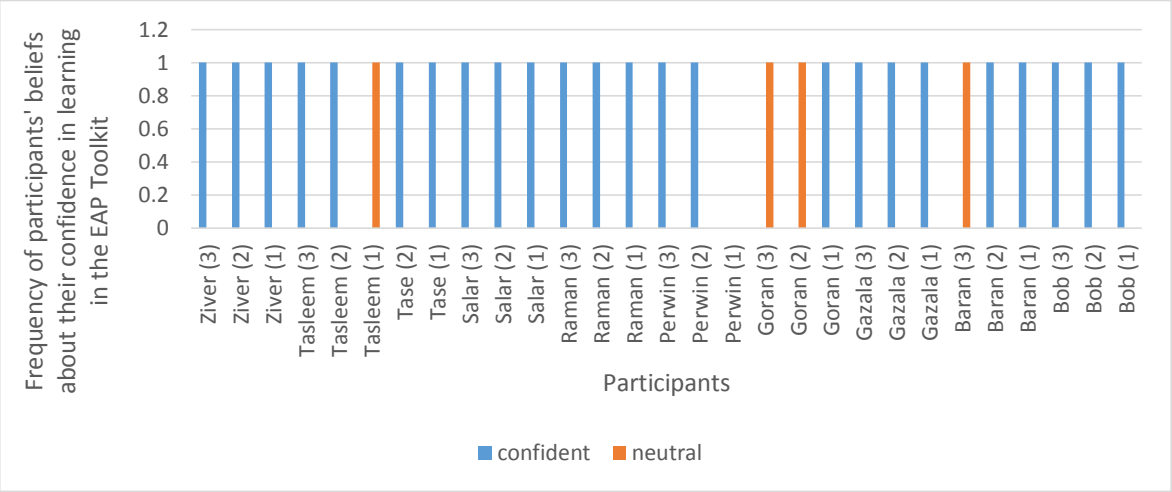


Figure 45: Participants' confidence in the EAP Toolkit reported in interviews

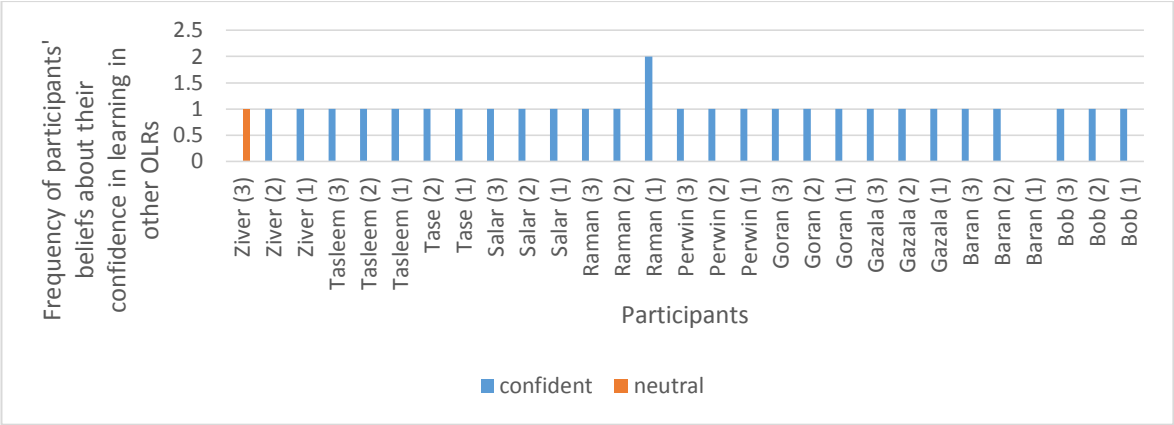


Figure 46: Participants' confidence in other OLRs reported in interviews

Also, the participants give different reasons for their confidence in learning with the EAP Toolkit. They state that their confidence increases by means of:

- speaking aloud (Bob 1),
- tutor's teaching (Bob 2),
- the ease of the activities (Bob 3),
- success (Baran 1, Gazala 1, 2 and 3, Salar 2 and 3, Tase 1, Tasleem 2),
- feedback (Gazala 2, Goran 1, Perwin 3, Salar2, Tase 1, Tasleem 2, and Ziver 2 and 3),
- strategy (Perwin 2),
- interaction with the activity (Salar 1),
- practice (Ziver 1),
- independent learning (Tase 2) and
- both independent and classroom learning (Tasleem 3) with the EAP Toolkit.

The feedback as a scaffolder has an impact on their confidence, especially in that it increases when they see they are right (see examples 7.6, 7.7, 7.9 and 7.10) and when they use the same word as the feedback to give the answer (see examples 7.6 and 7.8) while learning in the EAP Toolkit.

Example 7.6

Gazala (2): *… and gives me confidence in two ways, that, here that, when I receive the feedback, which is for example, it is right, it is the same, my answer is the same with feedback, the correct answer, it gives me confidence. And here, especially, plagiarism, about she explained that why they, then plagiarism, because as I said, it is not fair. And people she as she said, people write essay better, anyway he is better than a person, student will copy. It gives me the confidence that my writing is good. Maybe not, it will be considered anyway better than anyone*.

Example 7.7

Gazala (3): *I did right. My confident will be more.*

Example 7.8

Salar (2): *When I found my words like here when I did notice when I found the same word in the script or when I found my bullet points of my activities is the same of the feedback make me that I am understanding the activity, I am understanding English well, make me more confidence.*

Example 7.9

Salar (3): *More confident. Because I got a lot success.*

Example 7.10

Tasleem (3): *Actually, it helps you, every time you answer right to the question, I feel very good. You know that*.

Likewise, they state that their confidence in learning in other OLRs increases thanks to:

- the improvement in learning (Bob 2, Baran 2 and 3, Gazala 2 and 3, Goran 1, Raman 1, 2 and 3, Salar 2, Tasleem 1 and 2),
- independent study (Salar 1, Tasleem 1, Ziver 1 and 2),
- both classroom and online learning (Bob 3, Raman 1 and Tasleem 3) and
- awareness of learning (Gazala 3).

The above-mentioned data aims to examine both 10 participants' confidence in learning with the Toolkit during observations and their replies as to the ways their confidence is impacted on during learning in the Toolkit and with other OLRs. However, an investigation of their beliefs on a larger scale is needed to comprehend their perceptions of their confidence and learning in both classroom and e-learning environments by analysing both the pre- and post-questionnaires (see Section 4 of the questionnaire in Appendix E for self-efficacy items and see Tables 43, 44, 45, 46, 47, 48, 49 and 50 in Appendix R).

Data on the participants' feelings about their confidence in learning in e-learning environments given in the pre- and post-questionnaires are displayed in Tables 43 and 44, respectively. Data from 35 participants' questionnaires show that:

- there is a significant increase in the number of participants who feel confident when reading online (from 23 participants in the pre-questionnaire to 28 in the post-questionnaire);

- there is a moderate increase in the number of the participants who feel confident when they receive feedback in the EAP Toolkit (from 21 participants in the pre-questionnaire to 22 in the post-questionnaire) and in other OLRs (from 20 participants in the pre-questionnaire to 21 in the post-questionnaire) and the EAP Toolkit supports and correct them (from 20 participants in the pre-questionnaire to 22 in the post-questionnaire);
- there is a slight increase in the number of participants who feel confident in expressing their opinions online (from 23 participants in the pre-questionnaire to 22 in the post-questionnaire) and when other OLRs corrects them (from 28 participants in the pre-questionnaire to 27 in the post-questionnaire).

Data on their feelings about the classroom's influence on their confidence in the pre-and post-questionnaires are shown in Tables 45 and 46, respectively. Data from 35 participants' in both questionnaires stay nearly the same over time in that they feel confident when:

- reading articles and texts in class (26 participants in the pre-questionnaire, while 31 in the post-questionnaire);
- expressing their opinions in class (31 participants in the pre- and post-questionnaires);
- receiving comments from their tutors in class (34 participants in the pre-questionnaire, while 32 in the post-questionnaire);
- their tutors correct them in class (31 participants in the pre- and post-questionnaires);
- their tutors give them feedback in class (31 participants in the pre-questionnaire, while 32 in the post-questionnaire); and when
- their tutors support their learning in class (31 participants in the pre-questionnaire, while 32 in the post-questionnaire).

Overall, the participants say they are influenced by both e-learning and classroom learning environments, to the extent that they feel confident in learning or using the resources in both environments both at the beginning and the end of the semester. However, their beliefs about learning online and the effects of both learning environments are still difficult to judge, so the next findings attempt to clarify that issue by means of analysing both the pre- and post-questionnaires.

Participants' beliefs about their online learning are presented in Tables 47 and 48. These beliefs rise in confidence over time. Data from 35 participants' questionnaires indicate that they believe that:

- learning English online is easy (i.e. an increase from 17 participants in the pre-questionnaire to 24 in the post-questionnaire),

- they can express themselves in English online well (i.e. an increase from 22 participants in the pre-questionnaire to 25 in the post-questionnaire),
- their performance improves when they receive feedback from OLRs (i.e. an increase from 21 participants in the pre-questionnaire to 31 in the post-questionnaire),
- their interest in language learning increases when they receive feedback from OLRs (i.e. an increase from 26 participants in the pre-questionnaire to 29 in the post-questionnaire),
- the support they receive in OLRs make them aware of how to learn on their own (i.e. an increase from 23 participants in the pre-questionnaire to 30 in the post-questionnaire),
- the feedback they receive from the EAP Toolkit makes them aware of how to learn on their own (i.e. an increase from 16 participants in the pre-questionnaire to 32 in the post-questionnaire).

However, there is a slight decrease from 31 participants in the pre-questionnaire to 26 in the post-questionnaire in participants who believe that learning English online is fun.

Moreover, similar issues in Tables 47 and 48 are investigated and responded to with similar values in terms of classroom-based learning as presented in Tables 49 and 50. Findings from 35 participants' questionnaires show that there is no change in their belief in the benefits of learning in class between the pre- and post-questionnaires. Approximately two-thirds of them think that:

- learning English in class is easy (24 participants),
- learning English in class is fun (28 participants),
- they can express themselves freely in English in class (26 participants),
- receiving feedback from tutors improves their performance (32 participants),
- their interest in language learning increases when they receive feedback from their tutors (30 participants),
- the comments (28 participants) and feedback (29 participants) from their tutors make them aware of how to learn on their own.

Above all, their use of computer and online applications is asked in both questionnaires (see Section 5.4.1.1.) in order to evaluate their confidence over time as presented in Tables 51, 52, 53, 54, 55 and 56 (see Appendix R). Tables 51 and 52 show the rise of their beliefs in the benefits of computer use over time. Data from 35 participants' questionnaires show that 26 participants rate their computer skills in general as being good in the pre-questionnaire, whereas 32 of them report this in the post-questionnaire. Similarly, 19 of them regard their computer skills for academic purposes as being good in the pre-questionnaire, while 26 of them consider this the case in the post-questionnaire.

Although more than half of the participants evaluate their computer skills as being good in both the pre- and post-questionnaires, they were asked to report the number of hours they spend on computers in order to see if there is a link between their confidence in computer use and their use of computers and online applications (see Appendix M and the analysis in the below paragraph). Tables 53 and 54 (see Appendix R) indicate that they (28 of 35 participants in the pre-questionnaire, and 27 in the post-questionnaire) spend similar amounts of time, more than 4 hours per day on the computer. 20 of 35 participants use online applications for more than 4 hours per a day in the pre-questionnaire, 32 of them do this in the post-questionnaire. More participants report to use them in the post-questionnaire.

In order to compare their confidence in computer use and their overall use of computers and online applications (see Appendix M), they were asked about the level of confidence they feel about using the computer. Tables 55 and 56 (see Appendix R) show that there is no change in the rate of their feeling confident. 22 of 35 participants feel confident while using the computer in both the pre- and post-questionnaire. To determine whether there is a difference between their use of computer and online applications, their daily computer use for general and academic purposes, their confidence in computer use and their feelings about online learning resources between pre- and post-questionnaires, a Wilcoxon signed-rank test was run but has indicated that there is no difference (see Appendix M).

Overall, both qualitative and quantitative data provide crucial findings for answering the second sub question of the third research question. However, it does not only offer an answer to learners' confidence in learning online, especially in scaffolded e-learning environments, but also in classroom learning environments. It is found that scaffolding not only from OLRs, but also from tutors in the classroom, in the form of comments and feedback motivates and encourages their own learning in both environments, as shown in both questionnaires. Also, there is no relationship between computer use and the confidence of a wider group of 35 participants in the questionnaires. Their confidence and belief in handling their learning in those environments having been looked at, the next section further explores how they use the strategies to further manage their own learning in e-learning environments.

7.5 Participants' Use of Learning Strategies

As mentioned above, there is a significant relationship between participants' attributions for their successes and failures and their self-efficacy by means of help such as feedback, comments and corrections provided during the participants' learning. As indicated in Sections 7.3. & 7.4., this kind of help with learning resources in both e-learning environments and also in classroom

learning environments tends to improve the participants' motivation, and in turn, to enhance their learning, especially on their own. Despite that indication, further exploration is needed in order to grasp learners' exercise of autonomy in e-learning environments. Therefore, this section will answer to the third sub-question of the third research question:

> *RQ3.3) What learning strategies do they use, especially in scaffolded e-learning environments?*

Figures 47, 48 and 49 below illustrate the frequency of use of learning strategies by participants in each session of the observation, in their interviews about the EAP Toolkit and their interviews about other OLRs, from 1 to 3. The vertical axis shows the number of instances of learning strategies used by each participant and the horizontal axis shows each participant and the learning strategies used by the participants. Data were analysed by coding each participant to the appropriate learning strategies, if they used any (for the detail about coding, see Section 5.6.2.1.). Six learning strategies (i.e. cognitive, metacognitive, affective, meta-affective, sociocultural-interactive and metasociocultural-interactive; for detail, see Section 3.2.3. and Figure 7; and also see Section 5.6.2.1.) are presented in the following figures. Additionally, extracts from participants' interviews and think-aloud protocols are provided for each code of learning strategies.

Overall, all three Figures 47, 48 and 49 show that 10 participants mostly benefit from cognitive and metacognitive learning strategies, whereas sociocultural-interactive, metasociocultural-interactive, affective and meta-affective strategies are less preferred.

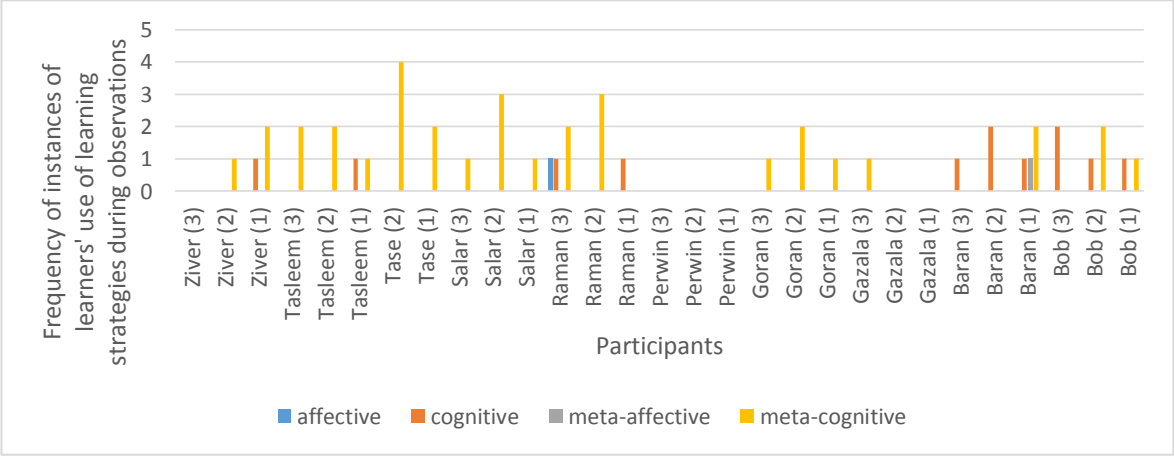


Figure 47: Participants' use of learning strategies in the EAP Toolkit during observations

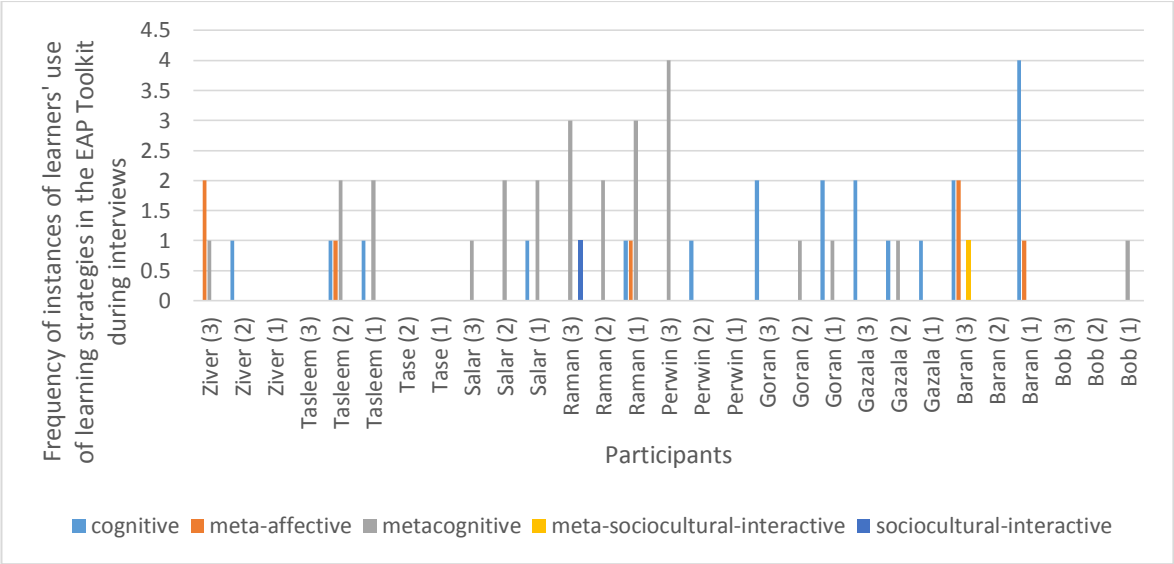


Figure 48: Participants' use of learning strategies in the EAP Toolkit reported in interviews

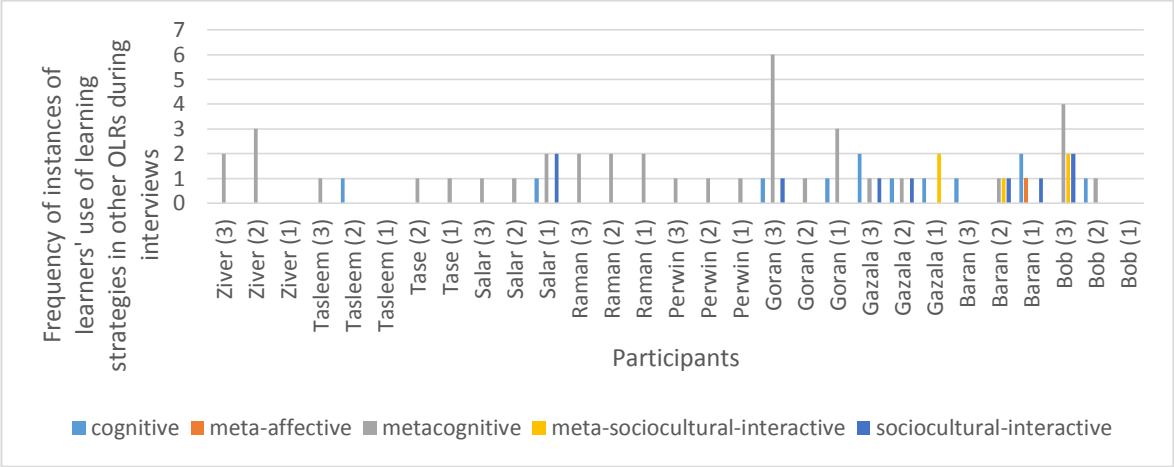


Figure 49: Participants' Use of Learning Strategies in other OLRs in interviews

Figure 47 reveals that a metacognitive strategy has a crucial impact on their learning during the observations as used by all of them except Perwin. Perwin does not seem to use any learning strategy during the observations (see Figure 47), whereas during the interview (see Figures 48 and 49) she expresses her use of metacognitive strategy in the EAP Toolkit and other OLRs through paying attention to her cognition when concentrating on the activities when using both the Toolkit (see example 7.11) and other OLRs (see example 7.12). She also plans to apply her cognition to writing an essay (see example 7.13). By obtaining resources for her cognition from both the EAP Toolkit and other OLRs, she can develop a cognitive strategy (see examples 7.14 and 7.15).

Example 7.11

Perwin (in the 3rd interview about the EAP Toolkit): *If you see only, if you only concentrate on this and you don't have any study …. useful for you.*

Example 7.12

Perwin (in the 2nd interview about other OLRs): *Sometimes I like to understand. I concentrate on this activity. If you not, you not need, I don't concentrate on this*.

Example 7.13

Perwin (in the 3rd interview about the EAP Toolkit): *In academic writing, I choose academic writing because it is important. For example in writing essay. And in writing if you sometimes you, describing, for example chart or diagram, how you describe in academic writing. You make, decided, to before anything, you understanding the title essay, and you understanding how use the key in the title. All of them, you see answer in your essay. After that you decided the structure you make in your essay structure, for example, introduction body and conclusion*.

Example 7.14

Perwin (in the 3rd interview about the EAP Toolkit): *… time I need to, I have free time. I need to study. I open this.*

Example 7.15

Perwin (in 1st interview about other OLRs): *BBC all of them I use in listening. BBC iPlayer and BBC news use listening only. And all of them I use some sites, online I show some YouTube and teach speak for example, adjective, noun and structure of writing academic, in YouTube*.

Moreover, Appendix P gives detailed examples of the strategies used by the participants in e-learning environments as illustrated in figures 47, 48 and 49. It can be concluded that scaffolding from both the Toolkit and other OLRs facilitates their learning (for more, see Section 7.7.1.) in that the learners:

- plan, pay attention, organise, obtain and use resources, monitor and evaluate their cognition metacognitively,
- go beyond the immediate data by predicting and inferring, conceptualise broadly by summarising, reason inductively and deductively and use their senses to understand cognitively,

- plan, pay attention, organise, obtain and use resources, monitor and evaluate their own affect meta-affectively,
- activate supportive emotions, beliefs and attitudes affectively,
- plan, obtain and use resources for contexts, communication and culture metasociocultural-interactively,
- interact to learn and communicate sociocultural-interactively.

For instance, scaffolding received from the instruction in the Toolkit helps Salar 1 to develop a *metacognitive strategy* during the observation by paying attention to his cognition; in turn, he increased his learning ability (see example 7.16).

Example 7.16

Salar 1: *I learned a lot, because first thing, this is my problem as well, I want to focus it, now gradually I can fix it, reading instructions as well, because I missed a lot of words from the activity, here exercises, because I did not know how to apply, how to follow the exercises, because the instruction about it is very useful*.

Even though the use of a learning strategy might be affected by scaffolding from the tutor, it seems that scaffolding from the Toolkit enhances their plans for their cognition (see example 7.17).

Example 7.17

Tasleem 2: *… so I know, for my next project, I will use more quotation, because my teacher told me actually, she marked me for the quotation, and I didn't use any quotation for my project. Because I thought that quotation is not very important if you just paraphrase, paraphrase, paraphrase everything, even if your paraphrasing is bad, it is better than using the quotation. But I saw that quotation is good, also*.

Furthermore, Raman 1 and 3 says that he seeks out another resource such as the online dictionary when the Toolkit fails to give a meaning for some of the vocabulary. Feedback within the EAP Toolkit enables the participants to evaluate and monitor their learning by using a metacognitive strategy. However, they utilise different means such as checking words in a dictionary to see if they are right (e.g. Salar 1), and if they find their writing level to be too low, they use EngVid to improve that skill (e.g. Salar 2) in order to monitor their learning in other OLRs, rather than directly benefiting from the feedback – which might be because of the apparent lack of it (see 6.3.1.2.2.). Although one of the participants (Goran 1) stresses that feedback in other OLRs enables him to evaluate himself and his learning, others (e.g. Baran 2, Goran 2, Perwin 3, Raman 1 and Salar 1) state that they can understand their level after performing the activities in

those resources. It can be interpreted that the scaffolding received from feedback and activities with instruction encourages them to use metacognitive scaffolding.

Also, the *cognitive strategy*, as the second most-used learning strategy (see Figures 47, 48 and 49), is employed by participants who use multiple senses to understand a topic. For example, Perwin 2 (see example 7.18) and Raman 1 utilise their haptic sense by taking notes or memorising words, whereas Ziver 2 (see example 7.19) uses combined senses by listening to audios and reading the written form of the audios.

Example 7.18

Perwin 2: *And after that, if you read more, and sometimes, if you not understand some word, you can write the meaning of word, and good for your vocabulary.*

Example 7.19

Ziver 2: *I listen to audios and write it, and have no problem. I read, I write it one of them correctly… I think writing something is good*

Moreover, Baran goes beyond the immediate data by guessing and inferring during his learning. Additionally, Goran claims to use a cognitive strategy by both receiving information from the specific topic and applying it to another topic during the first interview (see example 7.20), as well as grasping the meaning from the topic's general idea.

Example 7.20

Goran 1: *And second one, just mention how I can use, how can I benefit from unacademic passage if I read some unacademic passages, what can I learn from this passage. For example, this explanation for four type of explanation I can use them, I can learn from this passage and use them in my, maybe in my academic.*

Furthermore, some of them use the *meta-affective strategy* by paying attention to their affect. For instance, Tasleem 2 and Ziver 3 say that it is important to be relaxed before working on the activities in the EAP Toolkit. Baran 3 plans for his subsequent affect by starting to study English in the Toolkit after becoming relaxed. Raman 1 obtains and uses resources for altering his affect by 'reading to feel good, to feel well about word' in the Toolkit. Baran 3 organises his affect by using the activity in the Toolkit after becoming relaxed. Baran 1 evaluates his affect by finding himself successful and feeling happy after receiving feedback from inside the Toolkit.

Moreover, Raman 3 and Salar 2 use the *sociocultural-interactive strategy* by interacting with others to learn and communicate, because of the lack of any interaction with others provided by

the Toolkit. Lastly, some of them use a *metasociocultural-interactive strategy*. For example, Baran plans to communicate with his friends to obtain online learning resources. Bob 3 and Gazala 1 obtain and use resources for communication with a tutor to receive the right answers in other OLRs, as these resources fail to provide feedback, and Gazala 1 uses reliable websites such as BBC or British Council to check her writing, respectively. Overall, both scaffolding provided in the EAP Toolkit and in other OLRs, and e-learning *per se*, encourage learners to create and use learning strategies on their own.

This section has offered an answer to the third sub-question of the third research question which asks which learning strategies learners use in e-learning environments, especially in scaffolded e-learning environments. Data from 10 participants' observations and interviews show that learners can develop cognitive, metacognitive, affective and meta-affective strategies on their own by means of the help and scaffolding they receive in e-learning environments (for the relationship between scaffolding and learning strategies, also see Section 7.7.2.), whereas sociocultural-interactive strategies should be encouraged in e-learning environments. The above sections have discussed learners' exercise of autonomy in e-learning environments by analysing the components of learner autonomy including self-management, self-regulation, attributions for success and failure, self-efficacy and learning strategies. The results have also discovered that participants in the present study are encouraged to learn online through their tutors' comments, feedback and support. The next section deals with learners' need for support from their tutors in order to understand their autonomous learning in e-learning environments.

7.6 Participants' Need for Teachers' Support as Compared to E-learning

Data shown in the above sections of the present chapter have presented the findings that learners manage and regulate their learning, use learning strategies and feel more confident and motivated through scaffolding in e-learning environments. Nonetheless, the impact of classroom-based teaching in assisting their learning can also be obtained from data. Therefore, this section compares the findings of 35 participants' rating of their improvement by means of the Toolkit and the importance of teachers' presence in e-learning environments from the pre- and post-questionnaires as shown in Tables 57, 58 and 59 (in Appendix R), and examines whether learners need support from the teacher during their learning within the observations and interviews, respectively. By this analysis, it aims to make a contribution to the third research question:

> *RQ3) In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments?*

As shown in Table 57, 9 of 35 participants rate their improvement in English by means of the EAP Toolkit greatly, whereas 18 of them claim this in the post-questionnaire. Similarly, there is a slight increase in their rating the importance of a teacher's presence during learning with the EAP Toolkit as seen in Table 58. 7 of the participants state that they can work on their own in the EAP Toolkit with ease in the pre-questionnaire, while 9 of them say this in the post-questionnaire. Also, 6 of them state that they can work on their own moderately in the pre-questionnaire, whereas 10 of them claim this in the post-questionnaire. 21 of them in the pre-questionnaire state that these two items about their improvement in English and the importance of a teacher's presence are not applicable for them, whereas less than half (12 participants) of them report this in the post-questionnaire (see Tables 57 & 58). A similar statement in Table 58 is asked to 35 participants in order to understand the importance of a teacher's presence in learning with other OLRs as given in Table 59. There is a slight increase in this over time: 14 of the participants report that they can work on their own with other OLRs well in the pre-questionnaire, whereas 16 of them state this in the post-questionnaire.

It could be argued that that participants improve their learning with the EAP Toolkit over time and that they can work on their own in e-learning environments more effectively over time, as can be understood from data from Tables 57, 58 and 59. However, it is still necessary to investigate learners' need for a teacher's presence in e-learning environments more completely. Hence, the analysis of three-time observations and follow-up interviews enables us to clarify this issue.

Figure 50 below illustrates the frequency of the need for a teacher's support in e-learning environments as stated by participants in each of the observation or interview sessions. The vertical axis shows the number of instances of the need for a teacher's support in e-learning environments and the horizontal axis shows each participant and their need for a teacher's support in e-learning environments. Data from the Camtasia recordings and think-aloud protocols (i.e. observations) in Figure 50 were calculated by coding a participant to 'yes' if they asked the observer to help them while they were doing the activities in the EAP Toolkit. Data from the interviews were calculated by coding each participant to 'yes' or 'no' according to their answers to the following question (see Appendix F):

> *Do you feel that you will need a level of support from the tutor or the EAP Toolkit or other OLRs to study English?*

Figure 50 shows that only two of the participants (Tase 1 and Perwin 1) look at the observer to help them while completing the activities in the EAP Toolkit during the observations. However, data from interviews in Figure 50 shows that they have different attitudes to a need for support from teachers in e-learning environments. Nearly half of the participants (Gazala 2, Raman 3,

Salar 1, 2 and 3, Tasleem 1, 2 and 3) state that they do not demand support from the teacher while learning in both the EAP Toolkit and other OLRs, whereas two of them (Ziver 3 and Perwin 2) need that support in both e-learning environments.. Furthermore, most of them say that they do not require this help during learning with the Toolkit, but do require it when using other OLRs (Bob 2 and 3, Baran 1, 2 and 3, Goran 1, 2 and 3, Tase 2 and Ziver 2). Also, one of the participants (Baran 3) states that he sometimes needs support from the teacher. Additionally, Gazala says that she needs assistance from both the Toolkit and the tutor in e-learning environments.

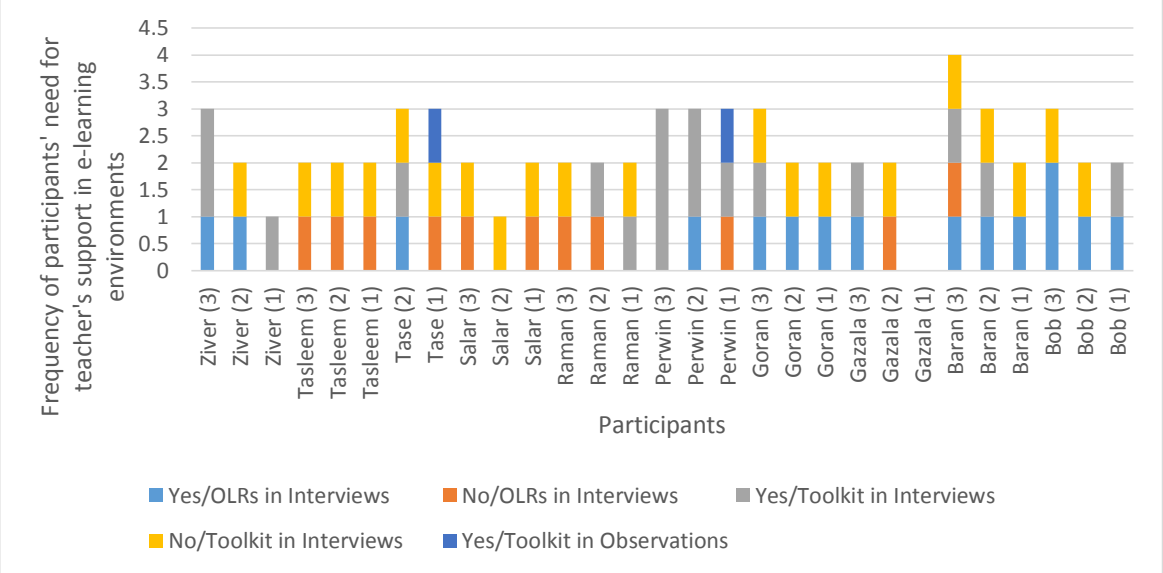


Figure 50: Participants' need for teacher's support in e-learning environments

Half of the participants (Baran, Perwin, Raman, Tase and Ziver) state that support from a tutor is needed at first. The lack of scaffolding is noted as a reason for requiring help from a tutor in learning with both the Toolkit (Gazala 3, Perwin 3, Raman1 and Ziver 3) and other OLRs (Goran 2 and 3 and Ziver 3). On the one hand, as illustrated in examples 7.21 and 7.22, the Toolkit helps Goran and Tase to remember what has been taught in the classroom.

Example 7.21

Goran: *This is just repeating what the tutor said*.

Example 7.22

Tase: *Of course, we are told about the plagiarism from the first day. It is obvious*.

In interviews, some of the participants (Baran 2 and 3, Raman3, Tasleem 3 and Ziver 1) also highlight that classroom learning and teaching helps them to improve their learning in e-learning environments.

Overall, they express the need for help, especially from a tutor, during the first time they perform the activities in the observation and interview. Despite this, most of them agree that scaffolding guides them in handling their learning in e-learning environments. Still, a few of them express their need for help from a tutor.

In the last interview, the participants were asked how to describe themselves as online learners in order to observe their exercise of autonomy. The responses reveal that they are online learners who study:

- online resources (Bob, Baran, Gazala, Goran, Perwin, Raman, Salar and Tasleem),
- the EAP Toolkit (Bob),
- with the help of tutor (Bob and Perwin),
- with peers (Bob),
- in the future (Goran, Perwin and Tasleem),
- on their own (Perwin, Raman, Tasleem and Ziver),
- and improve their learning (Goran, Perwin, Raman, Tasleem and Ziver),
- with motivation (Gazala, Goran and Salar).

Nevertheless, one of them (Baran) pinpoints that reading online deters him from using paper-based books.

As a result, scaffolding is a key factor in fostering learning in e-learning environments (for more on this relationship, see the next section). Considering this, the participants can improve their learning and the exercise of their autonomy within e-learning environments. Additionally, it can be inferred from their descriptions of themselves as online learners that they are eager and self-motivated in handling their own learning. All in all, scaffolding and learner autonomy are treated as related issues in the present study. In order to deduce the relationship between scaffolding and learner autonomy in e-learning environments, the next section benefits from data from pre- and post-questionnaires which investigates that relationship, and which links both issues with the help of the analysis presented in the previous and present chapters.

7.7 The Relationship between Scaffolding and Learner Autonomy in E-learning Environments

Chapter 6 has set out to investigate the participants' learning actions and their perceptions of learning in scaffolded and un-scaffolded e-learning environments, whereas Chapter 7 has examined the exercise of their autonomy in e-learning environments. It could be argued that the data in both chapters have found out that scaffolding and learner autonomy can coexist in e-

learning environments in order for learning to happen. However, there is a need to understand that the coexistence of scaffolding and learner autonomy in e-learning environments. Therefore, this section aims to answer the last research question of the present study:

> *RQ4) What is the relationship between scaffolding and learner autonomy in e-learning environments?*

In order to answer the last research question, the section deals with firstly, one case study of the participant, Salar (see Appendix J), and subsequently the analysis of data from pre- and post-questionnaires which looks at the relationship between scaffolding and learner autonomy in e-learning environments and its general indications with the help of an investigation of the previous research questions as indicated in Chapters 6 and 7.

7.1.1. An Example of one Case Study Showing the Relationship between Scaffolding and Learner Autonomy in an E-learning Environment

Chapters 6 and 7 have dealt with the way learning is scaffolded and managed without the presence of human-based help, for example from a tutor or from peers in an e-learning environment. More importantly, the next finding will give insight into this area by referring to the case study of one participant, Salar (see Appendix J). Salar was chosen to describe the exercise of his autonomy through the means of scaffolding, as he seems to talk about his learning more than many other participants. Overall, he seems to exercise his autonomy more over time by:

- guiding himself to look at scaffolders,
- practising self-scaffolding,
- developing learning strategies on his own,
- increasing his motivation to deal with learning activities,
- guessing the answers,
- accomplishing the tasks as if collaborating with others,
- deciding which LO to look at based on his current subject, and
- assessing and evaluating himself after watching feedback,

This was analysed during observation sessions and then shown in the findings below. Data from his Camtasia recordings which include both the computer screen and the face of the participant, his think-aloud protocols and extracts will help to investigate the relationship between scaffolding and learner autonomy.

In the case study of Salar (see Appendix J), he guides himself to read the scaffolders within the LOs and seems to imagine talking to someone else in order to begin the activity (see Section 8.4. and example 7.23).

Example 7.23

Salar 1: *When you click on the introduction to vocabulary learning within the EAP Toolkit, I just read the instruction first.*

This kind of interaction or self-talk can be seen during his performance of all the activity within the Toolkit. Furthermore, he acts as if there were someone else to collaborate with in determining the order with which to accomplish the activity (see example 7.24), which 'is self-scaffolding through the dialogic self, where other people are represented in the multi-voiced self' (Granott, 2005, p. 148).

Example 7.24

Salar 1: *We have to follow the instructions.*

Then he reads the instruction and performs the activity. After checking his answers in the explicit feedback, he evaluates and assesses himself by checking whether he has answered correctly. In this, he uses a metacognitive strategy. He then tells himself that he is 'fifty percent good'. With this, he provides himself with motivational scaffolding. By this method, he motivates himself to generate articulations of his concept and practice (see example 7.25), as the Toolkit gives him extrinsic feedback (for discussion, see Section 8.2.3.).

Example 7.25

Salar 1: *Wow! Now, feedback. Here are … Oh the first one is banking. Asset, where is asset, I thought it is. The second one is right. The law, OK. Textiles, I got three, how much, one, two, three, four, five, six. OK. 50% good!*

As seen in the above example, the think-aloud protocol initiates self-talk as 'a dialogue with the self existing …. addressed to self ….' (Vocate, 1994, p. 6), inasmuch as feedback with a scaffolder has the advantage of generating students' 'dialogical relationships' with the Toolkit in the present study. This is 'required not only between individuals, groups and culture, but also within the self of one and the same individual' (Hermans and Hermans-Konopka, 2010, p. 1). In this case, scaffolding does not occur in a traditional sense whereby teachers provide tasks that encourage students' scaffolding usage through 'reciprocal and self-scaffolding', and students thus 'become better learners and better problem solvers in situations when they do not have expert assistance

to hand' (Holton and Clarke, 2006). However, Salar requires help from the scaffolders provided in the Toolkit and can thus promote his learning and solve his problem when he faces one. Meanwhile, in the above-indicated situation, the learner reflects on his own learning process by finding himself 50% successful.

Besides, the information/explanation section in the next activity enables Salar to feel encouraged to overcome the problem he faced in the previous activity (see example 7.26).

Example 7.26

Salar 1: *Good. This was my wrong thing. I got w, wrong form.*

After reading the explicit feedback on the next activity, he sees and understands his mistake by saying 'I got it.', looks happy to notice this as seen in his Camtasia recording and with his word 'Yeah!', and thus assesses himself (see example 7.27).

Example 7.27

Salar 1: *Decide, haaa, now, now, I got it. The base word is verb. Manage. Account, I am right with this one. Yeah!*

Similarly, in the subsequent activity, he checks his answers with the help of feedback, corrects himself and monitors his cognition along with noting his failure to find the correct forms of the word, 'negotiate' and remembering its other forms (see example 7.28).

Example 7.28

Salar 1: *Negotiation, negotiator, renegotiate …, wow I got only two. Ohh, I know this one as well.*

In another case, when he cannot answer the question, as he does not understand it, he looks unhappy, but consults the feedback and then seems fine and so continues to the next question (see example 7.29). In the meantime, he compares his spelling with the answer in the feedback and comments on this in the second question (see example 7.30). In the next question, he expresses his accomplishment by uttering '*Yeah*!'.

Example 7.29

Salar 1: *Let's see. Service. Ahha, the base is here, I am not understanding the question.'* (First Question)

Example 7.30

Salar 1: *Advert, Companies like Nissan and Nordstrom were persuaded to advertize before, advertize before… yeah, I got this, I got American one with z. It is OK!* (Second Question)

As he does not understand the next question, he reads it twice and guesses the answer, but is surprised, as none of his guesses are right (see example 7.31).

Example 7.31

Salar 1: *… legislation, legacy, legalizing, maybe work. Legality, Ohohohoho!*

The same happens with the subsequent two questions. Then his motivation seems to decrease, since he looks unhappy after his mistake, as is surmised from his face that is being recorded via Camtasia. In the last instance, he indicates that he understands his mistake by telling himself '*Yeah, it should be adverb'*.

As shown in the above comments, the learner articulates his feelings during his learning with the Toolkit after looking at the feedback. He expresses his reflection on success and failure by uttering an exclamation to convey his emotion.

After finishing all the activities in the current LO (see example 7.32), Salar goes back and clicks on another LO and not the next one on the list. As presented in Section 4.2.1., the EAP Toolkit presents the activities in an order users can choose to follow or not. In this study, participants have mostly followed the order presented by the EAP Toolkit (i.e. Ziver, Tasleem, Raman and Gazala in each observation session; Baran in Observation 1; Tase I Observation 2; Goran in Observation 1; Perwin and Bob in Observation 3; see also Section 6.2.3.). Therefore, Salar is supposed to move back to the next LO, but prefers not to do this in this instance even though he has preferred to follow the standard order previously. Rather, he chooses the LO after the next one by reading its title. It could be argued that learners might differ in carrying out learning actions while learning online (for the discussion, see Section 8.2.).

Example 7.32

Salar 1: *I think I finish it; I will go back to another one. It is OK.*

Rather than reading the introduction or information/explanation of the activity in the LO, *Language for Classifying*, he looks through the instructions and questions himself about the topic (see example 7.33).

Example 7.33

Salar 1: *What is classifying?*

Then he reads the information/explanation section. In doing so, he handles his learning, even when he has a problem in providing a meaning or conceptualising the topic, via the information/explanation section offered as a scaffolder in the e-learning environment, without the tutor's or expert's presence. However, in this case, the scaffolder acts as an expert to support his learning.

During the first observation, he interacts with the materials and engages with the activities by directing himself and reflecting on his learning processes. In spite of learning with an aim to further interaction with the tool, he asks for help from the researcher as to whether he should go back to another LO or finish completing the activities. Additionally, at first he accidentally skips doing the activity. Overall, the first experience of working on the activity with the think-aloud protocol seems to affect him negatively on some occasions. Therefore, it could be surmised that the more experienced learners are, the more skilled they become (Gardner, Dukes and Discenza, 1994); so his experiences on the second and third occasions need studying, as indicated in the forthcoming discussion.

Firstly, in the second observation, the learner starts the LO by reminding himself of his prior knowledge of the topic (see example 7.34).

Example 7.34

Salar 2: *Yeah! The first task is finding out about plagiarism. Plagiarism, I know it well.*

Similarly, within the first activity during the first observation, he has difficulty with parts of the task, such as finding the video to play (see example 7.35) during the second observation.

Example 7.35

Salar 2: *OK. Let's go to the, video, where is the video? I can't find it. You will listen to a tutor …*

Therefore, he guesses the answer and then reflects on his process by monitoring his cognition, during which activity the use of explicit feedback leads him to use a metacognitive strategy (see example 7.36).

Example 7.36

Salar 2: *I put it only one point. Maybe, paraphrasing ideas you have read without acknowledgement. OK, all of this.*

Despite not finding the video in the first activity, he succeeds in playing the video in the second one (see example 7.37). Similarly, he utters exclamations like “OK”, “WOW” to show emotions such as surprise and confirmation that he understands his mistake, or has grasped what the feedback or the activity requires him to conceptualise. Additionally, he monitors his cognitive performance while working through the activity in the LO.

Example 7.37

Salar 2: *OK, main causes. Lack of confidence, lack of time, lack of study skills. Let’s see the feedback. OK. Lack of confidence, lack of time, lack of study skills, lack of understanding, WOW. I missed it. OK!*

In the next activity, he reads the information/explanation section in order to know what to consider. Although he does not convey his feelings about that scaffolder during the observation, he accomplishes the tasks better by looking at feedback, as shown in the process of carrying out the tasks (see example 7.38).

Example 7.38

Salar 2: *Cheating, of course! … Good!*

Cheating as well, because sourcing got. This is clear plagiarism, yeah!

Cheating, of course!

Yeah, acceptable. … Good!

In his reflection on the tasks, he gives himself motivational scaffolding by saying ‘Good!’ and gives the reason why the answer is cheating, both of which seem to be supported by that scaffolder, feedback.

Also, he looks at the feedback to show how to understand the solution and then compares his answer with the feedback, as if he were explaining or collaborating with someone else (see example 7.39).

Example 7.39

Salar 2: *Then the qualification, we have.*

OK. Let's [see] the other feedback, how to know.

I put it voices, others' voices, OK.

OK, so we have to.

In the end, he tells himself to finish performing the activities (see example 7.40).

Example 7.40

Salar 2: *OK, we finish.*

As for his experience in the last observation, the learner is free to choose whichever folder he wants. He selects the folder on "reading and critical thinking" consciously, as it is his goal (see example 7.41).

Example 7.41

Salar 2: *OK, we have today reading and critical thinking. Introduction to reading, introduction to scanning. Reading to identify main points. That is my point.*

To decide which LO to start, he scrolls down with the mouse. He looks determined to choose that folder, and seems to regulate and manage his learning by making a plan. Furthermore, in a similar way, he says 'OK!' after reading the scaffolders, to confirm that he understands his reading. Above all, he improves his computer use by clicking on the hyperlink for the pdf file of the essay, despite his former inability to open the pdf in the first observation and his inability to play the audio file in the second one.

While reading the essay, he shows his understanding by saying 'OK', sometimes skimming it and going back to the question for solving rather than reading it all through and then ordering the questions. Similarly, he evaluates himself and reflects on his process without completing the activities, but then realises that there are two more questions left (see example 7.42).

Example 7.42

Salar 2: *Yeah we got three from three, no, two left.*

After solving those two questions, he does the same thing and gives himself motivational scaffolding (see example 7.43).

Example 7.43

Salar 2: *We got 5 from 5. That is good point*.

In the meantime, he gives a reason for the correct answer instead of requiring help from his tutor or peers. This could be because of the intrinsic feedback he receives during the learning process from the Toolkit although he has not previously mentioned the influence of this kind of feedback. In other words, obtaining this kind of feedback potentially has a positive influence on the actions he generates, for instance, giving reasons why the answer is correct, even when he receives only extrinsic feedback (see example 7.44).

Example 7.44

Salar 2: *Opinion. Yeah it is opinion. Because it can be presumed.*

Moreover, he decides that he has accomplished the LO and plans to go to another LO or folder (see example 7.45).

Example 7.45

Salar 2: *So done this activity. We need to select another one.*

He goes to another folder and uses the dialogical self (Hermans, Kempen and Van Loon, 1992) by directing himself to do the activity (see example 7.46).

Example 7.46

Salar 2: *Let's go to the writing one. Academic writing. OK. Structuring your writing, using examples to support statements, expressing fact and opinion in writing. Let's do that one.*

After reading the information/explanation section as conceptual scaffolding, which gives additional information about the concepts (see Section 4.2.2.), he answers the questions and emphasises the word 'general' to show why it is evidence, in order to draw attention to it after reading the feedback (see example 7.47).

Example 7.47

Salar 2: *Yes, that is general.*

In this case, the use of the think-aloud protocol leads him to use self-talk and put the emphasis on the word; and, in connection with this, he encourages himself to learn alone without any help.

In the last activity, he reads the information/explanation section but, differently from before, gives reasons why it is either fact or opinion before looking at the feedback (see example 7.48).

Example 7.48

Salar 3: *Because it is a general idea, fact. Fact, OK. It is clearly fact.*

This is opinion, not everyone's opinion.

It is fact, maybe some statistics. Fact, yeah good.

It is opinion. Where is your statistics about it? I am good in opinion and fact, believe me!

It is opinion. Where is your evidence?

Maybe statistics. Fact, this is a fact, yeah.

These comments demonstrate that the information he receives before doing the tasks supports him in conceptualising the topic and in giving himself self-scaffolding. Meanwhile, after checking his answers in the feedback, he smiles and tells himself that he is good by looking more confident. This study shows that interaction emerges from learning in a scaffolded e-learning environment so that learners can manage their learning without the help of any human-based resource. This being said, the next section shows the relationship between scaffolding and learner autonomy in e-learning environments in a more general sense.

7.1.2. The General Indications for the Relationship between Scaffolding and Learner Autonomy in E-learning Environments

Having looked at the participants' self-managed and self-regulated learning, feelings and beliefs about motivation including attributions for their failure and success, their confidence, and their use of learning strategies, the present study has discovered that learners need tutors' support due to the lack of scaffolding in e-learning environments. Scaffolding is considered a necessary feature for enabling learners to promote their learning. However, an in-depth analysis is needed to answer the last research question of the present study:

RQ4) What is the relationship between scaffolding and learner autonomy in e-learning environments?

Therefore, this section aims to investigate this relationship by analysing data from 35 participants' pre- and post-questionnaires (see Tables 60, 61, 62 & 63 in Appendix R) and findings from Chapters 6 and 7 which address to the first, second and third research questions. Additionally, extracts from participants' interviews or observations help to explore the relationship between scaffolding and learner autonomy.

35 participants' views on the relationship between scaffolding and learner autonomy with the EAP Toolkit given in the pre- and post-questionnaires are presented in Tables 60 and 61, respectively. 35 participants' views on the relationship between scaffolding and learner autonomy in other OLRs in the pre- and post-questionnaires are presented in Tables 62 and 63, respectively. Results from 35 participants' pre- and post-questionnaires indicate that there is a slight increase over time, in their beliefs that:

- the EAP Toolkit helps them to learn a language independently (i.e. an increase from 25 participants in the pre-questionnaire to 26 participants in the post-questionnaire),
- the EAP Toolkit helps them to develop skills of their own in learning the language (i.e. an increase from 24 participants in the pre-questionnaire to 25 participants in the post-questionnaire),
- the EAP Toolkit helps them to improve their strategy for learning the language on their own (i.e. an increase from 21 participants in the pre-questionnaire to 24 participants in the post-questionnaire),
- other OLRs can help them to become a more independent learner (i.e. an increase from 32 participants in the pre-questionnaire to 33 participants in the post-questionnaire).

However, there is a slight decrease, over time, in their beliefs that:

- the EAP Toolkit supports them in learning the language independently as they receive feedback from the activities (i.e. a decrease from 25 participants in the pre-questionnaire to 21 participants in the post-questionnaire),
- the EAP Toolkit makes them aware of their own language learning (i.e. a decrease from 25 participants in the pre-questionnaire to 23 participants in the post-questionnaire),
- other OLRs give them a better opportunity to learn in their own way (i.e. a decrease from 34 participants in the pre-questionnaire to 32 participants in the post-questionnaire),
- other OLRs support them in exploring new concepts in language learning (i.e. a decrease from 32 participants in the pre-questionnaire to 29 participants in the post-questionnaire),
- other OLRs give them an opportunity to learn the language independently with the help of the support (i.e. a decrease from 32 participants in the pre-questionnaire to 31 participants in the post-questionnaire)
- other OLRs make them aware of their own language learning (i.e. a decrease from 27. participants in the pre-questionnaire to 26 participants in the post-questionnaire).

Also, it remains static that 31 participants think that other OLRs help them to extend their skills in learning the language outside the classroom. Overall, the analysis of quantitative research data reveals that more than half of the 35 participants believe that they can improve their learning in the EAP Toolkit and other OLRs with the help, support and feedback in e-learning environments. It could be argued that learners can develop their learning on their own without a tutor but with the help of scaffolding in these environments. Moreover, qualitative data analysed in Chapters 6 & 7 further explore the relationship between the support involved in e-learning environments and the learners' autonomous learning.

As indicated in Sections 6.2.2. and 6.2.3., participants carry out different actions when learning online, especially in scaffolded e-learning environments. Those learning actions in scaffolded e-learning environments can be dependent on the design of OLRs and participants' choice in carrying out the activity. Data from all of three observation sessions indicate that participants draw on different scaffolders (i.e. the introduction, information/explanation, instruction and feedback sections, see Section 6.2.1.2.) and scaffolding types (i.e. metacognitive, conceptual, strategic, procedural, motivational and technical scaffolding, see Section 6.2.1.2.) while learning in the EAP Toolkit. Each scaffolder has a tendency to provide a scaffolding type as discussed in Section 4.2.2. As seen in Section 6.2.2.1., the method and order, by which the EAP Toolkit provides scaffolding (i.e. the provision of the introduction, information/explanation, instruction and feedback sections as scaffolders in the EAP Toolkit), tend to assist participants in performing the learning activities in this fixed order during the observations. They mostly follow that order, while a few of them (i.e. Baran in Observation 2, and Gazala and Perwin in Observation 3) choose not to do that. As indicated in Section 6.2.3., participants seem to direct themselves to handle their learning without the presence of a tutor by telling themselves to read the introduction first (see examples 6.22 & 6.25), while performing the activities in the order the EAP Toolkit provides. Also, they show their understanding of the topic or a scaffolder by uttering 'OK' to themselves (for more, see discussion in Section 8.5.). They can scroll up and down the page in order to get through the activities at first because of the flexibility of design of the EAP Toolkit. However, that flexibility may impede their learning by enabling the skipping of activities. As observed, some of the participants (Baran and Ziver in Observations 1 and 2 and Perwin in Observation 3) may not understand what scaffolders tell them to do (see Section 6.2.3.). As suggested and indicated during interviews (see Section 6.3.), participants think that learning is encouraged when scaffolding provides:

- a brief introduction about the topic before participants start the activity (i.e. conceptual scaffolding, see example 6.43),
- guidance on how to think about a topic (i.e. metacognitive scaffolding)

- strategies for dealing with the present and future learning activities and tasks (i.e. strategic scaffolding)
- methods for ways to perform the learning activities (i.e. procedural scaffolding)
- help from computers or help based in OLRs which does not distract from the core learning (i.e. technical scaffolding, see example 6.44).

Furthermore, the participants' use of the EAP Toolkit increases over time (see Section 6.2.2.1). Similarly, they state that they improve their learning by drawing on multifarious OLRs (see Section 6.2.2.2.). Therefore, it could be argued that learners can engage with interactive learning through scaffolding in e-learning environments depending on the design of OLRs and on learners' actions (for discussion, see Section 8.2.).

As for improving the exercise of learners' autonomy, the components of learner autonomy which compromise self-management, self-regulation, motivation including attributions for success, failure and self-efficacy, and learning strategies (see Section 3.2.) were analysed. Participants think that the use of OLRs supports them in managing and regulating their learning by planning what to do and by adjusting, evaluating and assessing their learning (see Section 7.2.). They also believe that scaffolding, especially feedback, in OLRs increases their learning, self-management and self-regulation if provided (see Sections 6.3.1.2.2. & 7.2.). Considering the study of Gobel et al. (2013, see Section 3.5.), participants seem more autonomous in handling their learning, as they make internal attributions such as ability, effort and strategy towards their success and failure in learning online (see Section 7.3.; for discussion, see Section 8.4.). As stated by participants, scaffolding and lack of scaffolding from the instruction and feedback in e-learning environments have an impact on learners' attributions for success and failure (see Section 7.3.) and self-efficacy (see Section 7.4.). Their confidence is also increased by their success. It could be discussed that scaffolding has a role in supporting learners in regulating, managing, making internal attributions towards their success and failure and in improving their confidence within e-learning environments (for discussion, see Section 8.4.).

Above all, the scaffolding used in the learning process in the EAP Toolkit during the observations seems to help participants develop learning strategies such as cognitive, metacognitive and meta-affective strategies. The following extracts from the participants (see also Appendix O) presents data from the Camtasia recordings and think-aloud protocols of each participant on the ways that learners develop learning strategies through scaffolding.

For instance, hyperlinks for prefixes and suffixes given as technical scaffolding provided in the Toolkit help Raman 1 to develop his cognitive strategy in terms of using his visual sense to

understand and remember (see example 49) prefixes and suffixes. He seems to confirm his understanding of this by stating 'OK' (for the discussion of the use of OK, see Section 8.5.).

Example 49

Raman 1: *The base form of a word is important for building your vocabulary as it can be altered through adding **prefixes** or **suffixes** … What is this one prefixes? Abbreviation, prefixes. Suffixes, just here OK... (He prefers to click on the hyperlinks and see the meanings.)*

Goran 1 receives implicit feedback, which provides him with strategic scaffolding for the tasks. After reading the feedback, he evaluates his cognitive progress (see example 6.3). Furthermore, he uses a metacognitive strategy by paying attention to his cognition of specific words (see example 7.49).

Example 7.50

Goran 1: *I determined [to learn] some words I don't know the meaning*.

Also, after reading the instruction as a scaffolder which gives procedural scaffolding, Baran 1 finds the words or the activity difficult and says that he will guess the answer from the word. He uses a cognitive strategy by going beyond the immediate data by predicting an answer. When he cannot guess he prefers to translate by using Google Translate. He uses a metacognitive strategy by obtaining resources for cognition. In addition, Bob 2 and Goran 2, who read the implicit feedback containing procedural and conceptual scaffolding respectively, are encouraged to use a metacognitive strategy by evaluating their cognitive progress and performance (see examples 7.1 and 7.51).

Example 7.51

Goran 2: *OK. I thought I should just select one check box. That is why I selected one. I selected one near the definition of plagiarism. OK. It was wrong and I made a mistake*.

Moreover, as seen in Section 6.2.1.2., feedback seems to provide self-scaffolding by helping participants give themselves motivational scaffolding. Salar 3 uses a meta-affective strategy by evaluating his affective progress and conditions after studying the feedback, and improves his confidence by uttering that he is good at the topic (see example 7.2).

Raman 3 is encouraged to use a metacognitive strategy and monitor his cognitive performance by checking and counting the number of words he does not know (see example 7.52). Meanwhile, he uses an affective strategy by saying: '*It is OK. Good!'* Thus he activates supportive emotions, beliefs and attitudes by substituting positive emotions, beliefs and attitudes for negative ones.

Example 7.52

Raman 3: *There is just one word in the context I did not. It is OK. Good! I finish this part. Let's go to the next part.*

Bob in the second observation reads the implicit feedback which provides procedural scaffolding. Then he develops a metacognitive strategy by evaluating his cognitive progress and performance (see example 7.53).

Example 7.53

Bob 2: *Solved. So we can now know what the plagiarism is.*

These examples of learners' use of learning strategies are triggered by means of different scaffolding types. Conceptual, procedural, motivational, strategic and technical scaffolding have an impact on learners' motivation for developing learning strategies such as cognitive, metacognitive and meta-affective strategies in the context of the present study. Scaffolding promotes learner autonomy by helping learners to develop learning strategies including some cognitive, metacognitive, affective and meta-affective strategies by themselves, whereas sociocultural-interactive strategies are not encouraged in e-learning environments, as shown in the current study.

This section has discovered that there is inclination for the strong relationship between scaffolding and learner autonomy. Scaffolding provided in the EAP Toolkit and other OLRs tends to improve learners' self-management, self-regulation, attributions for success and failure, self-efficacy and learning strategies. Participants require support from teachers, because e-learning environments seem to provide insufficient help and guidance. Therefore, the participants recommend that these resources should include more activities and scaffolders, especially feedback, and should be designed in a more interactive way (see Section 6.3.1.2.2.; for recommendation, see Section 9.3.). Consequently, scaffolding has a crucial impact on learners' learning and the exercise of their autonomy in e-learning environments.

7.8 Conclusion

Data from Camtasia recordings, think-aloud protocols, interviews and pre- and post-questionnaires presented in this chapter have been formulated to respond to the third and fourth research questions of the present study as repeated below:

> *RQ3) In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments?*

RQ3.1) To what do learners attribute their success and failure, especially in scaffolded learning environments?

RQ3.2) What is learners' confidence about their own learning, especially in scaffolded e-learning environments?

RQ3.3) What learning strategies do they use, especially in scaffolded e-learning environments?

RQ4) What is the relationship between scaffolding and learner autonomy in e-learning environments?

The third research question is answered with the help of the components of learner autonomy which contain self-management, self-regulation, attributions for success and failure, self-efficacy and learning strategy. Learners exercise their autonomy in e-learning environments by:

- managing and regulating their learning,
- making internal attributions for their success and failure,
- feeling more confident with the independent learning, strategy, feedback and support they receive in OLRs and success,
- developing learning strategies.

The study has found out that they regulate and manage their learning by:

- planning and setting goals for what to do in the future,
- monitoring, assessing and evaluating their learning via feedback,
- adjusting their learning with the help of other OLRs and implement their learning into a new learning environment (see Section 7.2.).

Section 7.3. answers the first sub-question of the third research question: Learners make internal attributions such as ability, effort and strategy towards their success and failure in learning online, especially in scaffolded e-learning environments. Considering the study of Gobel et al. (2013), they seem more autonomous in taking responsibility for their own learning. There is also an indication for the correlation between learners' confidence and their attributions for success and failure within the EAP Toolkit but not in other OLRs (see Section 7.4. & Appendix N). Responding to the second sub-question of the third research question, Section 7.4. has revealed that the participants' confidence increases with both their success and also the scaffolding which provides feedback, strategy, support and interaction in OLRs. However, there is no difference between their confidence in computer use and their use of computers and online applications. Data has provided an answer to the last sub-question of the third question (see Section 7.5.). Learners tend

to use cognitive, metacognitive, affective and meta-affective strategies on their own by means of the help and scaffolding they receive in e-learning environments but they do not use sociocultural-interactive and metasociocultural-interactive strategies due to the lack of their provision in e-learning environments.

The last research question of the present study queries the relationship between scaffolding and learner autonomy in e-learning environments. Data from pre- and post-questionnaires, one case study (see Section 7.7.1.) and Chapters 6 & 7 investigating its previous research questions has made a contribution to an answer for the last research question. As implied in the findings, there is a strong relationship between scaffolding and learner autonomy in e-learning environments as scaffolding in e-learning environments tends to help learners to:

- guide themselves in following their learning path on their own and in accomplishing the tasks (see Sections 7.7.1. & 6.2.2.1.),
- provide self-scaffolding for themselves (i.e. motivational scaffolding, see Section 6.2.1.2.),
- manage and regulate their learning, especially by means of feedback (see Section 7.2.),
- make internal attributions for success and failure (i.e. effort, strategy, ability, lack of effort, lack of strategy and lack of ability, see Section 7.3.),
- increase their confidence (see Section 7.4.),
- develop learning strategies such as cognitive, metacognitive and meta-affective strategies (see Sections 7.5. & 7.7.2.).

Furthermore, learners state that they need a tutor's support in e-learning environments in order to manage their learning due to a lack of scaffolding, especially feedback (see Section s 6.3.1.1.2., 6.3.1.2.2. & 7.6.). The aforementioned results offer some evidence for the significance of scaffolding in learners taking responsibility for learning and for the relationship between scaffolding and learner autonomy in e-learning environments. With this chapter having given the answers to the research questions, the next section will discuss the findings which produce key themes within the present study.

Chapter 8: DISCUSSION

8.1 Introduction

Chapters 6 and 7, respectively, have looked at scaffolding learning and learner autonomy in e-learning environments. This chapter discusses key themes emerging from the data and looks in some detail at the notions of interaction and adaptation (see Sections 2.4.2. and 8.2.), as exemplified in Laurillard's Conversational Framework (2012). The research questions (see Section 1.3.) will be addressed in order.

Firstly, the interaction between learners and online learning resources (OLRs) will be explained by showing what actions learners carry out when learning online and how learners perceive their own learning online, especially in scaffolded e-learning environments. It will do that by discussing the following aspects raised during the data analysis:

- the use of scaffolders, scaffolding types and the affordances of OLRs (see Section 2);
- the use of the EAP Toolkit and other OLRs (see Section 2); and
- learners' perceptions of their learning in scaffolded and unscaffolded e-learning environments (see Section 3).

That discussion, based on the data (see Chapter 6), helps to answer the first and second research questions of the present study (see RQs 1 & 2 in Section 1.3.).

Secondly, the adaptation in a scaffolded e-learning environment is discussed under the components of learner autonomy:

- self-management,
- self-regulation,
- learning strategies,
- attributions for success and failure
- self-efficacy (see Section 8.4).

In this context, the adaptation of learning observed in this study (see Chapter 7) answers the third research question about in what ways, learners exercise their autonomy, especially in scaffolded e-learning environments, and its sub questions, about how they attribute their success and failure, what their confidence is, and what learning strategies they use in a scaffolded e-learning environment (see RQ 3 in Section 1.3.).

After clarifying the nature of scaffolding learning through the interaction with OLRs, and autonomous learning through the adaptation of learning in scaffolded e-learning environments, Section 8.5. intends to answer the last but main research question, about the relationship between scaffolding and learner autonomy in e-learning environments (see RQ 4 in Section 1.3.). The adapted model of Laurillard's Conversational Framework (see Figure 51) is a key theoretical outcome of this study, as it takes into account the relationship between scaffolding and LA as regards learning to work on their own online, and goes beyond Laurillard's original intention (see Section 2.4.2 and Figure 4) of accounting for learning in designed learning environments such as blended or classroom settings supported by tutors and/or peers.

8.2 Understanding the Actions Learners Carry out when Learning Online, especially in Scaffolded E-learning Environments (RQ 1)

Laurillard's Conversational Framework (Laurillard, 2012) suggests how learning takes place in formal education through the interaction between learners and tutors or peers (see Section 2.4.2.). However, there is a lack of illustration of the communication and interaction between students and OLRs in e-learning environments, where students might feel isolated and alone (Zembylas, Theorou & Pavlakis, 2008), or in self-paced e-learning environments where students are alone and completely independent (Ghirardini, 2011). Referring to Jackson et al. (1998), the present study reveals and discusses the fact that learning takes place through the interaction between learners and OLRs in such a way that they can improve their learning and knowledge by means of support from the software or the resources online. Therefore, this section aims to answer the following first research question:

> RQ1) What actions do learners carry out when learning online, especially in scaffolded e-learning environments?

In order to do that, it discusses the following answers to the first research question which were obtained from data analysis in Chapter 6:

- Learners carry out different actions to learn online (see Section 8.2.1.).
- They might complete the activities in the order provided in OLRs, whereas they might prefer to follow their ways such as interpreting the activities, not reading scaffolders and just finishing the task without looking at the instruction and so on (see Section 8.2.1.).
- They mostly prefer to draw on metacognitive, conceptual and procedural scaffolding types, and the information/explanation, instruction and feedback sections as scaffolders in scaffolded e-learning environments (see Section 8.2.2.).

- They accomplish the activities according to the affordances of a scaffolded e-learning environment such as practicability, applicability, authenticity, feedback and reusability which support them to perform learning actions (see Section 8.2.3.).

The following sub sections will discuss the aforesaid answers respectively.

8.2.1 Understanding Learners' Actions in Using OLRs, Especially in Scaffolded E-learning Environments

A number of studies (i.e. Aghaee, Hansson, Tedre & Drougge, 2014; Anagnostopoulou, Gallacher & Priego-Hernandez, 2009; Brook & Beauchamp, 2015; Mama-Timotheou, 2015; Naresh & Reddy, 2015; Omer, Klomsri, Popova, Klingberg-Allvin & Osman, 2015; Sharpe & Benfield, 2005) have looked at the perceptions of e-learning in order to understand learners' learning in e-learning environments. Along with exploring learners' perceptions of their learning online (see RQ2 in Section 1.3. and Section 8.3.), the present study has conducted research on how learners actually function in e-learning environments on their own, by looking at the actions they carry out when learning online via the interaction with the EAP Toolkit or other OLRs by means of scaffolding or unscaffolding (see RQ 1. in Section 1.3.).

This study shows that learners carry out different learning actions when learning online because of learning preferences and needs in e-learning environments, as learners differ in learning settings (Jackson et al. 1998). They seem to differ in:

- spending time on each LO,
- using scaffolding provided in e-learning environments (for detail, see Section 8.2.2.),
- answering the question by guessing,
- learning styles and
- digital literacy skills.

Those differences stated above in this study give an understanding of the design of e-learning environments, particularly by investigating learners' use of LOs in the EAP Toolkit, and their learning needs and styles. It shows that the time to be spent on each LO should be enough for them to finish the activities without any restriction. For instance, they might wish to avoid reading scaffolders such as the introduction, information/explanation, instruction and feedback sections. Watson's (2010) study, which looked at students' perceptions of their learning in the EAP Toolkit (see Section 4.2.), indicates that learning in each LO takes place in 20 to 40 minutes ideally. However, the present study which conducted the research while students were using the EAP Toolkit during the observations and expressed their perceptions of their learning in the EAP

Toolkit shows that learners prefer to spend less than 20 minutes on it (see Section 6.2.2.1. and Appendix K). Otherwise, they might be impeded by feeling distracted and bored (see Sections 6.2.2. and 6.3.1.1.2.). It could be inferred from the study that the flexible e-learning environments should be set up or designed for learners to complete and carry out the activities in however much time they wish to spend in these environments.

Also, this study shows how learners prefer to carry out the task when not wishing to use the scaffolding provided in OLRs. Learners can arrive at the answer by guessing (see Section 6.2.3.), which is discounted (Conole & Warburton, 2005), especially in e-learning environments. Learners guess the answer by making connections between two responses or through a previous learning item (see Section 6.2.3.). In this regard, they use previous learning or the connection between two questions to scaffold their learning, as this behaviour helps them to accomplish the task and go to the next question. By guessing and deciding what to read in order to facilitate their learning, learners interact with OLRs to personalise their learning on their own (for more discussion of personalisation or individualisation, see Section 8.4.). This also shows that the previous learning either inside or outside the classroom occasionally has an impact on their learning in e-learning environments, without regard to scaffolding or support from OLRs.

Moreover, this study gives an understanding of learning styles in e-learning environments. Learners might be sequential, as they follow the order implemented in OLRs, whereas some of them might be global, preferring to scroll the mouse down and up in order to look at the activities first, and then do the tasks holistically (see examples 6.26., 6.27. and 6.28.; Figure 31, and, for the theoretical explanation, see Felder & Silverman, 1988 and Section 2.4.1.). However, learning design tends to be helpful for some learners if it is constructed sequentially (see example 6.43 in Section 6.3.1.1.2.). By that method, users would have to follow the instructions supplied in OLRs. For example, users of the EAP Toolkit first come across and tend to read the introduction (see Section 4.2.1.) in order to have the basic knowledge about the topic in a scaffolded e-learning environment. Furthermore, there might be visual learners who benefit from OLRs, and they might require resources to put important vocabulary in boldface and the feedback in a bigger font (see examples 6.26 & 6.41 in Section 6.3.1.1.2.), and resources which would also contain videos and pictures (e.g. Raman, Salar and Ziver in Section 6.3.1.1.2.). However, auditory learners should be taken into consideration as well, as they learn better when listening to someone (see examples 6.27 and 6.28 in Section 6.3.1.1.2.). Since Wiley (2001) defines learning objects as digital resources such as images, photos and video and audio samples (for details, see Section 4.2.), LOs created in e-learning environments should be designed by taking account of the auditory and visual helpers, as revealed in the study. In spite of the fact that auditory and visual learners are restricted to OLRs' provision for interaction, deductive and inductive learners are flexible in

arranging their learning process in those environments. For instance, learners can improve their learning inductively the first time, and then learn deductively the next time (see the case of Goran in Section 6.2.3.). All in all, together with differences in learning preferences, needs, goals and experience, learners differ in learning styles such as the sequential, global, auditory, visual, deductive, inductive, reflective and active styles in e-learning environments. The study argues that an e-learning environment designed considering different learning styles can be significant to increase learning and knowledge performance, as indicated in the study by Manochehr (2006).

However, learners might have problems while experiencing their learning process in e-learning environments. Personal factors or lack of digital literacy skills (for digital literacy, see Section 3.3.2.) might hinder their interaction and learning process in e-learning environments (i.e. example 6.24.). Considering this, LOs should be designed in such a way that learners can easily further their learning. For instance, Perwin looked at the introduction section in each LO in the folder in the last observation without clicking on and sorting out the activities (see Section 6.2.3.). In her case, the inability to use the computer and personal factors such as age, stress and health problems have a negative impact on her learning (see Section 6.3.1.1., and for more data, see subsections 3 and 4 in c) in Section 6.3.1.1.2., and c) in Section 6.3.1.2.2.). Also, this study shows that classroom learning and examinations can impose a considerable burden and inhibit learning in e-learning environments (for data, see subsections 2 in c) in Section 6.3.1.1.2., and d) in Section 6.3.1.2.2.). Above all, not understanding the topic has an effect by inclining them to skip doing the activity, whereas some learners avoid reading scaffolders (see Section 6.2.2.1.). Learning in e-learning environments can be disadvantageous for some learners as it might cause 'frustration, anxiety and confusion' (Zhang et al., 2004, p.76; see Table 1 and Section 2.2.3.). As Sadler-Smith and Smith (2004) suggest, a model of flexible learning can overcome the weakness of e-learning if it 'represents an integration of learning styles and preferences with strategies' (p.408).

Overall, learners differ in carrying out actions when using OLRs in self-directed e-learning environments where they study alone and without the presence of tutors or peers. What can be drawn from the presented discussion on learners' actions in learning is that there are potential features of a well-designed e-learning environment which should consider:

- offering a learning environment where learners can easily follow the learning path through the interaction with LOs, so that they cannot be isolated and lost and stop carrying on their learning in e-learning environments, and where they can take their own time to complete the activities (for more discussion on learner autonomy, see Section 8.4.), as based on data and other studies (i.e. the studies of Christal et al., 1997; Ribbe & Bezanilla, 2013; Scardamalia & Bereiter, 1996 in Section 3.5.);

- instructional design, in terms of constructing a systematic way to enable learners to overcome the problems and in turn, develop their learning (see Section 4.2.; Gustafson & Branch, 2002; Harvey, 2005) when they need additional help;
- learners' digital literacy level (for more discussion, see Section 8.4.);
- different learning styles such as those of visual, auditory, global, sequential, inductive, deductive, active and reflective learners, as learners vary in their characteristic features in terms of cognition, affect and psychology (Keefe, 1979 cited in Griggs, 1991); and
- providing 'individual learning activities' (Conole, 2013, p. 7) to be performed by different learners (Koper, 2006; see Section 2.4. for detail).

Corroborating the claims of Rasmussen (1998) and Riding and Grimley (1999; cited in McLoughlin, 1999), this study reveals that learners can interact more with learning activities and tasks which are designed on the basis of learning styles. This study also discusses that learning design should not constrain learners' preferences since they have different learning styles, as argued by Jackson et al. (1998 and see Section 2.4.1.).

8.2.2 Scaffolding Learning in E-learning Environments

As mentioned in the above section, learners carry out different actions when learning online through their interaction with OLRs. That difference can happen when they learn in scaffolded e-learning environments. It tends to affect their use of scaffolders and scaffolding types, depending on the OLRs' provision for scaffolding, and in turn to affect their learning. As this study mainly focuses on their scaffolded learning in self-directed e-learning environments (see Section 3.3.1.), it shows that learners use different scaffolders and scaffolding types in the learning process, and then further their learning through that scaffolding (for data see Section 6.2.1.). Following this, this section deals with the actions they carry out when learning in scaffolded e-learning environments, through the discussion of the roles of scaffolders and scaffolding types.

8.2.2.1 The Role of Scaffolders

Scaffolding has evolved in e-learning environments as argued by Puntambekar and Hübscher (2005, see Section 2.3.2). Despite the original notion of scaffolding which regards scaffolder from single and more knowledgeable person, the evolved (current) notion of scaffolding sees scaffolder as an assistance provided by tools and resources (see Table 2 in Section 2.3.2). Considering this argument, this study takes the EAP Toolkit as an example of a scaffolded e-learning resource, which provides assistance and a shared understanding for learners (see Sections 4.2 & 4.2.1.), in order to explore what actions learners carry out when learning in scaffolded e-learning environments (see RQ1 in Section 1.3.).

This study reveals that participants carried out different action when learning in a scaffolded e-learning environments and benefit from different scaffolders at different ranges (Section 6.2.1.2.). Those scaffolders were categorised as the introduction, information/explanation, instruction, feedback, web links, glossary and dictionary sections supplied in the EAP Toolkit. They used at least three scaffolders to help them complete the activities in the learning process in all three observation times, except for Perwin, who just read the introduction of each LO because of her lack of ability in computer use, even though it was her third experience of the EAP Toolkit (see Figure 28). Participants differed in their preferences for taking advantage of scaffolders, especially the dictionary or hyperlinks embedded in LOs. A few of them (e.g. Salar) stated that those scaffolders distract them, particularly when directing them to a new tab or page. Although there is no clear evidence of receiving support from peers in the EAP Toolkit, learners require facilities of that kind, such as discussion forums, to gain access to other people's views and assistance (see Section 6.3.1.1.2).

This study shows that learners mostly draw on scaffolders in the Toolkit, such as

- the introduction section to receive general information about the LO;
- the explanation/information section for further knowledge about a learning activity;
- the instruction section to learn how to accomplish the task;
- the feedback section, which is the most used and helpful scaffolder (Pea R. D., 2004; Podolefsky, Moore & Perkins, 2013, and Quintana, Reiser, Davis, Krajcik, Fretz, Duncan, Kyza, Edelson & Soloway, 2004; and for more discussion see Section 8.2.4.) since it initiates the dialogic self and self-addressed talk, as revealed by means of the think-aloud protocol and learners' self-talk, so that they are able to manage their learning (i.e. see example 6.17. and for more, see Section 8.4.).

Together with those above-mentioned scaffolders, other OLRs except the EAP Toolkit provide transcripts, sub lists, subtitles and online dictionaries to scaffold their learning (see Sections 6.2.2.2 & 6.3.2).

The aforesaid functionality of scaffolders backs up the argument of Puntambekar and Hübscher (2005). Scaffolders have the role of facilitating learning and assist learners to accomplish the activities in e-learning environments without the presence of a human-based help. Rather than talking or receiving help from their peers or tutors, learners tend to adapt themselves to that situation and find solutions such as directing themselves to another website (see Section 6.2.1.2.), reading scaffolders again or explaining what the scaffolders tell them (see Section 6.2.3.). In that sense, scaffolding need not be regarded as 'passive support', which is against the claim of Puntambekar and Hübscher (2002). The researchers indicate that the tools in e-learning

environments supply unchanging support for learners (ibid.). However, this present study indicates that learners control fading of scaffolding even though the EAP Toolkit offers 'blanket scaffolding' (ibid.), which suggests the sameness of support for all learners. Learners can be free and flexible to decide when to receive scaffolding and use scaffolders if an e-learning environment allows that. Therefore, they can carry out different or individual actions in using scaffolder while learning in scaffolded e-learning environments.

8.2.2.2 The Role of Scaffolding Types

As stated in the previous section, scaffolding provides more than what was expected of it in e-learning environments. Scaffolders do not just give passive support, but also enable learners to decide when to stop using or continue to use scaffolding provided by OLRs. Furthermore, the evolved features of scaffolding in e-learning environments, as discussed in the case of the present study (see Sections 2.3.2 & 8.2.2.1), are apparently supported and brought about with the help of different scaffolding types. In the same vein, and in relation to the use of scaffolders to some extent, participants in this study carried out different actions while using scaffolding types in the learning process (see Sections 6.2.1.1. and 6.3.1.1.). This section discusses learners' actions in a scaffolded e-learning environment with regard to the use of scaffolding types in order to answer what actions learners carry out when learning in scaffolded e-learning environments (see RQ1 in Section 1.3.).

Technical scaffolding such as hyperlinks provided in OLRs might not be used by learners (for data, see section 6.2.1.1.) because hyperlinks can distract from their learning experience, as resulted in some previous studies (for distraction by hyperlinks, see Dee-Lucas and Larkin, 1995; Fitzsimmons, Weal & Drieghe, 2013; for distraction by technology, see Reynolds & Speight, 2008). However, that distraction might be due to the complexity of the practical aspect of producing learning (Laurillard, 2002). Despite technical scaffolding, other scaffolding types such as strategic, conceptual, procedural, metacognitive and motivational scaffolding help to improve their learning experiences as shown in this study (see Section 6.2.1.1.). They take different actions in a scaffolded e-learning environment by using the following scaffolding types:

- *strategic scaffolding*, especially when embodied in feedback, to help them to analyse their answers, make strategies and plan for the next activity or learning task, as agreed by Hannafin et al. (1999);
- *procedural scaffolding* to enable them to use the methods offered in the instruction section as scaffolders;
- *conceptual scaffolding* to guide them as to what to consider as scaffolders from among the introduction, information/explanation and feedback sections; and

- *metacognitive scaffolding* to understand how to think of the learning topics.

On the one hand, the above findings of this study support the research by Tiantong and Teemuangsai (2013; see Section 3.5). They have found out that scaffolding types help learners to accomplish the tasks in an e-learning environment (ibid.). On the other hand, the current study draws attention to learners' learning experience with the help of *motivational scaffolding*. Participants in this study provided that kind of scaffolding for themselves after looking at feedback in the activity, despite the lack of motivational or affective scaffolding in the EAP Toolkit. By this means, learners can develop *heuristics or self-scaffolding* to help them learn on their own (Holton & Clarke, 2006). It can be suggested that self-scaffolding provided for themselves by learners occurs in order to facilitate learning (see Sections 6.2.1.1. and 7.7.1.). Thus, learners can become self-scaffolders. Depending on the scaffolders in e-learning environments, self-scaffolders can initiate interaction between a learner and a scaffolder. Corroborating the studies by Hannafin et al. (1999), Luckin (2001) and Wood and Wood (1996), this study argues that learning can take place without the learner being told what to do by teachers but through scaffolding provided by OLRs.

Overall, learners carry out different actions when learning in scaffolded e-learning environments. They use different scaffolders such as

- introduction,
- instruction,
- explanation/information,
- feedback,
- hyperlinks,
- transcripts,
- sub lists,
- subtitles,
- online dictionaries.

They use different scaffolding types such as

- metacognitive,
- strategic,
- procedural,
- conceptual,
- technical scaffolding.

They potentially develop motivational scaffolding after receiving other scaffolders in scaffolded e-learning environments. However, they might need more scaffolding to increase their knowledge in e-learning environments (see Sections 6.3.1.1.2 and 6.3.1.2.2) where they are alone. They can take charge of their own learning in self-directed e-learning environments (see Section 3.3.1) through scaffolding. As presented in Figure 8 and claimed by Liaw et al. (2007; see Section 3.3.1), learning can be enhanced through scaffolding provided in OLRs in order to promote learner autonomy. The present study goes beyond this claim and suggests that a well-designed scaffolded e-learning environment should consider what actions learners carry out when learning online and provide different scaffolders and scaffolding types. As a result, the provision of different scaffolders and scaffolding types enables and motivates learners to interact with online learning resources. This having been said, the next section presents the affordances embodied in a scaffolded e-learning environment.

8.2.3 **The affordances of a Scaffolded E-learning Environment**

This section discusses the affordances or action possibilities (Gibson, 1977 and see Section 2.5. for detail) to understand what actions learners carry out when learning online. The affordances of an e-learning environment such as practicability, applicability, authenticity, feedback and reusability will be dealt with to see how they help learners to perform learning actions, especially in a scaffolded e-learning environment.

The practicability of the activities in a scaffolded e-learning environment enhances learners' knowledge by making the information concrete and solid in mind (see example 6.38 in Section 6.3.1.1.1.). Namely, a learner receives information about the activity and then practises it in an e-learning environment, which enables him or her to create tangible information independently in his or her learning space or mind. Furthermore, the applicability of the activities can assist with learning, not just in e-learning environments but also in classroom-based learning environments (e.g. Tase's plan to apply what she learned from the information/explanation section into preparing her personal research project (PRP), in example 6.29 in Section 6.3.1.1.1.).

Above all, the present study shows that OLRs offer an authentic learning experience as learners use scaffolders for 'the real-world problem solving' (Lombardi, 2007). Furthermore, this kind of authentic materials are fitted into the learning purpose (Hutchinson & Waters, 1987) and caters to learners to improve their knowledge with the help of scaffolders. For example, an audio file included in the task boosted Tasleem's knowledge of plagiarism, while other participants (Baran, Tase and Ziver) similarly found the activities very useful in serving up the information. In this

context, scaffolding has a role to play in offering authentic material for learners in e-learning environments.

More importantly, feedback is a crucial affordance for helping learners improve their knowledge and skills in e-learning environments (Brown & Voltz, 2005). As the present study shows, feedback enhances participants' self-regulation and self-management (see Section 7.2.), success, attributions for their success to ability (see Section 7.3.), confidence (see Section 7.4.), use of learning strategies (see Section 7.5.) and independent learning (see Section 7.7.2.). In this study, feedback was investigated to be given in two ways: explicit and implicit feedback. Explicit feedback provided in the activities in OLRs helps learners in the following ways:

- to decide whether they are right or wrong,
- accomplish the activity,
- evaluate themselves and
- go to the next task.

Implicit feedback encourages them to take responsibility for their own learning by adapting their learning (see Section 6.2.1.1., and for more discussion, see Section 8.4). By this means, learners interact with LOs in such a way as to generate both types of feedback by themselves. Feedback can be a scaffolder to help them to formulate their ideas and apply them to their actions, as seen in participants' comments such as:

> '*I am good …*' (Salar in Observation 3; see the case study in Appendix J or section 7.2.),
>
> '*Oh, good! I did very well in this activity*' (Tase in Observation 2, and see Section 7.4.),
>
> '*There is just one word in the context I did not. It is OK. Good! I finish this part. Let's go to the next part*' (Raman in Observation 3 in Appendix K, and see Section 7.5.) and so on (see Appendix J, especially the case of Salar for more detail).

In this context, 'the quality of students' interaction with those comments is equally and perhaps more important', while the quality of feedback provided in the Toolkit is also important (Nicol, 2010, p.503). Above all, implicit feedback given in OLRs (see Section 6.2.1.1.) enables learners to improve their learning and practise self-reflection in a self-generated way. Additionally, the encouragement of self-reflection helps learners to 'know how close they are to a good performance, and what more they need to do' (Laurillard, 2002, p.127), as seen in the examples below (for detail, see Section 7.5.):

> '*I want to compare what I understand from this … I determined to learn some words I don't know the meaning*.' (Goran in Observation 1) (See 4, 3 in Figure 51; see Appendix B)

'*OK. I thought I should just select one check box. That is why I selected one. I selected one near the definition of plagiarism. OK. It was wrong and I made a mistake*.' (Goran in Observation 2) (See 2, 1 in Figure 51; see Appendix B)

'*Solved. So we can now know what the plagiarism is*.' (Bob in Observation 2, see the case study of Bob in Appendix J) (See 2, 1 in Figure 51; see Appendix B); and

'*There is just one word in the context I did not. It is OK. Good! I finish this this part. Let's go to the next part*.' (Raman in Observation 3) (See 2, 1 in Figure 51; see Appendix B)

In this sense, OLRs can help learners to internalise their learning and feel more confident by providing either extrinsic or intrinsic feedback, or both kinds (see Section 8.4. for more discussion). As the use of feedback increases, so does their learning improve.

Last but not least, reusability of OLRs has a positive impact on learning, especially when learners are alone, without any help from tutors or peers. In other words, users can take advantage of the reusability in a scaffolded e-learning environment designed under these circumstances (Grunwald & Reddy, 2007). The present study shows that learners use the activity again for their classroom learning and tasks (e.g. examples 6.29 and 6.30). However, OLRs should consider the reusability of 'dynamic' activities which provide more opportunities to navigate (Raman in Interview 1, 2, 3, and see Section 8.2.2.) rather than only the reusability of static activities.

Along with the affordances of practicability, applicability, authenticity, feedback and reusability in a scaffolded e-learning environment, the present study also draws the attention to the operation of affordances (for detail, see Section 2.5.). This study (see Section 6.3) backs up Conole and Dyke's (2004) taxonomy of affordances in OLRs:

- *Accessibility* of OLRs should be available; however, the more important point is to enable users to know 'how to use what is available' (ibid., 116).
- *Speed of change* should be considered in issues such as 'quality, lack of authority of sources and lack of reflection' (ibid., p.116).
- *Diversity* should be embodied in OLRs to assist users to have different learning experiences.
- *Communication and collaboration* should be provided to engage with others.
- *Reflection* can be made in asynchronous technologies such as in discussion forums.
- *Multimodal and non-linear* functions of OLRs should be provided for learners to 'adopt more individualized strategies and pathways' (ibid., p.119).
- *Risk, fragility and uncertainty* of OLRs should be avoided to supply reliable information.

- Immediacy, such as in responding to the email immediately, can give the exchange of information between users in a quick way.
- Monopolization considers the dominance of a particular product in learning; however, the present study shows that learners prefer to use various OLRs or learning applications (see Section 6.2.2.2).
- Surveillance allows teachers to monitor their students' learning. Beyond this, the present study suggests that a well-designed scaffolded e-learning environment should consider enabling learners to track their learning.

Overall, the affordances of a scaffolded e-learning environment enable learners to engage and interact with learning materials, activities and tasks. In spite of the lack of help from tutors or others, learners can manage, solve tasks and make decisions about their learning in an e-learning environment which is designed in consideration of various learning actions. Learners' actions through the interaction with OLRs via scaffolding having been explained, the next section discusses learners' perceptions of their learning in e-learning environments to have a better understanding of their interaction.

8.3 Understanding Learners' Perceptions of their Learning in Scaffolded or Unscaffolded E-learning Environments (RQ 2)

Along with understanding of learners' actions as a result of different learning experiences in using OLRs, scaffolding and affordances of OLRs, learners' perceptions of their learning in scaffolded or unscaffolded e-learning environments help to explain their interaction with OLRs. This section aims to help the answer of the following second research question of the study:

RQ 2) How do learners perceive their own learning online, especially in scaffolded e-learning environments?

In order to do that, it discusses the following answers to this research question which were obtained from data analysis in Section 6.3.:

- As learners get used to using and learning in e-learning environments, they believe that they can improve their learning.
- They think that scaffolding can replace the tutor.
- They prefer e-learning to classroom learning.
- They suggest a number of features for learning design when learning in e-learning environments.

The present study shows that learners can increase their learning in e-learning environments over time even when they do not expect to do so. This means that it is not just already known information or concepts, but also new ones, which enable the interaction to take learning further when learners use OLRs over a period of time (see Section 6.3.1.1. and Figures 33 & 34). In the same way, learners' feelings about the experience of learning with OLRs changes with time to become more positive, because of some elements being facilitated in their learning process. Following this, based on data (see Section 6.3.1.1.1. and for more discussion, see Section 8.2.2.), the present study shows that scaffolding plays a key role in providing interaction and thus enables learning. Although some studies (see Section 3.5. and Cuthbert & Hoadley, 1998; Hakkarainen, 2003; Oshima & Oshima, 1999; Oshima et al., 2002) have looked at learning programs to promote learning through scaffolding, others (Hannafin et al., 1999; Luckin, 2001; Wood & Wood, 1996) have placed stress on the role of scaffolding as a tutor in e-learning environments (see Section 3.5.). Similarly, the present study reveals that scaffolding can act as a tutor (for data, see Section 6.3.1.1.1.) when it provides:

- assistance related to content or language learning (see examples 6.29 and 6.30) for learning inside or outside the classroom (e.g. Baran, Salar and Goran);
- guidance in following their learning path, especially by brainstorming and summarising the main points (e.g. Salar);
- instruction on how to do learning activities and methods for accomplishing learning tasks (e.g. Ziver);
- advice when they face problems (see Sections 6.3.1.1.2. and 6.3.1.2.2.);
- explanation and information on what to consider in learning tasks (see examples 6.29, 6.31, 6.32 and 6.33);
- interaction to facilitate their learning (see examples 6.35 and 6.36, and through activating the brain in the manner of a puzzle to be solved, as exemplified in example 6.34); and
- explicit and implicit feedback to check and evaluate their learning process (see example 6.37 and for more discussion, see Section 8.2.3.).

Above all, this study supports the claim of Hogan and Pressley (1997 and see Section 2.3.1.1.). Scaffolding in the classroom might be distracting because of diverse communication styles, so learners prefer learning through scaffolding in e-learning environments where they can work alone (see Section 6.3.1.1.1.).

However, data in this study draw attention to learners' perception of learning in e-learning environments without regard to whether or not it is scaffolded. The study shows that the

following features of designing an e-learning environment should be considered (Winnips et al., 2000):

- the colour of the OLRs' background,
- the word style and
- the place of the activities and
- feedback (see Section 6.3.1.1.2.).

Also, data suggests that:

- OLRs should be friendly and easy for learners to use and follow on their learning path.
- OLRs should give the answers with explicit and implicit feedback, as learners might differ in their feedback preferences.
- the activities provided in the resources should be designed according to levels from beginners' to advanced, so that learners will not avoid doing the activities but can choose any of them depending on their level.
- the activities should be 'dynamic' (see example 6.47 in Section 6.3.1.1.2) to give learners more opportunities to navigate their learning process.

In this context, learning design should be based on two traditions in technology-enhanced learning. They are 'the attempt to build computer systems that would orchestrate the delivery of learning resources and activities' and 'the need to find effective ways of sharing good and innovative practice' (Falconer et al., 2011, p.101; and see Section 2.4.). Similarly, the present study demonstrates that learners favour to be supported for flexible learning anytime, anywhere and with free access to OLRs. Various resources for different skills can be provided, but there is a need to consider improving speaking skill by utilising the resources. As indicated in Section 8.2.3, the operation of affordances such as accessibility, speed of change, diversity and surveillance (Conole & Dyke, 2004) should be taken into account while designing an e-learning environment.

Along with the issues of learning design, personal problems such as tiredness, stress, being recorded, worry about completing the task, age and health problems (Sections 6.3.1.1.2. and 6.3.1.2.2.) might influence students' interaction with OLRs in e-learning environments. It can be inferred that learners can interact with OLRs if a comfortable e-learning environment is provided to enable them to improve their learning.

Overall, the present study concludes that learners prefer scaffolding to further their learning in e-learning environments, especially when no human-based interactions, as with a tutor or peer, exist. Together with scaffolding, the features of OLRs are considered highly suitable for setting up a well-designed e-learning environment, as learners differ in learning actions, experience,

preference, needs and styles (see Section 8.2.1.). By this, OLRs can be 'a stand-alone resource for students to use for independent study' (Watson, 2010, p.47; see Section 4.2.). In order to understand their autonomous learning in scaffolded e-learning environments, the next section discusses how they exercise their autonomy in those environments.

8.4 Understanding Learner Autonomy in Scaffolded E-learning Environments (RQ 3)

The previous sections have discussed that scaffolding plays a vital role for learners' interaction with OLRs and helps them to make progress in learning and accomplish the activities. The present section discusses in depth how learners exercise their autonomy in a self-directed e-learning environment, especially in scaffolded e-learning environments. It thus aims to answer the following third and its sub research questions of the present study:

RQ 3) In what ways, do learners exercise their autonomy, especially in scaffolded e-learning environments?

RQ 3.1.) To what do learners attribute their success and failure, especially in scaffolded learning environments?

RQ 3.2.) What is learners' confidence about their own learning, especially in scaffolded e-learning environments?

RQ 3.3.) What learning strategies do they use, especially in scaffolded e-learning environments?

It discusses the following answers to the third and its sub research questions:

- learners can manage and regulate their learning in different ways,
- learners can develop their learning strategies to some extent,
- learners mostly make internal attributions for success and failure and
- learners' self-efficacy can increase depending on their success and the provision of scaffolding (for detail, see Chapter 7).

This study gives insights into how learners adapt themselves and their learning in order to exercise their autonomy. For that purpose, this section first explains adaptation and then discusses how learners manage to handle their learning through scaffolding. Adaptation is described as 'learning and teaching activities that enable the student or teacher to adjust their actions in the light of results of previous actions' (Laurillard, 2002, p. 249). Although Laurillard (ibid.) defines adaptive activities in terms of teacher-student interaction, the present study

applies that description to research into student-OLR interaction (for more discussion, see Section 8.5 and Figure 51).

According to Hagel and Shaw (2006), learners 'studying off-campus need to take more responsibility for their own learning' (p.285). Especially, in self-directed e-learning environments, they should 'generate and pursue their own goals, and undertake critical evaluation of the materials they select' if they are autonomous (Saks & Leijen, 2014, p.192). They should have the digital literacy, 'the ability to understand and use information in multiple formats from a wide variety of sources when it is presented via computers' (Gilster, 1990 cited in Bawden, 2008, p.246). Although good digital students 'have a proactive attitude and are autonomous insofar as is possible, they display initiative in their learning and in their performance during the course' (Sáiz, 2007, p.5; for more, see Section 3.3.2.). Still, they might need additional help in tackling unfamiliar problems. OLRs might not be designed considering different learning actions, styles, preferences, the cultural aspect (see Sections 8.2 & 8.3) and learners' different backgrounds (Edmundson, 2011). In this context, the discussion of learners' adaptation to learning in e-learning environments enables the present research to see how learners exercise their autonomy on their own although they might differ in learning actions, preferences and styles (see Sections 8.2 & 8.3).

Learners' ability to use the computer and find the information via computers has an impact on their learning and confidence (see Section 3.3.2.). The concept of digital literacy is formed in the following levels:

- the amateur ability level of 'remembering / understanding',
- the intermediate level of 'applying/ analyzing/ evaluating', and
- the professional level of 'creating' (Han et al., 2006, cited in Yi, 2014, p.313)

All of them are covered thanks to Bloom's Taxonomy (see Churches, 2008). Those levels are embodied in OLRs to enable users to organise and develop their learning alone to some extent. Considering this, the evolved features of scaffolding as discussed in Section 8.2.2.1 (see also Sections 2.3.2 and 8.2.2.2) of the current study tend to help learners to remember and understand the topics, apply, analyse and evaluate what they have understood, and create a new thing. As indicated in the present study, scaffolded interaction enables learners to exercise their autonomy and adapt their learning in e-learning environments in that:

- they can manage and regulate their learning by making plans, implementing, adjusting and evaluating, setting goals, monitoring and combining resources (see Section 7.2);
- they can develop their learning strategies including cognitive, metacognitive, affective and meta-affective strategies on their own, whereas they might not do that for

sociocultural-interactive strategies (Chang & Sun, 2009 and Luzón, 2006; for data see Section 7.5. and Appendix P) because of the lack of activities for improving speaking skills and interacting with other people; and

- gaining the knowledge of learning strategies can support classroom learning and learning skills (see Section 7.6.).

Learners potentially adapt themselves by regulating and managing their learning in e-learning environments (see RQ3 in Section 1.3). They can use the techniques of self-management and self-regulation in e-learning environments (see Section 7.2.). Those techniques seem to support them in taking responsibility for their own learning outside the classroom (Kormos & Csizér, 2013; for detail, see Sections 3.2.1 and 3.2.2.). They can acquaint themselves with the tasks and activities in those environments (see Section 7.5.), which is the indicator of ability to handle their learning in settings where there is no-one to help learners (Hismanoglu, 2000; White, 2008), and of their motivation and behaviour (Dembo, 2004). They use various OLRs and those who use online learning resources every day can be regarded as capable of benefiting from online learning resources (see Section 6.2.2.2.). The most preferred resources are those of the BBC such as BBC Learning English and BBC iPlayer, EngVid, British Council, TED.com and Google. However, classroom learning plays a role in choosing which websites to use. Also, they can find solutions to their problems. For instance, participants needed to prepare a personal research project at the end of the semester and preferred to use Google Scholar, online journals and e-books. In this context, these learners are 'active agent[s]' (Littlejohn, 1997, p. 191) who engage in selecting online learning resources without being explicitly directed to choose, and learn to take responsibility for their own learning (Benson, 2001; Dickinson, 1987; Holec, 1981 and Little, 1991).

Learners can improve all their learning skills such as listening, reading, speaking and writing by finding suitable learning resources in e-learning environments (see Section 6.2.2.2.). This corroborates the study by Fuchs et al. (2012) that there is a connection between digital literacy and learner autonomy in that the use of online learning resources increases the possibility of learner autonomy. In the context of the present study, for instance, the use of the EAP Toolkit increased over time (see Section 6.2.2.1.), whereas use of other OLRs seemed similar from the first to the last time (see Section 6.2.2.2.). That might be because of scaffolding provided in the EAP Toolkit but lack of scaffolding in OLRs (see Section 6.3.).

The present study shows that scaffolding has a significant role to play in encouraging learners to manage and regulate their learning. They can plan and set goals what to do in the future, monitor, assess and evaluate their learning via feedback, adjust their learning with the help of other OLRs and implement their learning into a new learning environment (see Section 7.2.). This also

indicates that they can develop learning strategies on their own through scaffolding (see Section 7.5 & RQ3.3 in Section 1.3). They can create cognitive, metacognitive, affective and meta-affective strategies on their own by means of help and scaffolding they receive in e-learning environments. That kind of scaffolding provides heuristic scaffolding which enables learners 'to discover or learn something for themselves' (Oxford online dictionary, 2016, n.p.). The present study adds to the understanding of heuristic scaffolding which promotes independent learning in e-learning environments where OLRs provide scaffolders, not just in settings where the teacher is a scaffolder, which was found out by the studies by Holton & Clarke (2006), Radford, Bosanquet, Webster and Blatchford (2015), and Radford, Bosanquet, Webster, Blatchford and Rubie-Davies (2014). This study additionally reveals that learners cannot develop sociocultural-interactive and meta-sociocultural-interactive strategies because of the lack of their provision in e-learning environments. The affordances of communication and collaboration should be considered in the design of an e-learning environment to enable them to engage with others (Conole & Dyke, 2004; see Sections 6.3 & 8.2.3).

Above all, learners can adapt their motivation, as scaffolders and scaffolding types enable them to motivate themselves in e-learning environments. The present study has found that learners mostly made tool attributions which are internal attributions (Marakas et al., 2000) as follows (see RQ3.1 in Section 1.3):

- lack of ability,
- lack of effort,
- lack of strategy,
- lack of experience,
- lack of concentration,
- lack of understanding,
- ability,
- effort,
- scaffolding from instruction, feedback and examples, and
- strategy from scaffolders.

That can be interpreted as showing that they tended to manage their learning on their own in e-learning environments, which is similar to the findings of Gobel et al. (2013; for detail, see Section 3.5.). Since they made internal attributions for success towards effort and strategy (see Section 7.3.), they seemed autonomous and confident, as emerged in the study by Gobel et al. (2013; see Section 3.5. for detail).

The present study shows that the relationship between their attributions for success and failure, and self-efficacy is statistically significant (see Section 7.4.). Even though more than half of the participants in interviews felt confident in online learning, the views of the participants in the questionnaires on self-efficacy did not change significantly between the pre- and post-questionnaires. However, it argues that learners' confidence can be improved by means of the following elements (see RQ3.2 in Section 1.3):

- learning through scaffolding in e-learning environments,
- independent study,
- both classroom and online learning and
- awareness of learning.

Affirming the preliminary study of Taipjutorus et al. (2012; see Section 3.5.), the present study indicates that there is a link between self-efficacy and learner control in a scaffolded e-learning environment. It can be deduced from these findings and discussion that learners have the ability to adjust both their motivation and exercise of their autonomy with the help of scaffolding provided in e-learning environments where no human-based help or interaction is supplied.

Moreover, this study shows that the affordances (discussed in Section 8.2.3.) facilitate learners' awareness, as similarly put forward by Haythornthwaite and Andrews (2011; for detail, see Section 2.5.). In particular, feedback has a key role in this process. It can be inferred that feedback is mostly considered a vital scaffolder or affordance, towards which learners have a positive attitude (Pea R. D., 2004; Podolefsky, Moore & Perkins, 2013 and Quintana, et al., 2004). It is like a tutor since it enables learners to obtain answers, go to the next activity and improve their learning (see Section 6.3.1.1.1.). The present study indicates that learners can exercise their autonomy on their own to the extent that they do not merely copy information given in the feedback, but also integrate it into their learning (Vygotsky, 1978) by:

- regulating and managing their learning,
- developing learning strategies,
- making internal attributions for their success and failure
- improving their self-efficacy (see Chapter 7).

All in all, this study shows that learners can enhance their learning and exercise their autonomy on their own in e-learning environments although no human-based assistance is provided, if they are supported enough. Additionally, autonomous learners can develop learning strategies on their own, manage and regulate their learning and maintain their motivation in those settings. This

section having explained the exercise of learners' autonomy, the next section provides a model showing the relationship between scaffolding and learner autonomy in e-learning environments.

8.5 Towards a Model of the Relationship between Learner Autonomy and Scaffolding in E-learning Environments (RQ 4)

Although in the early 1990s computer technology was regarded as a means whereby tutors could decide which activities to include (Chapelle, 2009), that focus has changed in recent years so that interaction and communication with the computer can be achieved by different methods such as 'automated voice systems, interactive texts, and combinations of these' (ibid., 749). Scaffolding or the assistance provided in online learning resources to enable interaction and communication with OLRs promotes transferral of responsibility from an expert to a learner (Meyer, 1993 cited in Kong, 2002) and the learner's ability to take control of learning (Appleby, cited in Upham et al., 2014). The interaction through scaffolding seems to provide the individualisation needed for learners to personalise their learning, as Thorpe (2001, see Section 3.3.1. for more detail) argues. The present study indicates that self-directed e-learning environments where the teacher is absent (see Section 3.3.1) should take account of differences in learning actions and preferences (see Sections 8.2 & 8.3) to support them to carry on their learning, especially on their own (see Section 8.4). Considering this argument, this section purposes to answer the following fourth research question of the study:

> RQ 4.) What is the relationship between scaffolding and learner autonomy in e-learning environments?

It has found out that there is a strong relationship between scaffolding and learner autonomy in these environments. This section discusses the following answers to the last but main research question:

- The lack of scaffolding may lead to the need for the tutor.
- Scaffolding can be provided to transfer the responsibility from the teacher to the learners.
- Learners who are autonomous enough to handle their learning can adjust their learning to the lack of social interaction through scaffolding from their peers or others.
- Learners can have self-talk or dialogue to accomplish learning activities even though there is not any 'live' human-based help in the learning place.
- Autonomous learners can decide when to fade scaffolding although OLRs provide permanent scaffolding.

In order to discuss this, an adapted model (see Figure 51) of Laurillard's (2012) Conversational Framework has been developed based on the data derived from my research (see the original model in Figure 4). This model allows us to understand how learning takes place in scaffolded e-learning environments.

Laurillard's Conversational Framework highlights the importance of the learning conversation between learners and teachers (Laurillard, 2008 and see Figure 4), and also with their peers when using online technologies (Quinn & Reid, 2003). Beyond the interaction between learners and teachers or peers, the present study shows the interaction between students and OLRs through scaffolding. Facilitated interaction through scaffolding in e-learning environments enables learners to independently manage and adapt their learning in these environments without a tutor (see Section 8.4). Therefore, the way learning takes place in the case of the present study resembles Laurillard's Conversational Framework, but goes beyond her model, as the adapted model shows that learning can take place through the interaction between learners and OLRs, as shown in Figure 51 below:

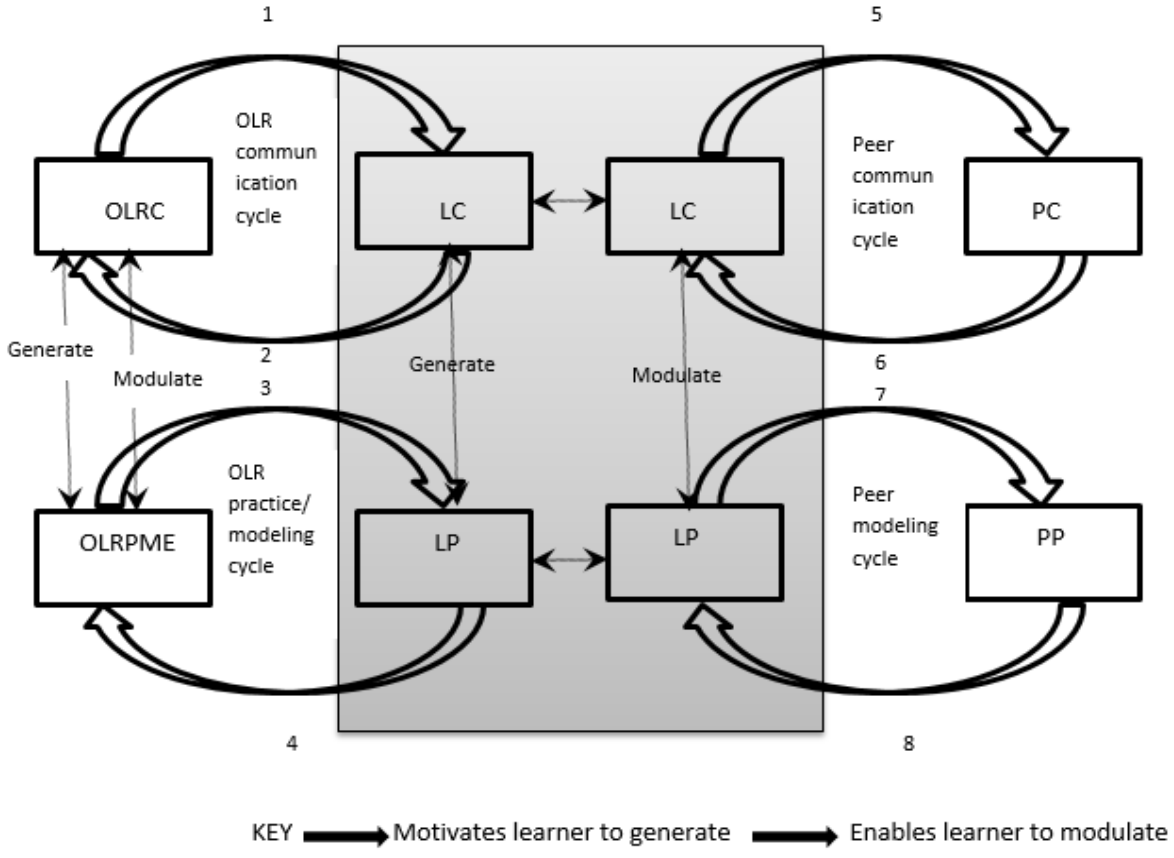


Figure 51: The adapted model of Laurillard's Conversational Framework in the present study

This above adapted model sees the tutor in Laurillard's model replaced by scaffolded online learning resources (OLRC) so that the learner interacts with learning concepts (LC) in the OLR

communication cycle. The learner then carries out learning activities or learning practice (LP) in the OLR practice/modelling environment (OLRPME) within the OLRPM cycle. If available, learners may engage with the concepts of their peers (PC) in the peer communication cycle and practise with them (PP) in the peer modelling cycle. Although this study does not focus on the peer cycle, there are a number of instances during interviews where participants mention this interaction using, for example, Facebook or discussion forums (for data, see Section 6.3 and for discussion, see Sections 8.2.2.1. & 8.5).

This model derived from my data generates a learning environment in which learners are supported by online scaffolding and where they can start to exercise their autonomy without the specific help of a human tutor. It would seem that if the OLRs are well-designed, the scaffolding within the OLR cycle (OLRC) gives learners the opportunity to modulate the learning concept (1 in Figure 51) and motivates them to generate their own questions and articulate their understanding of the concepts through practice thanks to the extrinsic or explicit feedback provided by the OLRs (2 and 1 in Figure 51) in the OLR communication cycle. In the next stage, the OLR practice cycle motivates them to modulate their practice by generating actions that result in implicit or intrinsic feedback from the OLRs (4, 1 in Figure 51). Then, the OLR modelling cycle motivates them to modulate their practice by generating actions that result in extrinsic feedback from the e-learning environment (4, 3 in Figure 51).

The study emphasises the provision of scaffolding to enhance learners' tendency to take control of their learning; however, there is still the effect of classroom learning on their learning, probably in e-learning environments (see Sections 7.3. and 7.4.) and the need for help from tutors, especially on the first occasion of learning through OLRs (see Section 7.6.). Despite the fact that the more they use the Toolkit (see Table 11 and Section 6.2.2.1.), the more they improve their autonomous learning (see Section 7.7.2), learners mention lack of scaffolding as the reason they require help from tutors (see Section 7.7.2.). However, an effective scaffolding should transfer the control from the teacher, the expert or the agent to the student (Appleby, 1986, cited in Upham et al., 2014; Meyer, 1993 cited in Kong, 2002). As shown in the study by Delen et al. (2014, see Section 3.5.), embedded functions of scaffolding such as 'note-taking, supplemental resources, and practice questions' (ibid., p.134) in e-learning environments can increase learning performance and self-regulation.

This study also discusses that learners might require encouragement to enhance their speaking skills, as there is no one to help them in individualised e-learning environments. Social networking tends to initiate learners' interaction with others anytime and anywhere (i.e. Bob, Baran and Gazala stated that in the present study; see Section 6.2.2.2), so social networking websites have

been used to learn inside and outside the classroom (Robler et al., 2010 cited in Majid et al., 2012; see Section 3.5). Majid et al. (2012) have found out that students favour the use of the Internet and Facebook more than 'the traditional classroom teaching' (ibid., p.38). Facebook can help them to improve their writing skills and provide flexible learning outside the classroom (ibid.). Lamy and Zourou (2013) agree with Majid et al. (2012) and argue that social networking continues as long as 'the interactional dynamics' occur 'in unrestricted situations, beyond formal, institutional-led forms of interaction' (p. 4). In the same way, the present study shows that learners can adjust themselves to that lack of social interaction in some OLRs by using social networking websites such as Facebook, or discussion forums in some language learning websites, if they are autonomous enough to do that. For instance, the participants in this study said that they improved their speaking skill by chatting with friends on Facebook (Bob and Baran) and talking to people outside such as the driver (Salar), and one of them used forums to improve English (Gazala). By these methods and resources, they are provided with the peers' concepts and generate articulations when their peers give extrinsic feedback. This can consist, as in the case of Salar, of his communication with the driver and the driver's reply, which is a kind of feedback as it shows that the driver understands him and reacts to what he is saying (5, 6 in Figure 51). The peer modelling cycle can take place when they practise what they have learned from their peers or other people in other environments (see levels 4, 7 and 8 in Figure 51 and Appendix B) within social networking websites.

This study aims to discuss the relationship between scaffolding and learner autonomy in e-learning environments. One way to discuss that relationship in this study is to look at participants' think-aloud protocols. The think-aloud protocol (for details, see Section 5.4.4) initiates self-talk as 'a dialogue with the self existing …. addressed to self ….' (Vocate, 1994, p. 6). Relatedly, participants in this study used self-talk or a kind of dialogue verbally or non-verbally during their learning within the EAP Toolkit. Data from the digital screen capturing with video via Camtasia (see Section 5.4.3) and the think-aloud protocol method (see Section 5.4.4) tends to give insights into their interaction with OLRs and learning. Camtasia recordings provide crucial data on participants' self-talk as Camtasia software records what they said, for example, the comments they made about their perceptions of scaffolders in LOs in the EAP Toolkit (see Section 6.2.3.). That kind of expression and perception might encourage them to articulate their thoughts and they can clarify scaffolders such as instruction or feedback for themselves (see the examples of Tasleem 3 in Section 6.2.3.). Moreover, the dialogue with their self-personality tends to help learners to think back to their previous learning, which seems to reinforce their present learning (see Section 6.2.3 and especially examples 6.13, 6.14, 6.15, 6.16 and 6.17.). That kind of dialogue also enables them to remember their mistakes, focus on and potentially improve their

weaknesses (i.e. example 6.20). Furthermore, self-talk can be efficient at enhancing learners' motivation and self-efficacy (Weinberg, Grove & Jackson, 1992). It can be argued that learners can motivate themselves to feel more confident about accomplishing the activity, even when there is no one to help. They can tell themselves that they have did well while completing the activities (i.e. example 6.21).

Above all, the use of 'OK' as self-talk tends to represent their thought, showing that 'I understand', and is not 'unnecessary verbiage' in the present study (Eveland & Dunwoody, 2000, p.229). This study indicates that the use of scaffolding improves knowledge and understanding of the topic, as shown by the fact that all the learners uttered this phrase, OK after reading the scaffolders and the learning activities (see Section 6.2.3. and especially example 6.17).

Overall, the use of self-talk or dialogue occurs and is supported by the environments in e-learning and previous learning. That supported dialogue leads to understanding of learners' interaction with the resources and, correspondingly, their learning. In other words, the use of self-talk helps learners to focus and engage with their learning after receiving help from scaffolders such as the introduction, information/explanation, instruction and feedback sections in the EAP Toolkit. In this sense, the interaction between learners and the EAP Toolkit enables each learner to modulate his/her concept by providing access to the Toolkit's concept (see 1, in Appendix B and in Figure 51).

The examples from one case study provided in Section 7.7.1. feature the adapted model of Laurillard's Conversational Framework in Figure 51, in that scaffolding triggers interaction between a learner and an online learning resource. For instance, the online learning resources communication cycle (OLRCC) motivated Salar to generate articulations of his concept and practice (see Section 7.7.1.) because the Toolkit provides explicit feedback, which is represented by 2, 1 in Figure 51 (see Appendix B for more explanation of the framework). The following utterances of Salar are taken as an example of that cycle, allowing him to articulate what he thought and practised in the learning processes (for more detail, see 7.7.1.). Those utterances tend to show that he could evaluate and improve his learning after receiving feedback as a scaffolder in the EAP Toolkit:

> *'Wow! Now, feedback. Here are … Oh the first one is banking. Asset, where is asset, I thought it is. The second one is right. The law, OK. Textiles, I got three, how much, one, two, three, four, five, six. OK. 50% good!'*

> *'Decide, haaa, now, now, I got it. The base word is verb. Manage. Account, I am right with this one. Yeah!'*

'Negotiation, negotiator, renegotiate …, wow I got only two. Ohh, I know this one as well.'

'Advert, Companies like Nissan and Nordstrom were persuaded to advertize before, advertize before… yeah, I got this, I got American one with z. It is OK!' (Second Question)

'OK, main causes. Lack of confidence, lack of time, lack of study skills. Let's see the feedback. OK. Lack of confidence, lack of time, lack of study skills, lack of understanding, WOW. I missed it. OK!'

'*We got 5 from 5. That is good point*.'

Moreover, OLRCC (see Figure 51) motivates learners to modulate their practice by generating actions that elicit intrinsic feedback from the modelling environment, which is symbolised by 4, 3 in Figure 51 (see Appendix B). However, in this study, extrinsic feedback helped the learner, Salar to give a reason why the answer was correct, as shown in the quotation below. That might be because of his previous experience of learning with the EAP Toolkit, as some of the activities give implicit feedback.

'*Opinion. Yeah it is opinion. Because it can be presumed*.'

Figure 10 in Section 3.4 based on the theoretical understanding of the relationship between scaffolding and learner autonomy hypothesises that learners can become more autonomous as scaffolding is gradually removed. However, the present study indicates that learners can develop their abilities and apply learning strategies through the use of the appropriate scaffolding types. Figure 52 below illustrates that scaffolding promotes learner autonomy, especially in its initial stage. This study indicates that learners become more autonomous and interacted by making dialogical self-talk, questioning and monitoring their learning and directing themselves to go to the further learning task (see Sections 6.2.1 & 6.2.3) as they receive scaffolders to adapt their learning. Oxford (2003b) claims that "scaffolding is not a one-time thing, and neither is its removal" (p. 86). However, in self-directed e-learning environments learners take the responsibility for deciding when to use or remove scaffolding provided in OLRs. Therefore, effective scaffolding can equip learners with adequate help and guidance through the interaction between them and OLRs.

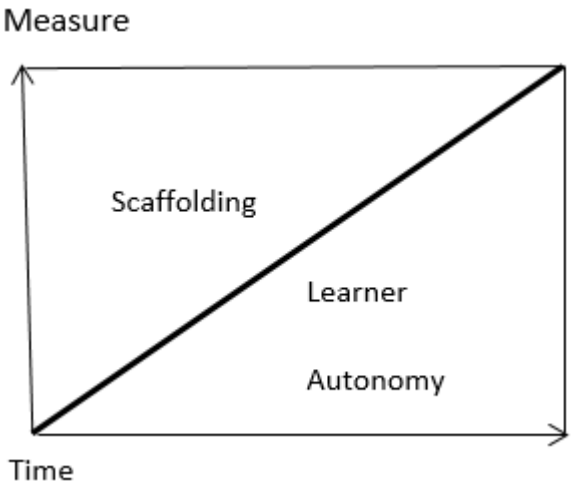


Figure 52: The illustration of the relationship between scaffolding and learner autonomy derived from the present study

However, the effectiveness of scaffolding will be dependent on individuals' learning preferences (for learners' difference in learning preferences, see Sections 6.3. & 8.3.) (Duffy & Azevedo, 2015) and learning actions when learning online (see Sections 6.2. & 8.2). In order to promote learning in self-directed e-learning environments, pedagogical agents are designed in OLRs to scaffold the exercise of each individual's autonomy (ibid.). Pedagogical agents (PAs) are defined as 'anthropomorphous virtual characters employed in online learning environments to serve various instructional goals' (Veletsianos & Russell, 2014, p.759). They can resemble human-like assistances by providing prompts and feedback (Duffy & Azevedo, 2015; Veletsianos & Russell) and mimicking the roles of tutors (Liew & Tan, 2016). When designing PAs, the following features should be taken into consideration:

1. The specific role and function of the agent: Determine what kinds of scaffolding feedback will be provided by the agent.
2. The appropriate theoretical framework to develop the agent: Decide how the agent will provide the scaffolding and feedback.
3. The effectiveness of the agent in fostering: Consider what it was intended to foster (Taub, Martin, Azevedo & Mudrick, 2016).

The aforesaid features of PAs to design an effective and scaffolded e-learning environment facilitate this study to make it clear that scaffolding can replace a teacher and enhance learner autonomy. This leads to the argument of the relationship between scaffolding and learner autonomy in e-learning environments.

All in all, the EAP Toolkit was taken as an example of a scaffolded e-learning environment in the present study and was considered a useful and crucial aid for learners seeking to improve their

skills and knowledge not only in language learning, but also in academic learning. This study shows that learners regard scaffolding in e-learning environments in both the Toolkit and other online learning resources as an opportunity to facilitate learning. As Tasleem and Salar indicated in Interviews 2 and 3, respectively, scaffolding helps and enables them to find themselves, for example by looking at their scores in the feedback section, in e-learning environments where they can take their time in doing the activities. By this means, they can take their time to find themselves or their learning skill in a scaffolded e-learning environment. Furthermore, a well-designed e-learning environment should involve scaffolding that considers differences in learning actions, preferences, needs, goals and styles. That kind of designed e-learning environment facilitates learning at the levels of (1), (2, 1), (4, 1) and (4, 3) of learning (see Appendix B) in OLRCC and OLRPME in Figure 51. Accordingly, the findings can be interpreted as showing that learners' interaction with OLRs through scaffolding has an impact on the way learners adapt their learning by means of learning strategies, self-regulation, self-management, attributing their success and failure to internal causes and controlling or improving their confidence. That kind of link can be triggered and empowered with the help of scaffolding, as suggested by the current study. Those two concepts having been discussed, the next section concludes the discussion chapter.

8.6 Conclusion

This chapter has discussed the relationship between scaffolding and learning autonomy in e-learning environments, symbolised as interaction and adaptation, respectively. Firstly, the chapter has discussed learners' interaction with OLRs by looking at their learning actions, learning styles, use of scaffolders and scaffolding types and benefit from affordances in order to answer the first research question. Scaffolding from OLRs enables learners to express their feelings and generate articulations. Also, the affordances of a scaffolded e-learning environment improves their interaction, engagement and reflection on their learning. The chapter has moved on to discuss their interaction with OLRs in order to answer its second research question of their perceptions of their learning. Then, it has attempted to answer the third research question by discussing learners' adaptation of their learning in a scaffolded e-learning environment. They appear autonomous as they use their own learning strategies, manage and regulate their learning, attribute their success and failure to internal causes and motivate themselves by feeling more confident. It can be interpreted that they improve their autonomous learning as they increase their use of the Toolkit or OLRs: that is, the more they interact with those resources, the more they adapt themselves for greater accomplishment in learning. Considering these two concepts as representing scaffolding and learner autonomy, the framework adapted (see Figure 51) from Laurillard's Conversational Framework (2012) tends to explain that relationship between

scaffolding and learner autonomy in e-learning environments by means of the interaction and adaptation of learners.

Chapter 9: CONCLUSION

9.1 Introduction

This concluding chapter aims to give a whole picture of the present study by reviewing the findings from both qualitative and quantitative research instruments and previous chapters of the present thesis. Section 9.2. explains how the relationship between scaffolding and learner autonomy in e-learning environments contributes to the understanding of the research. Next, Section 9.3. shows the limitations of the present study and makes recommendations for further studies, higher institutions, designers, teachers and students. Lastly, it concludes this section.

9.2 The Contribution of Understanding the Relationship between Scaffolding and Learner Autonomy in E-learning Environments

The present study has come from two research areas. The first is related to scaffolding in e-learning environments, while the second is concerned with learner autonomy, described as managing one's learning on one's own. Although there have been many studies of those concepts (i.e. Artino, 2008; Benson, 1998; Chang & Sun, 2009; Frizler, 1995; Linn, 1996; Luzón, 2006; Martin & Grudziecki, 2006; McLoughlin, 2002; McLoughlin & Marshall, 2000; Motteram, 1997; Nielsen, 2012; Ribbe & Bezanilla, 2013; Toogood, 2005; Warschauer, 1996, 2004), there is a need to explore the relationship between scaffolding and learner autonomy in e-learning environments (i.e. Hodges, 2008; 'Jarvis and Szymczyk, 2010; Jarvis and Pastuszka, 2008; Jarvis, 2008a; Jarvis, 2008b; Figura and Jarvis, 2007'; cited in Jarvis, 2012; Yelland & Masters, 2007 and see Section 2.1.). Therefore, this research has aimed to examine that relationship between scaffolding and learner autonomy in e-learning environments. In order to achieve its aim, it has looked at how international students taking an academic course at the University of Southampton to improve their language and academic skills learned in e-learning environments, by investigating their learning actions and perceptions of their learning and how they managed their learning on their own in terms of their self-management, self-regulation, use of learning strategies, attributions for their success and failure, and self-efficacy, especially in scaffolded e-learning environments.

This study contributes to the research area of scaffolding in e-learning environments. The data derived from this empirical study shows that learners can improve their learning through the use of different scaffolders and scaffolding types in e-learning environments without the need of human-based assistance such as tutors or peers in the learning process. However, they mostly need to understand the ways to utilise learning objects (procedural scaffolding) and how and

what to consider (metacognitive and conceptual scaffolding, respectively). Even when OLRs do not supply scaffolding, especially motivational scaffolding, learners sometimes provide self-scaffolding for themselves. Also, they can decide when to fade scaffolding if they are autonomous enough to take that responsibility for their own learning, even if an OLR's support is permanent. In this regard, the present study concludes that scaffolding provided in e-learning environments enables an interaction or conversation between learners and online learning resources without the presence of human-based resources such as tutors or peers, by contrast with Laurillard's Conversational Framework, which places the emphasis on the interaction and conversation between learners and tutors or peers, if available (Laurillard, 2012).

Also, the present study contributes to the understanding of learner autonomy in e-learning environments. This study shows that autonomous learners should do more than taking responsibility for their own learning in e-learning environments, despite the common definition of learner autonomy (see Benson, 2001; Dickinson, 1987; Holec, 1981; Little, 1991 in Section 3.2.). Although there is no one telling them what to do, autonomous learners can manage and regulate their learning through making plans, implementation, adjustment and evaluation; can set goals, monitor their learning and draw on different OLRs if needed. They can develop learning strategies such as cognitive, metacognitive, affective and meta-affective strategies through the use of scaffolders in self-directed e-learning environments. However, OLRs mostly fail to provide collaboration and interaction with human-based resources such as a tutor or peer, so learners have difficulty in developing their meta-sociocultural and sociocultural learning strategies. This suggests that OLRs should consider embracing learning activities and tasks that provide a variety of learning strategies, as this has an impact on learner autonomy. Corroborating the study by Gobel et al. (2013, see Section 3.5. for detail), the present study shows that learners who make attributions for their success towards effort and strategy seem more autonomous and confident. However, there is a need to measure the level of learners' learner autonomy (i.e. considering the double-channel model of Wang, Spencer & Wang, 2012) to understand whether learners develop their learner autonomy over time.

More importantly, the present study contributes to the understanding of the relationship between scaffolding and learner autonomy in e-learning environments. Supporting the claim of Hammond and Gibbons (2005, see Section 2.3.1.1.), but in OLRs-supported environments rather than teacher-supported environments, this study shows that scaffolding learning from OLRs at a micro level helps learners to reach their goals at a macro level and so to improve their use of strategy and take responsibility for their learning (see Section 7.7.2.). In order to enable improvement in learning, a scaffolded autonomous e-learning environment should be provided that considers different learning styles such as sequential or global, sensing or intuitive, visual or

auditory, inductive or deductive and active or reflective (see Sections 6.2.3. and 8.2.1.). Similarly, learners need multifarious types of scaffolders and scaffolding types in terms of learners' cognition, metacognition and motivation to adapt themselves to e-learning environments. Although this study indicates that feedback has a significant role in evaluating and monitoring learning in e-learning environments, especially through explicit feedback, OLRs should provide implicit feedback which leads to intrinsic feedback enabling learners to work without a tutor, as implied by Laurillard (2012). In this sense, what learners can do through scaffolding in one learning activity they will be able to do on their own in the next learning activity, as put forward by Vygotsky (1978 and see the epigraph in Chapter 1). Considering those features of a scaffolded autonomous e-learning environment, this study draws attention to the model (see Figure 51) adapted from Laurillard's Conversational Framework (2012). In that model, scaffolding enables learners to 'modulate their ideas, and generate further ideas and questions' (ibid., p. 98). In this regard, the data derived from the present study show that learners change and articulate what they think about learning topics through the interaction between themselves and OLRs after receiving the assistances provided in OLRs, and in turn, through the adaptation of their learning, they conceptualise the target topic.

Furthermore, this study contributes to the understanding of what to take into account in the design of a scaffolded autonomous e-learning environment. OLRs should account for the colour of the background and the font of the web page by giving flexibility through learners' choice, as an OLR aims at accommodating many learners with different learning preferences. OLRs should also provide learning activities that contain affordances such as practicability, applicability, authenticity, feedback and reusability, whether learning design is regarded as 'a noun': activity, or 'a verb': the product of the activity (for literature review, see Section 2.4.). Considering this, learners become more engaged and interactive with OLRs after receiving adequate and effective feedback and carrying out the learning activities in a well-designed scaffolded autonomous e-learning environment.

Regarding both their interaction with online learning resources and adaptation of their learning in e-learning environments through scaffolding, based on the findings from qualitative and quantitative research methods, the present study concludes that there is a potentially strong relationship between scaffolding and learner autonomy in e-learning environments. However, there is a need to set up a well-designed scaffolded autonomous e-learning environment to enable learners to reach their target and aims.

9.3 Recommendations and Limitations of the Present Study

The present study has revealed that scaffolding has a significant impact on learners, especially by helping them to take responsibility for learning on their own. Considering this and the aforesaid conclusions from the current research (see Section 9.2.), this section gives recommendations and indicates limitations of the present study.

Designers of online courses should consider including scaffolding in OLRs. While setting up a well-designed scaffolded autonomous e-learning environment, they should take into account such features as:

- a variety of learning activities to increase practice;
- the visual and auditory design;
- the design of the colour of OLRs' background, as 'a possible distraction can be reduced by using soft and light colors for bright background and shady colors for dark background' (Weinreich, Obendorf & Lamersdorf, 2001, p.24);
- the flexibility to learn anytime and anywhere;
- the use of different scaffolding types;
- explicit and implicit feedback; and
- multiple media, not only for self-directed e-learning, but also for communication exercises and peer collaboration.

Not only designers but also teachers should consider the provision of scaffolding to improve their cognition, metacognition and motivation during the instruction. Although this study lacks a discussion of blended-learning environments, it shows that allowing learners to interact and adapt their learning on their own increases their motivation and learning in self-directed e-learning environments. Therefore, teachers instructing in blended or technology-enhanced learning environments should consider the above-mentioned features of a well-designed e-learning environment. However, teachers still need help to set up a well-designed e-learning environment, although some researchers have recently looked at this issue (e.g. Laurillard, 2012). This is because teachers are not always 'at the front of a facilitator's mind' (Cornelius, Gordon & Schyma, 2014, p. 15) while teaching. Additionally, institutions should include the aim of encouraging students to take charge of their learning in their own way by supplying scaffolded OLRs, not only in self-directed e-learning environments but also in classroom-based or blended-learning environments.

Also, students should be aware of benefiting from different scaffolders in the learning process, and can enhance their learning on their own by utilising various online learning resources (e.g.

Figure 30) offered in open or closed e-learning environments. As seen in the present study, learners draw on different OLRs for their language or content learning (see Table 21). As the participants in this study were based in an academic course, they were supported in the use of resources by teachers or peers, or on their own. Also, this study might have influenced them by stimulating an interest in using resources and motivation to do so, and they would not do what they did if they were not told to talk about their learning and thinking. Furthermore, this study did not observe the participants in a totally natural environment such as a library, study room or bedroom. Therefore, future research can look at how learners choose OLRs in a totally non-human supported e-learning environment where they are entirely independent. This might help to gain understanding of students' learning and to set up an efficient e-learning environment for their learning of either content or language or both.

Furthermore, designers and teachers should consider what kind of learning resources to include. As revealed in the present study, learners prefer vocabulary, reading and critical thinking learning skills, as well as grammar and academic writing to enhance their learning in e-learning environments. However, this study took the example of just one resource, the EAP Toolkit, which is based on academic skills, to look at learners' learning. A further study is needed to investigate learning through more than one OLR. As the Toolkit does not provide collaboration or human-based interaction, this further study can look at learning in communities of practice supplied in OLRs, as social activity is important for learning (Kimble, Hildreth & Bourdon, 2008).

Moreover, participants in the present study used OLRs for both content and language learning (see Table 21). Therefore, this study has not separated out what learners need for language or content learning respectively. Future research can examine how they see OLRs for either language or content learning.

Above all, the present study shows that it is better for them to be exposed to hands-on practice and warming-up training (see Section 5.4.4. and Van Someren et al., 1994), as participants are not accustomed to using the think-aloud protocol or saying aloud what they are doing and thinking in an e-learning environment in order to overcome potential difficulties and problems (Branch, 2000; Ericsson & Simon, 1993 cited in Johnstone, Bottsford-Miller & Thompson, 2006). By this process, the participants in the current study seemed to understand what they were asked for, but all of them were seen to become more comfortable and accustomed to it in the last two observations (see Section 6.3.1.), suggesting that their interaction with the EAP Toolkit can be improved over time. Although this study finds that, with time, they developed more positive views about the think-aloud protocol method, the next study might consider preparing participants better, for instance, by giving a longer practice in advance. Furthermore, a three-time

observation session enables the present study to gain more insights into their interaction with the Toolkit and then into their learning in e-learning environments, despite some research that considers one-time observation sufficient for understanding learners' evaluation of e-learning (see Cotton & Gresty, 2006). Although this analysis refers to the methodology part of the research, it also highlights the contribution of the understanding that OLRs may not prepare an effective learning environment in which learners can improve and manage their learning in the first time. Therefore, it can be advised that further studies should include more than a one-time observation session.

Finally, this study indicates that participants sometimes needed more help because of lack of scaffolding and of activities that include audio-visual help and games. A further study can conduct research after setting up and considering the above-mentioned suggestions for a well-designed scaffolded autonomous e-learning environment. Additionally, as the current study lacks a large amount of data, a further study can include more participants from different backgrounds and cultures and investigate learners' interaction with those well-designed online resources.

All in all, the present study has given suggestions, based on scaffolding, for institutions, designers, teachers, researchers and students to consider and include in e-learning environments to enable learners to handle their learning on their own. It has also presented the limitations of the present study and given recommendations for further studies.

9.4 Conclusion

This chapter has introduced what was concluded in the present study by summarising the relationship between scaffolding and learner autonomy in e-learning environments. Further, it has given recommendations for institutions, designers, teachers and students, and indicated limitations of the study, on the basis of which further studies can consider how to conduct the research.

Appendices

Appendix A

Summary of key learning theories and models, their characteristics, and how they might be realised in the context of e-learning (Conole et al., 2004, pp.19-21)

Theories	Main characteristics	Potential e-learning applications	Literature
Behaviourism	-Focuses on behaviour modification via stimulus-response pairs -Trial and error learning -Learning through association and reinforcement -Pedagogical focus is on control and adaptive response -Focus on observable outcomes	- Much of current e-learning development represents little more than transfer of didactic approaches online, the 'web page turning mentality' linked directly to assessment and feedback	Skinner Tennant
Cognitive	-Focus on internal cognitive structures; views learning as transformations in these cognitive structures -Focus on human development - Pedagogical focus is on the processing and transmission of information through communication, explanation, recombination, contrast, inference and problem solving - Useful for designing sequences of conceptual material which build on existing information structures	- Salomon's notion of distributed cognition (Salomon, 1993) could lead to a more shared knowledge structure between individual and surrounding information rich environment of resources and contacts - Development of intelligent and learning systems, and the notion of developmental personalised agents	Anderson Wenger Hutchins Piaget
Constructivist	- Focus on the processes by which learners build their own mental	-The concept of Toolkits and other support systems which guide and inform users through a process of activities could	Papert Duffy & Jonassen

	structures when interacting with an environment -Pedagogical focus is task-orientated -Favour hands-on, self-directed activities orientated towards design and discovery -Useful for structured learning environments, such as simulated worlds; construction of conceptual structures through engagement in self-directed tasks	be used to good effect to embed and enable constructivist principles -Access to resources and expertise offers the potential to develop more engaging and student-centred, active and authentic learning environments -Micro worlds and simulations	
Activity-based	-Focus on the structures of activities as historically constituted entities -Action through mediating artefacts within a framework of activity within a wider socio-cultural context of rules and community -Pedagogical focus is on bridging the gap between historical state of an activity and the developmental stage of a person with respect to that activity e.g. current state of language use and child's ability to speak a language -The Zone of Proximal Development –the idea that assessing current ability gives limited insight into an individual's potential for development, which is better studied through examining their work alongside a more able peer	-In the last decade there has been a shift from a focus on the information (and in particular content) aspects of ICT to an emphasis on communication, collaboration and understanding the factors which underpin the development of communities -In particular there has been a realisation that the development of content alone does not lead to more effective learning, and that there is a need to structure and foster learning environments to enable communities to develop -Networking capabilities of the web enable more diverse access to different forms of expertise and the potential for the development of different types of communities	Vygotsky, '34; Wertsch, 85; Engestrom, '87

Socially situated learning	-Take social interactions into account and learning as social participation -Emphasis on interpersonal relationships involving imitation and modelling -Language as a tool for learning and the joint construction of knowledge -Language has two functions: 1. As a communicative or cultural tool, used for sharing and jointly developing knowledge 2. As a psychological tool for organising our individual thoughts, for reasoning, planning, and reviewing our actions • Dialogue between tutor and student can be articulated into 12 levels of engagement – both external and internal • Knowledge is a matter of competences with respect to valued enterprise. Participating in the pursuit of this, i.e. active engagement • Meaning our ability to experience the world and our engagement with it as meaningful – is ultimately what learning is to produce	-Multiple forms asynchronous and synchronous communication offer the potential for more diverse and richer forms of dialogue and interaction between students and tutors and amongst peers, as well as the use of archive materials and resource for vicarious forms of learning -Different online communication tools and learning environments and social for a offer the potential for new forms of communities of practice or facilities to support and enhance existing communities	Mercer Vygotsky Laurillard Lave Wenger

Appendix A

Experiential	-Experience as foundation for learning -Learning as the transformation of experience into knowledge, skill, attitudes, values emotions -Reflection as a means of transforming experience - Problem base learning a focus: +Experience: Problem situation, identification and definition +Gather and reflecting on Information + Theory formation and test in practice +Experience through Primary and Secondary +Reasoning and Reflection +Evaluation (Dewey, 1916)	-Asynchronous communication offers new forms of discourse which is not time-bound and hence offers increased opportunity for reflection -Archive and multiple forms of representation of different communications and experiences offer opportunities for reflection	Dewey Kolb Jarvis
Systems theory	-Focus on organisational learning, or on modelling the development of learners in response to feedback	-New forms of distribution and storage, archiving and retrieval offer the potential for development of shared knowledge banks across organisations and forms of organisational distributed cognition -Models of learning account adaptation in response to both discursive and active feedback	Senge; Laurillard

Appendix B

‘The teacher communication cycle (TCC)

(1) enables each learner to modulate their concept by giving them access to the teacher’s concept,

(2, 1) motivates each learner to generate questions or articulations of their concept and practice because the teacher is giving them extrinsic feedback.

The teacher practice cycle (TPC)

(4, 1) motivates each learner to modulate their practice by generating actions that elicit extrinsic feedback from the teacher.

The teacher modeling cycle (TMC)

(4, 3) motivates each learner to modulate their practice by generating actions that elicit intrinsic feedback from the modeling environment.

The peer communication cycle (PCC)

(6) enables each learner to modulate their concept by providing access to their peer’s concepts,

(5, 6) motivates each learner to generate articulations because they are getting extrinsic feedback from their peers.

The peer modeling cycle (PMC)

(4, 7) motivates each learner to generate actions in the practice environment because they are sharing the output of their practice,

(8) enables each learner to modulate their practice by using the model of their peer’s output’ (Laurillard, 2012, p. 94).

Appendix C

The detailed information about the participants according to their identity (ID) No

Group	ID No	Age	Gender	Nationality	Major
A	1	45	F	Iraqi	MA Social Statistics
	2	28	F	Iraqi	MA Geography
	3	31	M	Iraqi	MA Demography
	4	36	M	Iraqi	MA Demography
	5	35	M	Saudi	MA Bio nanotechnology
	6	20	M	Yemeni	UG Civil Engineering
	7	40	M	Iraqi	MA Social Statistics
D	8	35	M	Iraqi	MA Social Statistics
	9	31	M	Iraqi	MA Demography
	10	44	M	Saudi	MA Social Statistics
B	11	28	M	Iraqi	MA Demography
	12	32	M	Iraqi	MA Social Statistics
	13	30	M	Iraqi	MA Social Statistics
	14	20	M	Chinese	UG Fashion Design
	15	35	M	Thai	MA Maritime Law
	16	43	M	Iraqi	MA Geography
	17	36	F	Chinese	MBA
	18	39	M	Iraqi	MA Social Statistics

R	19	24	F	Thai	MA Finance and Economics
	20	34	F	Saudi	PhD Fashion Design
	21	31	F	Saudi	MA Applied Linguistics
	22	23	M	Chinese	MA Energy and Sustainability
	23	23	M	Chinese	UG Fashion Design
	24	21	F	Libyan	UG Interior Design
S	25	38	M	Saudi	MA Education Leadership
	26	27	F	Iraqi	MA Software Engineering
	27	28	M	Iraqi	PhD Computer Science
	28	22	M	Jordanian	MA Commercial Law
	29	36	F	Iraqi	MA Electrical Engineering
	30	25	F	Saudi	MA Software Engineering
W	31	23	F	Chinese	UG Design
	32	24	M	Chinese	MA Graphic Design
	33	23	F	Chinese	MA Fashion Management
	34	23	F	Chinese	MA Education
	35	20	M	Chinese	MA Computer Science

Appendix D

The information about observed and interviewed participants

Student	Group	Gender	Semester	Nationality	Major	Observation & Interview
Ziver	B	M	1	Iraqi	MA Geography	11/02/2013 15/04/2013 21/05/2013
Tasleem	S	F	2	Saudi	MA Software Engineering	12/02/2013 15/03/2013 21/05/2013
Gazala	R	F	2	Saudi	MA Applied Linguistics	15/02/2013 15/03/2013 30/05/2013
Bob	R	M	2	Chinese	MA Energy and Sustainability	15/02/2013 11/03/2013 24/05/2013
Salar	A	M	1	Iraqi	MA Statistics	15/02/2013 14/04/2013 29/05/2013
Baran	B	M	1	Iraqi	MA Statistics	15/02/2013 11/03/2013 30/05/2013
Tase	S	F	2	Iraqi	MSc Electrical Engineering	19/02/2013 29/04/2013 Absent
Goran	B	M	1	Iraqi	MSc Demography	20/02/2013 15/04/2013 16/05/2013
Perwin	A	F	1	Iraqi	MSc Statistics	01/03/2013 10/04/2013 28/05/2013
Raman	D	M	1	Iraqi	MSc Statistics	26/02/2013 19/04/2013 24/05/2013

Appendix E

QUESTIONNAIRE

Dear Participant,

I would like to ask your opinions about **online language learning resources** and the **EAP Toolkit** which you use to develop your language learning. I would appreciate your help in answering the questions.

Please you give your email address if you are happy for me to contact you for further information for my research.

SERPIL MERI

SECTION 1: Background Information

Please tick or circle as appropriate.

1. Gender: □ Male □ Female

2. Age: ……3. **Email address**……

4. Nationality……..

5. Which **subject** will you study after the EAS course? ……

6. What **level**?

Please tick □ undergraduate □ master □ PhD

7. What was your **English score**?

IELTS: TOEFL: If others, please specify: ……

8. How long have you been **learning** English? ……

9. How long have you been **in the UK**……

10. When did you start the EAS course? .....

Appendix E

11. Did you use the **EAP Toolkit** before?

Please tick □ Yes □ No

12. Which are the main areas that you would like to **improve** during the EAS course (e.g. reading and critical thinking, listening and note-taking, academic writing, communication skills, vocabulary, learning skills, grammar)? Please add as many or as few as you like.

……

……

13. How would you rate your computer skills in general?

Please tick □ Extremely good □ Good □ Neither □ Bad

□ Extremely Bad

14. How would you rate your computer skills for academic purposes?

Please tick □ Extremely good □ Good □ Neither □ Bad

□ Extremely Bad

15. How many hours per a day on average do you use a computer including laptops?

Please tick □ 12 or more hours □ 9-11 hours □ 6-8 hours

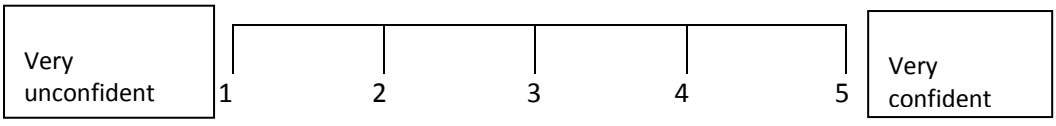
□ 4-5 hours □ 2-3 hours □ 0-1 hour

16. How many hours per a day on average do you use online applications (including tablets, smartphones, or others)?

Please tick □ 12 or more hours □ 9-11 hours □ 6-8 hours

□ 4-5 hours □ 2-3 hours □ 0-1 hour

17. How confident do you feel about using the computer?



SECTION 2: RATING THE EAP TOOLKIT AND ONLINE LANGUAGE LEARNING RESOURCES*

This questionnaire asks you to evaluate **online language learning resources** and the **English for Academic Purposes (EAP) Toolkit**. Please tick or circle as appropriate.

*adapted from Watson (2010)

EAP TOOLKIT

1. Do you use the **EAP Toolkit**?

□ If yes, please continue. □ If no, please go to question 22.

2. How often do you use the **EAP Toolkit**?

□ More than once a day □ Once a day □ Once or twice a week □ Only a few times

□ Never

3. On average, how long do you spend on **one** of the learning items in the **EAP Toolkit**? (e.g. Managing your time, Structuring your writing, Prediction skills for listening, Assessing yourself on articles etc.)

□ More than an hour □ 30 to 45 minutes □ Less than 20 minutes

4. Which folder of online materials in the **EAP Toolkit** do you use **the most** (tick only one)?

□ Academic Writing □ Reading & Critical Thinking □ Listening & Note-taking

□ Communication skills □ Vocabulary for academic purposes □ Learning skills

□ Grammar for academic purposes

5. Which folder of online materials in the **EAP Toolkit** do you find **the most useful** (tick only one)?

□ Academic Writing □ Reading & Critical Thinking □ Listening & Note-taking

□ Communication skills □ Vocabulary for academic purposes □ Learning skills

□ Grammar for academic purposes

Please give your views and place a tick as appropriate.

Statement	Not useful **1**	**2**	**3**	**4**	Very useful **5**
6. How would you rate the **EAP Toolkit**, in terms of usefulness, overall?					
7. How useful are the weblinks* in the online materials in the **EAP Toolkit**?					
8. How useful is the glossary link in the **EAP Toolkit**?					
9. How useful are the links to online dictionaries in the **EAP Toolkit**?					
10. How would you rate the feedback you received from the **EAP Toolkit** in general?					
11. How useful is the information about the activities in the **EAP Toolkit**?					
12. How would you rate the explanation for the activities in the **EAP Toolkit**?					

*links to websites giving extra information or practice in a particular learning point

13. How much do you think the online learning materials are helping you improve your academic English language skills?

Not much 1 2 3 4 5 Very much

14. How important is it for you to work without a teacher while doing the activities in the EAP Toolkit?

I cannot work on my own. 1 2 3 4 5 I can work very well on my own.

To what extent do you agree with the following statements? Please place a tick as appropriate.

1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree

The EAP Toolkit…	**1 (SD)**	**2 (D)**	**3 (N)**	**4 (A)**	**5 (SA)**
15. is **enjoyable** to use					
16. is **easy** to use as I receive enough ONLINE help.					
17. **helps** me to understand a learning point					
18. provides **good feedback** (e.g. answers/comments)					
19. **reinforces** what I learn.					

20. Do you have any problems using the online learning materials in the **EAP Toolkit**? If so, please describe them:

21. If you have any other thoughts about the **EAP Toolkit**, please write here.

ONLINE LANGUAGE LEARNING RESOURCES

22. Do you use **online language learning resources**?

Please tick □ If yes, please continue. □ If no, please go to Questionnaire 2.

23. Could you please specify which **online language learning resources** you use (e.g. BBC Learning English website, online dictionaries such as Macmillan, Cambridge or Oxford dictionaries, social networking websites such as Facebook or Renren, Livemocha, Englishtown or others)?

24. How often do you use **online language learning resources**?

Please tick □ More than once a day □ Once a day □ Once or twice a week

□ Only a few times □ Never

25. How would you rate **online language learning resources** you use for language learning purposes?

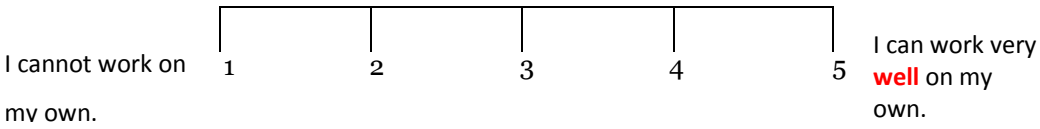
Not useful 1 2 3 4 5 Very useful

26. Do you receive any feedback (answers, comments or results) from **online language learning resources** you use?

Please tick □ If yes, please go to question 27. □ If no, please go to question 28.

27. How would you rate the feedback you receive in **online language learning resources** you use?

28. How important is it to work without a teacher while studying with the **online language learning resources** you use?



29. Describe a help you get from **online learning resources** you use.

30. What kind of feedback do you want to receive, and find useful while using **online learning resources**?

31. Do you have any problems in using **online learning resources**? If so, please describe them:

32. If you have any other thoughts about the usefulness or otherwise of **online learning resources**, please write here.

Appendix E

SECTION 3: ATTRIBUTION ITEMS*:

*adapted from Phillipson and Phillipson (2010)

This section is about how you feel about your own successes and failures when using online learning resources for independent language learning.

For each statement, please indicate whether you **agree** or **disagree**, or whether it is **not applicable** to you by using the following scale:

1. Strongly Disagree (SD) 2. Disagree (D) 3. Agree (A) 4. Strongly Agree (SD) 5. Not Applicable (N/A)

Statement	**1 (SD)**	**2 (D)**	**3 (A)**	**4 (SA)**	**5 (N/A)**
1. If I complete the activities in the **English for Academic Purposes (EAP) Toolkit** well, it is likely because I am just lucky.					
2. If I complete the activities in **online learning resources** I use, it is likely because I am just lucky.					
3. If I carry out the activities in the **EAP TOOLKIT** well, it is likely because I am very clever.					
4. If I carry out the activities in **online learning resources** well, it is likely because I am very clever.					
5. When I make progress in the activities in the **EAP TOOLKIT**, it is likely because, I work very hard at them.					
6. When I make progress in **online learning resources**, it is likely because I work very hard at them.					
7. When I do the activities in the **EAP TOOLKIT** well, it is likely because I have effective learning methods.					
8. When I do the activities in **online learning resources**, it is likely because I have effective learning methods.					
9. When I do not do the activities well in the **EAP TOOLKIT**, it is likely because I am unlucky.					
10. When I do not do the activities well in **online learning resources**, it is likely because I am unlucky.					
11. When I do the activities in the **EAP TOOLKIT** poorly, it is likely because I am not good at them.					
12. When I do the activities in **online learning resources**, it is likely because I am not good at them.					
13. When I do not finish the activities in the **EAP TOOLKIT**, it is likely because I do not work very hard.					

14. When I do not finish the activities in **online learning resources,** it is likely because I do not work very hard.					
15. When I do not make progress in the activities in the **EAP TOOLKIT**, it is likely because I do not have useful learning methods in studying.					
16. When I do not make progress in the activities in **online learning resources**, it is likely because I do not have useful learning methods in studying.					
17. If I complete the activities in the **EAP TOOLKIT** well, it is likely because teaching I have received in the class helps me.					
18. If I complete the activities in **online learning resources** well, it is likely teaching I have received in the class helps me.					
19. If I do the activities in **online learning resources**, it is likely because the methods I have learned in the class help me.					
20. If I do the activities in the **EAP TOOLKIT** well, it is likely because the methods I have learned in the class help me.					

Appendix E

SECTION 4: SELF-EFFICACY ITEMS

This questionnaire measures general self-efficacy which is your belief about how you see yourself as an online language learner.

Please rate how confident you are about the following statements. To indicate your answer, please place a tick where appropriate in order to show whether you **agree** or **disagree** with the following statements, or whether it is **not applicable** to you.

1. Strongly Disagree (SD) 2. Disagree (D) 3. Agree (A) 4. Strongly Agree (SD) 5. Not Applicable (N/A)

a) I feel confident when	**1 SD**	**2 D**	**3 A**	**4 SA**	**5 N/A**
1. I read articles, newspapers and texts **online**.					
2. I express my opinions **online**.					
3. I receive feedback from **online learning resources**.					
4. **Online learning resources** correct me.					
5. The **EAP TOOLKIT** corrects me.					
6. The **EAP TOOLKIT** gives me feedback.					
7. The **EAP TOOLKIT** supports my language learning.					
8. I read articles and texts in **class**.					
9. I express my opinions in **class**.					
10. I receive comments from my tutors in the **class**.					
11. My tutors correct me in **class**.					
12. My tutors give me feedback in **class**.					
13. My tutors support my language learning in **class**.					

1. Strongly Disagree (SD) 2. Disagree (D) 3. Agree (A) 4. Strongly Agree (SD) 5. Not Applicable (N/A)

b) I believe that	**1 SD**	**2 D**	**3 A**	**4 SA**	**5 N/A**
1. Learning English **online** is easy.					
2. Learning English **online** is fun.					
3. I can express myself in English **online** well.					

4. My performance improves when I receive feedback from **online learning resources**.					
5. My interest in language learning increases when I receive feedback from **online learning resources**.					
6. The support I receive in **online learning resources** makes me aware of how to learn on my own.					
7. The feedback I receive from the **EAP TOOLKIT** makes me aware of how to learn on my own.					
8. Learning English in **class** is easy.					
9. Learning English in **class** is fun.					
10. I can express myself in English in **class** freely.					
11. My performance improves when the tutors give feedback in **class**.					
12. My interest in language learning increases when I receive feedback from my tutors in **class**.					
13. The comments I receive from my tutors in the **class** make me aware of how to learn on my own.					
14. The feedback I receive from my tutors in the **class** makes me aware of how to learn on my own.					

Appendix E

SECTION 5: LEARNER AUTONOMY AND SUPPORT SCALE ITEMS

The following statements are related to the beliefs about the relationship between independent learning and the support you receive in **online learning resources** and **the English for Academic Purposes (EAP) Toolkit**. Please rate how well-supported you think you are while learning the language online. To indicate your answer, please place a tick where appropriate in order to show whether you **agree** or **disagree** with the following statements, or whether it is **not applicable** to you.

1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree 5. Not Applicable

Using online learning resources	**1 SD**	**2 D**	**3 A**	**4 SA**	**5 N/A**
1. helps me to become a more independent learner.					
2. gives me a better opportunity to learn in my own way.					
3. helps me to extend my skills for learning the language outside the classroom.					
4. supports me to explore the new concepts in language learning.					
5. gives me the opportunity to learn the language independently with the help of the support.					
6. makes me aware of my language learning.					

Using the English for Academic Purposes (EAP) Toolkit	**1 SD**	**2 D**	**3 A**	**4 SA**	**5 N/A**
1. helps me to learn the language independently.					
2. supports me to learn the language independently as I receive feedback from the activities.					
3. makes me aware of my own language learning.					
4. helps me to develop the skills of my own in learning the language.					
5. helps me to improve the strategy to learn the language on my own.					

Please answer the following questions regarding your independent language learning in online environments.

1. Do you think the comments, correction or feedback you receive from **online learning resources** help you to learn English? If yes, how? If no, why not?

2. Do you think the feedback from the **EAP Toolkit**s helps you to learn English? If so, why? If no, why not?

3. How do you feel about the support the **EAP Toolkit** gives you in comparison with the classroom? Please give examples.

4. How do you feel about the support **online learning resources** give you in comparison with the classroom? Please give examples.

5. How could the **EAP Toolkit** be designed to support your learning better?

6. How could online learning resources be designed to support your language learning better?

Many thanks for your help with my research!

Appendix F

INTERVIEW QUESTIONS FOR STUDENTS:

A) After the observation:

1. How do you feel about your experience in doing the activity?
2. What did you expect to learn before doing the activity?
3. After finishing, did you learn what you expected?
4. Did you learn anything which you did not expect to learn?

B) Interview Questions about the EAP Toolkit

1. Have you used the EAP Toolkit before?
2. What do you think of the EAP Toolkit in general?
3. What do you think of the activities in the EAP Toolkit?
4. What kind of things helped you to learn while you were doing the activity in the Toolkit?
5. What sort of feedback did you receive from the Toolkits?
6. What do you think of the feedback you received from the Toolkit?
7. In what way was it helpful or unhelpful?
8. If you used the web links in the online materials, the glossary link or the links to online dictionaries, what do you think of those links, and how useful are they?
9. How could that tool be improved?
10. Do you feel that you will need a level of support from the tutor or the EAP Toolkit to study English?
11. Why were you successful or unsuccessful while doing the activity in the EAP Toolkit?
12. How does the support from the Toolkit affect your belief and confidence in your own learning? How confident do you feel? Did it make you feel more confident?

Appendix F

C) Interview Questions about the Online Language Learning Resources

1. While learning a language, what kind of other online resources do you use?
2. While kind of things helps you to learn while you are doing the activities in the online learning resources?
3. What sort of feedback do you receive from the online learning resources?
4. What do you think of the feedback you receive from the online learning resources?
5. In what way is it helpful or unhelpful?
6. How could those online learning resources be improved?
7. Do you feel that you need a level of support from the tutor or the online learning resources to study English?
8. Why are successful or unsuccessful while doing the activities/tasks in the online learning resources?
9. How does the support from online language learning resources affect your belief and confidence in your own learning? How confident do you feel? Did it make you feel more confident?

Appendix G

CONSENT FORM

Study title: Exploring the effectiveness of online scaffolded self-access resources by looking at language learners' attributions, self-efficacy and autonomy

Researcher name: Serpil MERI

Staff/Student number: 24354856

ERGO reference number: 5096

Please initial the box(es) if you agree with the statement(s):

I agree to take part in this research project and agree for my data to be used for the purpose of this study	☐
I have read and understood the information sheet (date) and have had the opportunity to ask questions about the study.	☐
I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected	☐

Data Protection

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name)……

Signature of participant……..

Date……

Appendix H

Participant Information Sheet (Face to Face) for the Pilot Study

Study Title: Exploring the effectiveness of online scaffolded self-access resources by looking at language learners' attributions, self-efficacy and autonomy

Researcher: Serpil MERI **Ethics number:** 5096

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

My name is Serpil Meri. I am currently a student at the University of Southampton studying for PhD. As part of this award, I am required to undertake a project. I am interested in technology-based learning and independent study. Therefore, I have decided to explore the effectiveness of online scaffolded self-access resources (EAP Toolkit and blog) by looking at language learners' attributions, self-efficacy and autonomy. The Research Sponsor is the University of Southampton.

Why have I been chosen? As you are using EAP Toolkits and blogs for language learning in the course, you have been chosen to participate in this study.

What will happen to me if I take part?

On 23rd July, participants will be expected to fill out the questionnaires. It will take 15 or 20 minutes. The questionnaire consists of 4 parts such as personal information, learners attributions for successes and failures, self-confidence and self-beliefs, and the relation between independent learning and support. If needed, 3 volunteer students will be interviewed and observed. You may be contacted at a later time for follow-up information. Data from that study will help my main study as it will show the shortage of the study if possible. The amendments and developments will be made according to the results and by help of your cooperation.

Are there any benefits in my taking part?

Taking part in the study will be beneficial to you in that you will, hopefully, be more aware of your language learning in online scaffolded learning environments, viewing the attributions for successes and failures, and your confidence and beliefs of online scaffolded language learning. Also, it will be beneficial to other learners and course designers with the result of the study.

Are there any risks involved? There will be no risk when you participate in the study.

Will my participation be confidential? I ensure my compliance with the University policy, and the information will be stored and remain confidential. Data will be kept on a password protected computer. Anonymity is assured.

What happens if I change my mind? You have the right to withdraw from the study at any time.

What happens if something goes wrong? In the unlikely case of concern or complaint, you can contact the Chair of the Faculty Ethics Committee, Prof Rosamond Mitchell (02380592231, rfm3@soton.ac.uk.

Where can I get more information? If you need any more information, you contact me with this email address: sm17g10@soton.ac.uk

Appendix I

Participant Information Sheet for the Main Study

Study Title: Exploring the effectiveness of online scaffolded self-access resources by looking at language learners' attributions, self-efficacy and autonomy

Researcher: Serpil MERI **Ethics number**: 5096

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

My name is Serpil Meri. I am currently a student at the University of Southampton studying for PhD. As part of this award, I am required to undertake a project. I am interested in technology-based learning and independent study. Therefore, I have decided to explore the effectiveness of online scaffolded self-access resources (e.g. EAP Toolkit) by looking at language learners' attributions, self-efficacy and autonomy. The Research Sponsor is the University of Southampton.

Why have I been chosen?

As you are supported to learn a language in online environments inside or outside the course and you are currently in the EAS course at the University of Southampton, you have been chosen to participate in this study.

What will happen to me if I take part?

You will be asked to fill out pre and post questionnaires in February and May, respectively. Both of the questionnaires consist of 5 parts such as personal information, rating the EAP Toolkit and online learning resources, learners attributions for successes and failures, self-confidence and self-beliefs, and the relation between independent learning and support. It takes 30 minutes. After that, 10 volunteer students will be interviewed, observed and asked to keep a diary until the end of May. Interviewing will be made in order to gain a deeper understanding of the perceptions of the effectiveness of online scaffolded resources such as EAP Toolkit and other online learning resources. It takes just 10-15 minutes. In the observation, it is anticipated that participants will be audio/video recorded, and required to what and why they will be doing on the computer or laptop. In keeping a diary, it will be required to write down experiences and opinions on online learning environments. In addition, at the end of May, the comments made in the diaries will be collected and looked at by the researcher.

Are there any benefits in my taking part?

Taking part in the study will be beneficial to you in that you will, hopefully, be more aware of your language learning in online scaffolded learning environments, viewing the attributions for successes and failures, and your confidence and beliefs of online scaffolded language learning. You will develop your English by attending to work online with the EAP Toolkit. Also, it will be beneficial to other learners and course designers with the result of the study.

Are there any risks involved?

There will be no risk when you participate in the study.

Will my participation be confidential?

I ensure my compliance with the University policy, and the information will be stored and remain confidential. Data will be kept on a password protected computer. Anonymity is assured.

What happens if I change my mind?

You have the right to withdraw from the study at any time without any penalty.

What happens if something goes wrong?

In the unlikely case of concern or complaint, you can contact the Chair of the Faculty Ethics Committee, Prof Rosamond Mitchell (02380592231, rfm3@soton.ac.uk.

Where can I get more information?

If you need any more information, you contact me with this email address: sm17g10@soton.ac.uk.

Appendix J

1. The Case Study of One Participant, Salar

1.1. Observation Results

1.1.1. Salar's performance in the Toolkit in Observation 1

After the observer told Salar to do the activity, he started doing the activity from the introduction of 'introduction to vocabulary learning'. He read: 'OK. The first one is EAP Toolkit. Introducing, Introduction to vocabulary learning. As you continue to improve your use of English,…' In the meantime, I reminded him of wearing a headphone, and then, he did that. After wearing it, he showed that he liked it by saying 'WOW!', which probably indicates that he felt happier and more comfortable, as wearing the headphone gave him more isolation from outside (?). After that, he guided himself to follow the Toolkit: 'OK. When you click on the introduction to vocabulary learning within the EAP Toolkit, I just read the instruction first'. Meanwhile, he came closer to the computer screen to read better. While reading the instruction, he touched his chin and tracked with his eyes: 'As you continue to improve your use of English, you will want to expand your knowledge of both general and subject-specific vocabulary. In new contexts you may come across words that you are unfamiliar with, so it is important to use appropriate strategies in your approach to vocabulary learning. In these activities you will practise identifying which words might be useful to learn to use productively and consider learning vocabulary by topic group. Activity 1: Identifying which words to learn'.

After reading the information/explanation about the learning object, he told himself to follow the instructions. 'We have to follow the instructions. A distinction is often made between receptive vocabulary and productive vocabulary. Receptive vocabulary is a term used to refer to words which you recognise and understand the meaning of when you listen or read, but which you may not yet be able to use effectively in your own speech or writing. In other words, you are not yet able to 'produce' the vocabulary yourself. Productive vocabulary is a term used to refer to words which you recognise and understand the meaning of and that you can use effectively in your own speech or writing. In other words, you can 'produce' the vocabulary yourself. You probably have a large receptive vocabulary in English but a much smaller productive vocabulary. In this activity you are going to explore the vocabulary in a text on Natural Approaches to Medical Treatment (Barker, 2004) to identify … Baker, this is the activity now'. He clicked on Baker, 2004, and thought that he was directed to the activity, actually it showed the reference section. Therefore, he skipped the first activity unintentionally. Therefore, he could not benefit from technical

scaffolding to read the text and be supported to accomplish the activity, correspondingly. He spent 2 minutes 15 seconds to read the introduction and explanation/information about the activity 1.

As he thought he was directed to the questions, he started reading the questions: 'asset, capital, creditor, dividend, security, it is medicine. Behaviour, cognition, egoism, stimulus, trait, learning, where is learning? Psychology, yeah psychology'. For the first question, he chose the answer from the drop list, whereas he guessed the next question without looking at the drop list as in 'learning'. However, he selected the correct topic in the drop list after clicking on the list and smiled. And he continued: 'Jury, acquit, plaintiff… it is very new, this is very new, I can't, OK I will leave it. I will go to another one'. As he did not know the meaning of the words in the question, he omitted it. He went on the next question: 'Wound, diagnose, pathology, immunise, surgery. OK. This is medicine as well.' He thought the answer of that question as medicine, but did not select it. Then he moved the mouse to read the instruction: 'Select a topic that links the items in each set of words below from each dropdown list. Then read the feedback. From the instruction, there is a way to use two times'. He wanted to be sure if he could use the same topic twice while answering the questions. Then, he moved the mouse to and skimmed the information/explanation for the activity 2: very quickly 'Learning words by topic…' He went back to the question and selected the same topic: 'It is medicine. Fibre, rayon, weave, yarn. From the fibre it is'. He clicked on the dropdown list, but he could not answer it. And he clicked on 'show feedback' unintentionally, but did not read it. He went on the next question: 'ecosystem, acid rain, biodiversity, non-renewable resource, biodegradable. I found it hard. It is very hard.' He leaned back and talked about his feelings about its hardship while smiling. Then, he closed the feedback section and changed some answers: 'Ecology. I will choose this one, ecology.. This is textiles, I am sure. This one is ecology, banking, acid rain, biodiversity, psychology. Wow! Now, feedback. Here are… Oh the first one is banking. Asset, where is asset, I thought it is. The second one is right. The law, OK. Textiles, I got three, how much, one, two, three, four, five, six. OK. 50% good!' He felt happy to see the feedback and started checking if his answers were right, and then evaluated himself. Feedback helps him to assess and evaluate himself and makes him happy to see his success. He finished the activity in about 4 minutes.

As it was the first time for the observation, he was confused what to do after finishing the activity, so asked: 'What will I do? How will I go back?' I showed how to go back and continue within the LOs. He said: 'OK'. He skipped the introduction for the next LO and started reading the information/explanation for the activity 1 without reading the introduction: 'In this activity you are going to practice identifying the 'base' form of a word. Good. This was my wrong thing. I got w, wrong form'. While saying that, he smiled and looked happy to see that. He understood that he

needed to carry out that activity. It is a kind of help for him to improve his learning; so, he went to the question: 'Decide what the base word for each of the three following groups of words is and write it in the text area provided. Then read the feedback. Decide, decision (he writes decision in text area.). Managerial, management, unmanageable, manager, mismanage, management. Accounts. So feedback for each one. This represents. Decide, haaa, now, now, I got it. The base word is verb. Manage. Account, I am right with this one. Yeah!' After answering all of the questions, he checked the feedback instead of looking at the feedback after each question. Feedback helps him to see and understand his failure. He looked happy to see that. Also, he assessed himself by saying if he failed or succeeded. He finished the activity in 3 minutes and went to the next activity.

He skipped reading the information/explanation for the activity: 'Extending the base forms of words. Think about the base word negotiate and note any words you can think of that are related to and/or formed from this base word'. Then read feedback. Negotiation, nowadays people negotiation, I don't know why. Negotiable, no, negotiated, show feedback. Negotiation, negotiator, renegotiate…., wow I got only two. Ohh, I know this one as well'. After looking at feedback, he smiled and laughed as he just got two correct ones. He understood how to add more words. Feedback assisted him to see his lack in finding the correct forms and remembering the other forms. Then, he went to the next activity; however, he read the feedback of the previous negotiation: 'Choosing the right word for a specific context. Now, negotiation… negotiable….' He showed his understanding: 'OK, OK, OK'. He finished it in 1 minute.

He skipped reading the information/explanation and instruction about the activity, and went to the questions: 'Delivery of an effective….' However, he then went to the instruction: 'Complete the following sentences with appropriate forms of the base words given. Then read the feedback. Delivery of an effective sales….. Delivery of an effective sales deliveries is critical to success in the world market. Let's see. Service. Ahha, the base is here, I am not understanding the question'. He failed in the first question and felt unhappy, looked sad; however, after the feedback, he understood what the question required him to. Then, he looked fine and went to the next question: 'Advert, Companies like Nissan and Nordstrom were persuaded to advertize before, advertize before… yeah, I got this, I got American one with z. It is OK'. He checked and compared his spelling with the answer. He went to the next activity: 'Employ, According to a recent authoritative study conducted by the Centre for Workforce Development, up to 70% of what ___ know about their jobs they learn informally from the people they work with. Employees, yeah!' After feedback, he saw that he was right, and then, continued: 'Attorneys for General Motors Corporation and the United Auto Workers Union have agreed to start arbitration hearings next Wednesday on the ____of two bitter labour disputes. Attorneys for General Motors Corporation

and the United Auto Workers Union have agreed to start arbitration hearings next Wednesday on the, legislation, legacy, legalizing, maybe work. Legality, Ohhohoho!' He read the question twice. He tried the word forms of legal. After feedback, he was surprised and sighed as none of his guess was correct, and then went to the next question: 'Fees from credit cards, service charges, mortgage banking and trading also rose in the second quarter, while……. Fees from credit cards, service charges, mortgage banking and trading also rose in the second quarter, while….. management, managed, nice'. He read the question twice. After the feedback, he saw his mistake. But he looked tired and a bit unhappy. His motivation seemed to decrease. 'The price index is also expected to rise…. Margins, what is wrong with one. The price index is also expected to rise marginally to around 12.5 per cent, but the trade balance will probably slip into deficit in the second half of the year. Yeah, it should be adverb'. After the feedback, he saw his mistake and came forward to the screen to see why he failed, but then understood and corrected himself. After finishing, he went back to the folder of vocabulary for academic purposes: 'I think I finish it; I will go back to another one. It is OK. I think you are happy, to do another one.' He looked at me and asked if he would continue, and I told him to continue. He finished the activity in 5 minutes.

He omitted the next LO and went to the fourth one: 'Language for classifying. Instruction. Read each extract and identify any examples of classifying language it contains. Select the classifying language and click the 'bold' button to highlight it. You can choose 'normal' to remove the highlighting from a selection. Then compare your selections with those in the feedback. Read each extract and identify any examples of classifying language it contains'. After reading the instruction, he read the first sentence of the section. Then, he asked the question to himself about classifying, and went to the information/explanation to understand it: 'Classifying, what is classifying? In this activity you are going to read some short extracts from academic texts taken from different subject areas and identify examples of structures and vocabulary used for classifying.' Then, he had time to do just one question: 'There are a number of different types of stars….' He did not read aloud. After he kept silent, he made different types bold and clicked on the feedback: 'Yeah, we got number one'. He did not read all of the feedback; so he did not see that he highlighted just one instead of two. After that, he went to the next question; however, time finished: 'Beta-blockers… Time finishes. Good!'

Consequently, as it is the first experience to do the activity in the present study, he was affected, as exemplified in the first activity, where he skipped doing the activity by accident. Also, he benefited from the section of introduction, information/explanation and instruction in the first activity. However, it is obvious that he did not prefer to use all of them after he was familiar with the topic. What is more, feedback had a substantial impact on his learning and motivation.

1.1.2. Salar's performance in the Toolkit in Observation 2

After I showed which activity he would start, he confirmed that he understood it: 'Yeah! The first task is finding out about plagiarism. Plagiarism, I know it well.' He read the introduction about LO, which helped him to remember the topic, and then, he continued to read it: 'All student writers should be aware of the importance of not plagiarising the work of another writer. Warnings about plagiarism are frequently given in the context of academic study and, in some departments, students may be required to sign a declaration that they have not plagiarised when handing in their written assignments. In these activities you will explore what is meant by the term 'plagiarism'. You will listen to a tutor talking about the causes of plagiarism, reflect on some different scenarios to decide what you can and what you can't do, and consider why plagiarism is a problem in an academic context. OK. Let's go to the, video, where is the video? I can't find it. You will listen to a tutor…' He was confused as he thought he would listen to the video after the introduction. He looked over the activity, but did not see the video. Then, he read the sentence about what he would do. He continued to read the information/explanation: 'Activity 1: What is plagiarism? What do you understand the act of committing plagiarism to mean?' Then, without stopping, he went to the instruction: 'Instruction. Read these statements and select the checkboxes next to any that you think explain what the act of plagiarism means. Then read the feedback. Plagiarism is...

copying another student's work

cheating by pretending someone else's original ideas are your own

not crediting your sources in your written assignments

paraphrasing ideas you have read without acknowledgement

stealing someone else's intellectual property

literary theft.' He looked over the questions and replied: 'Not crediting…' He clicked on the feedback and kept silent. I reminded him of speaking: 'I put it only one point. Maybe, paraphrasing ideas you have read without acknowledgement. Ok all of this.' He corrected himself after seeing the feedback. Feedback helped him to understand his mistakes and correct himself. He finished that part in 2.30 minutes.

After the activity 1, he went to the next activity instantly: 'Activity 2: What are the causes of plagiarism? Some plagiarism happens because a writer deliberately attempts to deceive their reader into thinking that they have written what is in fact someone else's work. One serious form of this might be a student buying an essay from an online essay bank and submitting it to their

tutor as their own work. However, there may be other reasons why plagiarism occurs.' He read both the information/explanation and instruction sections: 'Instruction. Listen to this tutor talking about why a student might plagiarise unintentionally. Select the checkboxes next to any causes that you hear mentioned. Then read the feedback. OK.' By saying OK, he showed he understood what he would do. Then he clicked on the audio to listen. While listening, he ticked and answered the questions without saying anything. Before seeing the feedback, he spoke the reply: 'OK, main causes. Lack of confidence, lack of time, lack of study skills. Let's see the feedback. OK. Lack of confidence, lack of time, lack of study skills, lack of understanding, WOW. I missed it. OK.' He did not read all of the feedback, but checked the answers. Feedback provided him to see his mistakes and assess himself. He finished that part in 5 minutes.

He went to the next activity: 'Let's go to the activity 3. Deciding what you can and can't do. While you may be aware of the general rules concerning plagiarism, there may be situations where you are not sure what you can or can't do. Plagiarism committed by students can be unintentional but ignorance is no defence. In this activity you are going to consider some typical scenarios in which the problem of plagiarism might arise. Instruction. Consider each of these four situations and decide which ones represent cheating. Select the 'cheating' button for these and select the 'acceptable' button for those which are not cheating. Then read the feedback.' He read both the information/explanation and instruction about the activity without stopping and solved the questions: 'Two students write an essay together and submit the same piece of work as their own. Cheating, of course! Feedback. This is called collusion. We know what is collusion, and would be regarded as unacceptable... Good. A student copies several short paragraphs from the web, links them together with his/her own words without stating where they came from. Cheating as well, because sourcing got. This is clear plagiarism, yeah! A student quotes a sentence without quotation marks or reference. Cheating, of course! This may be unintentional but could still be counted as plagiarism and so must be avoided. The last one, Two students work together on an assignment to discuss the topic and read each other's writing and submit separate texts. Read each other's writing, I am not sure about this one. They can read each other's writing. Yeah, acceptable. This is collaboration and is acceptable, and may even be encouraged on some courses. Good.' That he saw his correct answers in the feedback made him feel good and give motivational scaffolding (Good!) to himself. He accomplished that part in 2.30 minutes.

He went to the next activity: 'Activity 4: Why is plagiarism a problem? As well as the fact that plagiarism is wrong, educational institutions, in particular, have to take the issue of plagiarism seriously, otherwise the value of their courses may be compromised. Listen to this audio in which a tutor talks about why plagiarism is a problem for universities and colleges. Listen and make notes of the reasons in the text area provided. Then, Listen and make notes of the reasons in the

text area provided. Then read the feedback.' He read the information and instruction about the activity. He clicked on the audio to listen to the tutor. While listening, he answered both of the questions. Then he read what he had written for replies: 'There is a problem with the qualification and unfair marking. And how is it possible to know when someone is plagiarising? Is voices you have and others' voices, by, by searching via Internet and final one, a software that some of universities have, has. OK.' After he was sure about his replies, he looked at the feedback: 'Let's see the feedback. • Tutors have to read essays and give marks which form part of a final qualification. Then the qualification, we have. They need to be sure that marks are awarded accurately for students' work according to stated criteria. Plagiarised work can give a false impression of someone's abilities. Honest students should not lose out. Someone who submits their own writing, even with mistakes, should not receive a lower mark than someone who copies and submits something without errors. OK. Let's the other feedback, how to know. Plagiarism is 'easily' detected in many cases, especially in the case of non-native writers of English. Tutors can very easily spot where a student has incorporated text from a native-speaking writer into their own essay. In addition to spotting something uneven in the style, other methods are used: • searching for text on the Internet. I put it voices, others' voices, OK.' He compared his answers with the feedback, and then, continued to read the rest of the feedback: '• using detection software. Many universities now use software systems which can make comparisons between students' essays and check them against a very large database of essays and websites around the world. OK, so we have to.' He finished that part in 6 minutes. 'You may wish to check, OK, we finish.'

Briefly, feedback still had an important impact on not only his learning but also motivation. Also, he benefited from scaffolding more than before in terms of the sections as scaffolders. In the meantime, after his success, he seemed that he scaffolded himself motivationally by saying, for instance, good, and became more motivated for the next tasks.

1.1.3. Salar's performance in the Toolkit in Observation 3

In the last observation, participants were told that they were free to choose any activity they wished. Therefore, he looked at the folders determinedly: 'OK, we have today reading and critical thinking. Introduction to reading, introduction to scanning. Reading to identify main points. That is my point.' After choosing the folder, he scrolled down the mouse to decide which LO to start, and then, saw a LO in which he needed to develop, which shows that he is autonomous to determine his gap and improve his learning. He started reading the introduction: 'An important academic reading skill is being able to recognise the main points that a text contains. Texts contain a mixture of main points and supporting points. Supporting points can take the form of

elaboration, examples and/or evidence for a main point. Associated with this skill is having the ability to distinguish between what a writer presents as a fact or as an opinion. In these activities you will practise reading to identify the main points of a text and distinguishing between different types of supporting information. In this activity you are going to use a student essay on security issues concerned with crime and terrorism in the twenty-first century to practise recognising main and supporting points. OK.' After reading the explanation about the activity, he showed his understanding by saying OK; then, continued the instruction: 'Open and read the student essay, selecting the best answers for each of the questions that follow. Then read the feedback. Crime, OK.' He clicked on hyperlink and read the pdf. He had the ability to use the technical support in the activity. 'Essay question: Criminals and terrorists seem to be able to travel around the world at will and the police in most countries are unable to prevent many serious crimes and acts of terrorism as a result. Discuss why this might be so and how this problem is being addressed. Finally, evaluate the current measures being taken to address the problem. Introduction. During the twentieth century, the world seemed to shrink: globalisation meant that… we will choose the main point. … This situation is set to continue into the twenty first century and while it has clearly had many beneficial effects, it is becoming increasingly evident that there are some negative impacts on the security of the world. The aim of this essay is to clarify what problems have arisen, outline the counter measures currently being adopted and assess their likely effectiveness. OK. Loss of global security. Criminals and terrorists are among those who have profited from this situation, and they have quickly learned how to organise and commit international crimes and how to carry out terrorist activities around the world… Ok. Mafia-style crime rings operate in many of the world's major cities now. Their illegal business operations include drug smuggling, running prostitution rackets and money laundering. The increase in travel and movement between countries allows them to smuggle prostitutes and drugs into countries illegally… Addressing the problem. Ways of countering these kinds of undesirable criminal activities are being investigated and in some cases, implemented. Immigration points at London Heathrow airport and Amsterdam airport are already introducing iris pattern recognition. This is a method of carrying out the biometric scanning of passengers electronically which… With a view to detecting the illegal rackets of mafia-style gangs in the major metropolitan centres, special police units are working undercover to infiltrate the gangs themselves. Dawn raids on premises used by such gangs are then made and the criminals brought to justice…Effectiveness of the Counter Measures. New biometric authentication technologies are being employed by security forces with ever increasing effectiveness, and as databases expand to include larger proportions of the population, it will become more and more difficult for a criminal to slip through the net. However, at present the use of such aids as iris pattern recognition systems is not commonplace although airports are increasingly making use of them. Although the level of international cooperation

existing between police forces in different countries has undoubtedly increased recently, it has not yet proven wholly successful. This is because the exchange of highly sensitive information about internal security matters is still a difficult area which requires a great deal of trust between the countries involved… Conclusion. From the discussion above it is evident that a new kind of problem has developed in the world as a result of the vast improvement in travel and communication. Despite the fact that counter measures are already being considered and in a few instances, implemented, these still need to be supported by more resources and manpower hours to tackle the growing problems. The success of our initial efforts to combat these new problems will only become apparent at some later date in the future. Reference..' While reading the pdf, he sometimes skimmed and then, went back to the question: 'We go back to that. Which main problem, discussed by the essay, is first presented in the introduction? That globalisation has made the world shrink. That globalisation has resulted in security problems. That globalisation has resulted in increased travel by criminals around the world. I think second one. Let's see. Security problems. OK. In the second paragraph, what kind of information is used to support the writer's claim that criminals and terrorists have been able to take advantage of this situation? What kind of information is used to support the writer's claim that criminals and terrorists have been able to take advantage of this situation? Examples of how criminals are now able to travel freely. Statistical evidence of criminal benefit. Example stories to illustrate international crime. I am not sure. Let's see, examples, yeah freely. What kind of information is used to support the point about Mafia-style crime rings? Evidence of where such crime rings operate. Examples of activities such crime rings are involved in. Examples of how the authorities are dealing with these crime rings. Oh, I am not sure about this. Examples of what.. Yeah we got three from three, no, two left. What is the main point being expressed in paragraph 7? Where is the paragraph 7? 1,2,3,4,5,6,7. Although the level of international cooperation existing between police forces in different countries has undoubtedly increased recently, it has not yet proven wholly successful. This is because the exchange of highly sensitive information about internal security matters is still a difficult area which requires a great deal of trust between the countries involved. Terrorists are able to benefit from this situation and, in some cases, escape detection until it is too late. From a positive perspective, the cooperation is in its early stages and it can be presumed that with time it will achieve a higher degree of effectiveness. OK. International cooperation between police forces has not been totally successful. International cooperation between police forces will improve. International cooperation between police forces has increased recently. Yeah. What kind of information does the writer use to support the argument that cooperation between police forces has not yet reached the desirable level? Why it is limited, yeah why it is limited. OK. We got 5 from 5. That is good point.' He scrolled down and up to see his corrects and mistakes. Feedback

helped him to assess, monitor and evaluate himself and his learning and give him motivational scaffolding. He finished that part in 7.30 minutes.

He skipped reading the information/explanation about the activity and went to the instruction: ‘Open and read the essay on crime and terrorism again and decide if the following statements represent fact or the writer's opinion. Select your answers and then note the evidence for your answer in the text area provided. Then read the feedback. Interpol has difficulty preventing criminals from travelling wherever they wish. Interpol, where is Interpol? Fact yeah. Evidence: 'This is partly because paper passports, which are used for international travel, can be easily forged. With a false passport, criminals and terrorists can travel wherever they wish.' He went to the pdf to find the answer, then replied. Feedback confirmed he was right. After that, he went to the next question: ‘Technologies that enable voice recognition and DNA profile matching will help maintain security in the future. Which was Holland and Heathrow. New biometric authentication technologies are being employed by security forces with ever increasing effectiveness, and as databases expand to include larger... Fact. Opinion. I am not sure. Other forms of identification such as voice recognition and DNA profile matching may also have a role’… Yeah. The last one, international cooperation between police forces in different countries will work more effectively with time.’ He went to the page where he opened the pdf, and read it. ‘Opinion. Although the level of international cooperation existing between police forces in different… Yeah it is fact, fact, fact. What is the time, it is important. In its early stages and it can be presumed that with time... Opinion. Yeah it is opinion. Because it can be presumed.’ He answered questions and checked each feedback, one by one. Rather than noting the evidence, he just went back to the pdf to see and read it in the feedback. After that he said: ‘So done this activity. We need to select another one.’ He decided that he had accomplished and planned to go to another LO or folder. He finished that part in 3 minutes.

He decided to go to another folder: ‘Let’s go to the writing one. Academic writing. OK. Structuring your writing, using examples to support statements, expressing fact and opinion in writing. Let’s do that one.’ After scrolling down and reading the LOs in the folder, he chose the fourth one. He started reading the introduction: ‘In formal writing contexts, most types of statement are expected to be supported by detail. These include opinions or general statements, which require support if they are to stand up to critical scrutiny. If factual evidence or examples are lacking the reader may be less convinced by the ideas and possibly consider that the writer's treatment of the topic is superficial. However, not all statements need to be supported in a formal piece of writing. Unlike opinions, general facts are more likely to be accepted by the reader without support. For this reason, you need to be aware of how to separate fact from opinion for formal writing purposes.’ He followed the information/explanation and instruction of the activity 1: ‘Activity 1:

Defining fact and opinion. You are going to consider how you understand the terms 'fact' and 'opinion'. How would you define a fact and an opinion? Write a simple definition for each of them with an example in the boxes below and then open the feedback to compare your answer. A fact is, is been supported by data by statistics or arguments. Example: the percentage of fertility, fertility... opinion to consider something may be happen or presuming it. Example: the mortality may be, may will be reach the highest level in the future. Feedback. A fact is an objective statement containing a general truth about something. For example: Average life expectancy is rising faster in developed countries than in developing ones. Yes that is general. An opinion is a subjective statement based on a person's beliefs or attitudes about something.' He read all of the feedback and emphasised the word 'general' to show why it is evidence. Although feedback did not highlight the word, he drew attention to it. He finished that part in 4 minutes.

He went to the next activity and read the information/explanation: 'Distinguishing between fact and opinion. You are going to look at some example sentences featuring both facts and opinions and consider some of the issues that may arise when distinguishing fact from opinion. It is not always easy to distinguish fact from opinion. Consider these examples and decide if they contain a fact or an opinion. Select your answer by clicking on the 'Fact' or 'Opinion' box next to each statement. Then read the feedback. Margaret Thatcher used to be the Prime Minister of Britain. Because it is a general idea, fact. Fact, OK. It is clearly fact. Education should be free for all. This is opinion, not everyone's opinion. It is opinion can be challenged by others. Until the 19th century, solid blocks of tea were used as money in Siberia. It is fact, maybe some statistics. Fact, yeah good. In the UK, football is less popular now than it used to be. It is opinion. Where is your statistics about it? I am good in opinion and fact, believe me! People who live in the North of Britain are friendlier than those who live in the South. It is opinion. Where is your evidence? On average, people in Britain are living longer. Maybe statistics. Fact, this is a fact, yeah.' He gave reasons why it is either fact or opinion before looking at the feedback. He clicked on the feedback after each question. Although time was over, he wanted to finish the activity. After seeing his corrects, he smiled and told that he was good. He looked more confident.

As a result, letting them choose what LO they want during the third observation helped the observer to see how they decided for the topics. One of the interesting points is that he selected two different folders. Also, he scrolled down the mouse over LOs to see which one to choose. As inferred from those situations, he has the ability to improve his lack and weaknesses by choosing the specific LOs. As he was free to choose, he looked more interested and focused than before. What is more, it seems that he developed his ability to answer the questions, as he gave reasons why it was right before looking at the feedback. As happened in the previous observation times, feedback helped him to be more motivated and enhance his understanding and learning.

1.2. Interview Results

1.2.1. Salar's 1st Interview

He said his experience did not affect him to speak. However, in the observation, it was seen that he had few difficulties in using the Toolkit, for instance, in the first activity. From the activities in the Toolkit, he learned new things. Therefore, he found it very useful. Also, he thought the examples and feedback are very good in the Toolkit, whereas other online websites do not provide it. He said: 'Feedback will help you to improve yourself to go back and use another.'

Furthermore, the folders in the Toolkit helped him to improve his learning and see different aspects of learning and language learning. He liked its feature of providing activities on different skills of learning. As he was not familiar with using the section of web links, dictionary and glossary, he did not preferred to benefit from them. What is more, he added that he would open Cambridge dictionary if he was using the computer in LRC. However, after seeing them and clicking on web links, he was surprised by the information, for example, 'sub list' provided in that section. He said it was nice to have this list in one sheet.

The explanation/information and introduction sections helped him to understand and clarify his learning. He thought, as international students, they overcame weaknesses with that help. He found the design good but not the colour. He suggested not to include hyperlinks in the activities in the beginning, as new students will be distracted because they are directed to another page. However, students good at computer will not have that problem. His experience in the first activity can be given as an example for that distraction.

He said he did not need any help while doing the activities in the Toolkit. However, for new things, he would maybe need tutor's help if the feedback was not enough. He suggested that feedback should be given after answering the question, as easy-going students will click on it before the question. He found himself successful, and the help from the Toolkit made him confident. He regarded the Toolkit like a tutor: 'It is like a tutor. You know, if you want, just read, like I read here, this activity is going to practice, this is interacting, this is interacting with me, within the text, but if the learner is not, this is, go to the feedback.'

He used other online resources such as BBC iPlayer, ESL4 related to IELTS, Radio 4, 6 minute English and others he could not remember its names at that moment. He said he took notes of new words after looking up them in the dictionary. He found 6 minute English interactive and in depth, and it was very good, especially, for beginners in providing the script. Also, it helped speaking in that pronunciation could be checked. As for the help from Radio 4, he improved his listening and learned new words about several topics. However, he claimed that feedback in

those resources were not as good as the Toolkit. He mentioned about the advantages of watching videos with regard to understanding how to focus on the main idea by means of the body language, and where people rose or fell the intonation.

He said he needed the tutor's help at first, but not now, in doing the activities in online learning resources. He found himself successful as he passed the classroom exam very well after his learning in Radio 4. In the similar way, he felt more confident after his practice in those resources. He thought that learning from tutors were needed up to 20 or 40%, and after that, learners would be independent:

'Teachers, you know that they give you on the platform, when you get on the platform, I mean platform is, I mean, there is a stage you can learn yourself, by yourself, you can depend on yourself for learning. Because language is vocabulary and using, if you don't use it, you will lose it. You will lose it. Believe me, my Arabic was not good. When I interacted with the people in Baghdad after Saddam left, my Arabic be improved very very very well, and in the past it was well, but, because, there is a five or eight year-gap not using the Arabic one. I lost it, I lost a lot of words, a lot of phrases.'

Additionally, he said the independent study in the university helped him to improve his skills, and his methods to manage his learning and his learning from the classroom and previous language promoted his language learning.

To sum up, scaffolding form the Toolkit and other OLRs facilitated him to develop his learning independently, that is, he claimed that he did not need the support from the tutor. Above all, help from the Toolkit and practice in those resources made him confident. Also, he drew attention to the colour in the design of the Toolkit although he found the design good. Nevertheless, he suggested that the hyperlinks should not distract users.

1.2.2. Salar's 2nd Interview

Speaking while doing the activity was easy for him. He felt comfortable. He said he did not learn any new things. He used the Toolkit after the first observation, as well. He found it enjoyable and ready for users. He compared his second performance with the first one and said the second one was better as he found it easier, which might be because of his improving English by means of his learning in the Toolkit as he could repeat what had learned in the classroom. He recommended that more links with the word or idea should be added. He claimed that following the introduction, information/explanation and instruction were helpful to accomplish the activity, and the same design for all of the LOs in the Toolkit was good. Also, the script in the activities helped him to see if his notes were related or not. He needed links for the essays or topics in the

feedback section. He thought it would distract him if the links were in the beginning of the activity. As feedback told him, he found himself 90% successful. Feedback, also, told him if he was understanding and doing the activity well. Above all, as he followed to read the introduction, information/explanation and instruction in that order, he was successful, as he said. That made him feel more confident, as well.

He used similar online resources in the previous time such as 6 minute English, online journals and newspapers, e-books, Radio 4, EngVid and uefap.com. He mentioned about the advantage of e-books:

'For me, electronic, because it is one area, not heavy, maybe you can read this book when you are in the bus. When you are on the way, you can listen [to] your books because some of the subjects, you have to see like videos or like audio to follow the introductions of the book.'

He said that he preferred to use the EAP Toolkit for writing, and Radio 4 for listening. He talked about EngVid saying that he was using before he came in the UK. He could improve his grammar and writing skills in that website, whereas he boosted his note-taking skill in uefap.com by: 'I can use it as a feedback when you are not following, you are not taking note very well. When you play again the listening, you will find something wrong, I do not know how, but I found it is helpful.' But he said he needed the script after videos.

Also, the feedback from 6 minute English was provided as the script as he claimed. In the meantime, he pointed out the help supplied in online dictionaries by assessing his understanding:

'As I said you, I found myself improving by using these websites and for the online dictionaries, as well, like Macmillan, online dictionaries. They will provide you synonyms, sample of using, a lot of things related, and I found my tutors, they are using Macmillan as well, so we are on the same track, any word I can explain to my tutor because he is using the same dictionary so it is easy.'

He criticised the lack in online learning recourses to enhance speaking skill. Therefore, he started communicating with people, for example, a bus driver, as face-to-face communication is interactive. Additionally, he could gain the presentation skills from hearing about tutors' experience and suggestion. But he advised that there would be no need for the tutor if users were provided with the feature to follow their progress, show their level and support them how to develop themselves.

He found himself successful because 'I know why I am using these websites,' and he visited the websites 2-3 times a day. He exemplified his success as follows:

'When I am playing the same in EngVid video, I found I can remember each word with in the video; so, in this case when I am using for example, when I play the video, it is about how to use the present perfect. When I use the present perfect within my essay and my tutor tell me 'wow, you are using the tenses very good', so I got from this website present perfect, is not from a book and my successful is the website, how I can find a website task.'

That he followed the instructions in the websites, doing them step by step affected him positively. In addition, he felt confident when he understood and accomplished the activities in online learning resources.

In brief, he stated that scaffolding from the Toolkit and other OLRs helped him to complete the activities and made him successful and confident; however, he needed more scaffolding on some occasions. Also, he managed to improve his speaking skill by socialising people although other OLRs did not provide any assistance for that skills. Additionally, he highlighted he could remember what he had learned in the classroom by the support in the Toolkit.

1.2.3. Salar's 3rd Interview

He said that he did not feel the same as at home as he would not speak during learning. Still, it was easy and usual practice for him. Also, he mentioned about why he chose the activities or those folders. He said that he learned new things. He found his progress well and now had the ability to identify the main points easily. He added that his learning and reading online such as reading in Guardian, and being a good learner in the native language, Kurdish facilitated him to accomplish and make a good progress in the activities. Although he did not use the Toolkit for his assignments and writing his project directly, he benefited from it to learn how to analyse, which supported his classroom learning and study indirectly. However, he thought the Toolkit would be helpful for beginners, and, as he was about to finish the semester soon, it would not be helpful for him anymore. In the meantime, he suggested that students can utilize it on holiday, and it will give them the main thoughts and replace the presence of tutors. Additionally, he did not need tutors' support anymore as feedback was enough for him, but previously, he needed that support.

As for scaffolding from the Toolkit in terms of the section of introduction, information/explanation, instruction, web links, glossary and dictionary, he said the first three of them were very useful, but he did not prefer to use the last three, as he was not familiar with them. Rather, he preferred to use Macmillan or Cambridge dictionaries in his laptop. For the instruction, he claimed that it directed him what to do and what the main point was, and he could accomplish the task and activity without anyone as it was enough for him. What is more, LOs in the Toolkit facilitated his learning. For instance, he said:

‘Writing is not easy to, you have to practise more by yourself and then go to the Toolkit, if you find some difficulties in your writing, structuring, identifying main points, what do you say, sorry, topic sentences. If you find this is difficult, you can go back to Toolkit. Toolkit is enough for that. It is helpful. It will give you main idea how you structure your paragraph.’

He believed he was very successful in doing the activities. He gave the reasons like that:

‘Because I use it, the instruction well, and I answered the question well. I got five of five. Because my English improved. But feedback I got from the Toolkit, it was very clear and easy to read.’

Also, he pointed out that the Toolkit prepared a situation for learners to remember what had happened in the classroom. Furthermore, his success affected his confidence, and he felt more confident.

He used online newspapers, articles, movies and videos to develop his learning. However, he said: ‘I am planning something else on holiday. I will use some of uefap.com. And I will choose BBC, all the BBC to listening, and reading, some text, some, you know, to improve my vocabulary from the news.’ Also, he was listening to daily news every day.

He claimed that it was his responsibility to promote and maintain his learning:

‘I used to do that [benefiting from the instruction], because I want to [be] sure that I'm understanding everything without any instruction or information not like in the Toolkit. It told me that you have an essay, you have to read it and choose main points. When I read the article, I will be choosing where is the main point, and I will do the same question, other, Toolkit told me, where is the main point, how the instruction, article, where is the main part of the article, what is the aim of the article. Yeah, it is my duty now. No longer to use any feedback.’

Also, he explained how he managed his learning:

‘Maybe if you have vocabulary, a dictionary, if you use a Macmillan, if you don't understand it, I will go to Cambridge to see where is the detail, or opposite. When I choose vocabulary in Cambridge, I will go to Macmillan to be sure that it is the same meaning or there is another meaning of this, another use of this word or phrase.’

Therefore, he did not need support from tutors. He felt successful and confident because he practised online a lot, even on his mobile phone. He defined himself as a good online user, who finds helpful online learning resources.

Comparing what he thought in all three interview times with what he did during learning in all of three observation times, he believed the experience in terms of speaking during learning did not

affect him at all of three times. On the one hand, his first experience in Observation 1 affected him negatively; that is, he seemed confused in the first activity. On the other hand, as he pointed out during the interviews, the link in the beginning of the activity might have distracted him. As for his independency, he showed that more obviously in the last observation while choosing the LOs, and, in all interviews, he expressed his feelings about the question of the need for tutors' support. Although he said he did not need that support in the first interview, he clarified better in the last interview by saying that he needed that previously, but now, he did not. He emphasised the advantage of the Toolkit in terms of the feature of scaffolders in it in that students do not need any one in the process of learning in the Toolkit. His experience can be exemplified of that: He followed the sections of the introduction, information/explanation, instruction, doing the activity and feedback as designed in the Toolkit, which facilitated him to accomplish the activities, understand his mistakes and handle the future tasks. Therefore, he felt successful and confident in doing the activities in the Toolkit. Meanwhile, that he used other online learning resources helped him to pass the classroom exams. Also, he implemented methods to benefit from them efficiently such as using another online learning resources when he could not receive help from an online learning resource. Therefore, he did not require the tutor's support during online learning.

Appendix K

How long participants spend on each activity and scaffolders

a) Tables for Observation 1

The first Learning Object (LO): Introduction to Vocabulary Learning

Student	Intr.	Act .1					Act. 2				
		Expl.	Instr.	Act.	Feedb.	Duration	Expl.	Instr.	Act.	Feedb.	Duration
Bob	40 secs	Y	Y	Y	N	5 mins	Y	Y	Y	N	12 mins
Baran	2 mins	Y	Y	N	N	5 mins	Y	Y	Y	N	7 mins
Gazala	N	Y	Y	Y	Y	12.43mins	Y	Y	Y	Y	6.30mins
Perwin	1 min	Y	Y	Y	N	7.30mins	Y	Y	Y	N	4 mins
Goran	N	Y	Y	Y	Y	17 mins					
Raman	1 min	Y	Y	Y	Y	7 mins	Y	N	Y	Y	2.20mins
Salar	1 min	N	Y	N	N	1 min	N	Y	Y	Y	4 mins
Tase	30 secs	N	Y	Y	Y	3 mins	Y	Y	Y	Y	3 mins
Tasleem*	N	N	N	Y	Y	7 mins	Y	Y	Y	Y	5.30 mins
Ziver	20 secs	Y	N	N	N	20 secs	N	N	Y	Y	3.30 mins
Total	7/10	8/10	7/10	7/10	5/10		8/9	6/9	9/9	6/9	

Notes: N: No, Y: Yes, mins: minutes, secs: seconds, Intr.: Introduction, Instr.: Instruction, Expl.: Explanation, Feedb.:Feedback, Act.: Activity, S: Student

Tasleem*: This student wished to continue so did the activity for half an hour.

Appendix K

Building your Vocabulary

Student	Intr.	Ac.t 1					Act. 2					Act. 3				
		Expl.	Instr.	Act.	Feedback	Duration	Expl.	Instr.	Act.	Feedb.	Duration	Expl.	Instr.	Act.	Feedback	Duration
Bob																
Baran	1.30 mins	N	N	N	N	2 mins										
Gazala																
Perwin	2 mins	Y	Y	Y	Y	3 mins										
Goran																
Raman	22 secs	Y	N	Y	Y	2.38 mins	Y	Y	Y	Y	2mins					
Salar	N	N	Y	Y	Y	2 mins	N	Y	Y	Y	1 min	N	Y	Y	Y	5 mins
Tase	N	N	Y	Y	Y	1.30mins	Y	Y	Y	Y	1.15	N	Y	3	Y	2 mins
Tasleem	N	N	Y	Y	Y	5.44 mins	Y	Y	Y	Y	2.30	N	Y	3	Y	5.30 mins
Ziver	N	N	N	Y	Y	2.30 mins	N	Y	Y	Y	7.30					
Total	3/7	2 /7	4/7	6/7	6/7		3/5	5/5	5/5	5/5		0/3	3/3	3/3		

Concordancing for Vocabulary development

Student	Intr.	Act .1					Act. 2				
		Expl.	Instr.	Act.	Feedback	Duration	Expl.	Instr.	Act.	Feedback	Duration
Bob											
Baran											
Gazala											
Perwin											
Goran											
Raman											
Salar	skipped										
Tase	30 secs	N				1 min	skipped				
Tasleem											
Ziver											
Total	1/1	0/1									

Appendix K

Language for Classifying

Student	Intr.	Act .1					Act. 2				
		Expl.	Instr.	Act.	Feedback	Duration	Expl.	Instr.	Act.	Feedback	Duration
Bob											
Baran											
Gazala											
Perwin											
Goran											
Raman											
Salar	N	N	Y	1	Y	1.30 mins					
Tase	skipped										
Tasleem											
Ziver											
Total	0/1	0/1	1/1	1/1	1/1						

Forming words with prefixes and suffixes

Student	Intr.	Ac.t 1					Act. 2					Act. 3				
		Expl.	Instr.	Act.	Feedback	Duration	Expl.	Instr.	Act.	Feedb.	Duration	Expl.	Instr.	Act.	Feedback	Duration
Bob																
Baran																
Gazala																
Perwin																
Goran																
Raman																
Salar																
Tase	N	N		Y	Y	Y 2 mins	skipped					skipped				
Tasleem																
Ziver																
Total	0/1	0/1		1/1	1/1	1/1										

Appendix K

Homophones, homonyms and homographs

Student	Intr.	Ac.t 1					Act. 2				Act. 3				
		Expl.	Instr.	Act.	Feedback	Duration	Expl.	Instr.	Act.	Feedb.	Expl.	Instr.	Act.	Feedback	Duration
Bob															
Baran															
Gazala															
Perwin															
Goran															
Raman															
Salar															
Tase	skipped														
Tasleem															
Ziver															

Confusable words

Student	Intr.	Act .1				
		Expl.	Instr.	Act.	Feedback	Duration
Bob						
Baran						
Gazala						
Perwin						
Goran						
Raman						
Salar						
Tase	N	N	Y	3	Y	1.30 mins
Tasleem						
Ziver						
Total	0/1	0/1	1/1	1/1	1/1	

Appendix K

b) Tables for Observation 2 for each Learning Item

Finding out about Plagiarism

Student	Intr.	Act. 1					Act. 2					Act. 3					Act. 4				
		Expl.	Instr.	Act.	Feedb.	Dur.	Expl.	Instr.	Act.	Feedb.	Dur.	Expl.	Instr.	Act.	Feedb.	Dur.	Expl.	Instr.	Act.	Feedb.	Dur.
Bob	2 m.	N	Y	Y	Y	6.20 mins	Y	Y	Y	Y	10 mins										
Baran	1 m.	N	N	Y	Y	1.30 mins	Skipped					Skipped					Skipped				
Gazala	1 m.	Y	Y	Y	Y	3 mins	Y	Y	Y	Y	6 mins	Y	Y	Y	Y	3 mins	Y	Y	Y	Y	6. 20 mins
Perwin	N	Y	Y	Y	Y	4 mins	Y	Y	Y	Y	7 mins	Y	Y	Y	Y	3 mins	Y	Y	Y	Y	6 mins
Goran	N	Y	Y	Y	Y	1.36 mins	Y	Y	Y	Y	1.44 mins	Y	Y	Y	Y	3.41 mins	Y	Y	N	N	20 secs
Raman		Skipped as done before					Skipped					Skipped					Skipped				
Salar	1 m.	Y	Y	Y	Y	1.30 minutes	Y	Y	Y	Y	6 mins	Y	Y	Y	Y	2.30 minutes	Y	Y	Y	Y	6 minutes
Tase	30 s.	Y	Y	Y	Y	1.17 minutes	Y	Y	Y	Y	3 mins	Y	N	Y	Y	1.30 minutes	N	N	N	N	2 minutes for listening
Taslem																					
Ziver	30 s.	Y	Y	Y	Y	1 min	Y	N	Y	Y	1 min	Y	N	Y	Y	30 seconds	Y	Y	Y	Y	4.40 mins
Total	6/8	6 / 8	7 / 8	8 / 8	8 / 8		7 / 7	6 / 7	7 / 7	7 / 7		6 / 6	4 / 6	6 / 6	6 / 6		5 / 6	5 / 6	4 / 6	4 / 6	

Notes: s.: seconds, m.: minutes

Identifying plagiarism and avoiding poor practice

Student	Intr.	Act .1					Act. 2				
		Expl.	Instr.	Act.	Feedback	Duration	Expl.	Instr.	Act.	Feedback	Duration
Bob											
Baran	N	Y	N	Y	N	1 min					Skip.
Gazala											
Perwin											
Goran											
Raman	30 secs	Y	Y	Y	Y	4.30 mins	Y	Y	Y	Y	6 minutes
Salar											
Tase	N	Y	Y	Y	Y	1.14 mins	N	Y	Y	Y	2 mins
Tasleem											
Ziver	N	Y	Y	Y	Y	2 mins	Y	N	Y	Y	1.13 mins
Total	1/4	4/4	3/4	4/4	3/4		2/3	2/3	3/3	3/3	

Notes: skip.: skipped

Appendix K

Introduction to quoting and paraphrasing

Student	Intr.	Act .1					Act. 2				
		Expl.	Instr.	Act.	Feedback	Duration	Expl.	Instr.	Act.	Feedback	Duration
Bob											
Baran	N	Y	N	N	N	1 min					Skip.
Gazala											
Perwin											
Goran											
Raman	50 secs	Y	Y	Y	Y	1.30 minutes	Y	Y	Y	Y	3 minutes
Salar											
Tase	N	N	Y	Y	Y	1 min	Y	Y	Y	Y	1.26 mins.
Tasleem	N	Y	Y	Y	Y	3.30 mins.	N	Y	Y	Y	8 mins
Ziver	N	N	N	Y	Y	41 secs	N	N	Y	Y	1.30 mins
Total	1/5	3/5	3/5	4/5	4/5		2/4	2/4	4/4	4/4	

Using quotations

Student	Intr.	Act .1					Act. 2				
		Expl.	Instr.	Act.	Feedback	Duration	Expl.	Instr.	Act.	Feedback	Duration
Bob											
Baran	1.10 m.					Skipped					Skipped
Gazala											
Perwin											
Goran											
Raman											
Salar											
Tase	N	N	Y	Y	Y	1.35 m.					
Tasleem	N	N	Y	Y	Y	4 mins					
Ziver											
Total	1/3	0/2	2/2	2/2	2/2						

Appendix K

Using paraphrasing in writing

Student	Intr.	Act. 1	Act. 2	Act. 3	Act. 4
Bob					
Baran	2 mins in his words	Skipped	30 seconds in his words	Skipped	Skipped
Gazala					
Perwin					
Goran					
Raman					
Salar					
Tase					
Tasleem					
Ziver					

Understanding reference lists and bibliographies

Student	Intr.	Act. 1	Act. 2	Act. 3	Act. 4
Bob					
Baran	2 mins in his words	Skipped	Skipped	Skipped	Skipped
Gazala					
Perwin					
Goran					
Raman					
Salar					
Tase					
Tasleem					
Ziver					

Describing types of source in reference lists

Student	Intr.	Act. 1	Act. 2	Act. 3
Bob				
Baran	1.26 mins in his words	Skipped	Skipped	Skipped
Gazala				
Perwin				
Goran				
Raman				
Salar				
Tase				
Tasleem				
Ziver				

Compiling a reference list

Student	Intr.	Act. 1	Act. 2
Bob			
Baran	36 seconds in his words	Skipped	Skipped
Gazala			
Perwin			
Goran			
Raman			
Salar			
Tase			
Tasleem			
Ziver			

Appendix K

The role of the introduction in academic writing

Student	Intr.	Act. 1	Act. 2
Bob			
Baran	1 minute in his words	Skipped	Skipped
Gazala			
Perwin			
Goran			
Raman			
Salar			
Tase			
Tasleem			
Ziver			

Creating cohesion in your writing

Student	Intr.	Act. 1	Act. 2	Act. 3	Act. 4
Bob					
Baran	2 minutes in his words				
Gazala					
Perwin					
Goran					
Raman					
Salar					
Tase					
Tasleem					
Ziver					

c) Tables for Observation 3

Bob carried out the activities in Academic Writing

	Introduction	Explanation	Instruction	Activity	Feedback	Duration
Describing Trends	Just 2 sentences					1.45 mins
Act. 1		Yes	Yes	Yes	Yes	2.15 mins
Act. 2		Yes	Yes	No	Yes	2.15 mins
Act. 3		Yes	Yes	Yes	Yes	3 mins
Interpreting trends	Yes					1 min
Act. 1		Yes	Yes	Yes	Yes	9 mins

Baran carried out the activities in Learning skills

	Introduction	Explanation	Instruction	Activity	Feedback	Duration
Identifying academic skills	No					
Act 1		No	Just the beginning	No	No	3 mins
Managing your time	No					
Act. 1		Yes	No	Yes	Yes	4.30 mins
Setting your own goals	No					
Act. 1		No	No	Yes	Yes	3 mins
The best conditions	Skipped					
Planning how to meet	The beginning					1.24 mins
Act. 1		No	No	1 question	No	48 seconds
Act. 2		No	No	Yes	Yes	5 mins

Appendix K

Gazala carried out the activities in Vocabulary for academic purposes

	Introduction	**Explanation**	**Instruction**	**Activity**	**Feedback**	**Duration**
Building your vocabulary	Yes					1.36 mins
Act. 1		Yes	Yes	Yes	Yes	3.43 mins
Act. 2		Yes	Yes	No	Yes	1.20 mins
Act. 3		Yes	Yes	Yes	Yes	4.30 mins
Concordancing for vocabulary	Skipped					
Language for classifying	Yes					1 min
Act. 1		Yes	Yes	Yes	Yes	4 mins

Goran carried out the activities in Reading and Critical Thinking

	Introduction	**Explanation**	**Instruction**	**Activity**	**Feedback**	**Duration**
Introduction to Reading	Yes					2 mins
Act. 1		Yes	Yes	Yes	Yes	12.10 mins
Act. 2		Yes	Yes	Yes	Yes	3.25 mins

Perwin carried out the activities in Academic Writing

Note: She just read the introduction of each learning material in Academic Writing.

Salar carried out the activities in Reading and Critical Thinking & Academic Writing

	Introduction	**Explanation**	**Instruction**	**Activity**	**Feedback**	**Duration**
Introduction to Reading	Yes					50 seconds
Act. 1		Yes	Yes	Yes	Yes	6 mins
Act. 2		No	Yes	Yes	Yes	3 mins
Introduction to Academic Writing	No					
Act. 1		Yes	Yes	Yes	Yes	3 mins
Act. 2		Yes	Yes	Yes	Yes	2 mins

Raman carried out the activities in Vocabulary for academic Purposes

	Introduction	**Explanation**	**Instruction**	**Activity**	**Feedback**	**Duration**
Introduction to Vocabulary	Yes					1.25 mins
Act. 1		Yes	Yes	Yes	Yes	7.30 mins
Act. 2		No	No	Yes	Yes	2.20 mins
Building your Vocabulary	Yes					45 seconds
Act. 1		Yes	A bit	Yes	Yes	1 min
Act. 2		No	Yes	Yes	Yes	34 seconds
Act. 3		Yes	Yes	3 act.	No	1.30 mins

Appendix K

Tasleem carried out the activities in Grammar

	Introduction	**Explanation**	**Instruction**	**Activity**	**Feedback**	**Duration**
Modal verbs in writing	No					1.17 mins for choosing
Act. 1		No	Yes	Yes	Yes	6.30 mins
Act. 2		No	Yes	Yes	Yes	2 mins
Act. 3		No	Yes	Yes	Yes	4.30 mins

Ziver carried out the activities in Learning Skills

	Introduction	**Explanation**	**Instruction**	**Activity**	**Feedback**	**Duration**
Identifying academic skills	Yes					1 min
Act. 1		No	Yes	Yes	Yes	3.25 mins
Act. 2		No	No	Yes	Yes	3.30 mins
Managing your study time	No					
Act. 1		Yes	Yes	Yes	Yes	2 mins
Act. 2		No	Yes	Yes	A bit	2 mins
Act. 3		No	Yes	Yes	Yes	5.30 mins

Appendix L

Table 22: Statistical Comparison of Use of the EAP Toolkit between Pre- and Post-Questionnaires

Test Statistics[a]

	PreTest & PostTest
N	35
Exact Sig. (2-tailed)	.004[b]

a. McNemar Test

b. Binomial distribution used.

Table 23: Statistical Comparison of Use of Online Learning Resources between Pre- and Post-Questionnaires

Test Statistics[a]

	PreTest & PostTest
N	35
Exact Sig. (2-tailed)	.625[b]

a. McNemar Test

b. Binomial distribution used.

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Table 24: Statistical Comparison of the Means between Pre- and Post-Questionnaires

	Pre-post Questionnaire	N	Mean Rank	Sum of Ranks	Z	p
Computer use in general	Negative Ranks	7[a]	8.57	60.00	.000[d]	1.000
	Positive Ranks	8[b]	7.50	60.00		
	Ties	20[c]				
Computer use for academic purposes	Negative Ranks	8[a]	6.19	49.50	-1.604[e]	.109
	Positive Ranks	3[b]	5.50	16.50		
	Ties	24[c]				
Use of Computer	Negative Ranks	14[a]	9.21	129.00	-.955[e]	.339
	Positive Ranks	6[b]	13.50	81.00		
	Ties	15[c]				
Use of Online Resources	Negative Ranks	11[a]	10.73	118.00	-.635[f]	.526
	Positive Ranks	12[b]	13.17	158.00		
	Ties	12[c]				
Confidence in Computer Use	Negative Ranks	6[a]	11.08	66.50	-1.279[f]	.201
	Positive Ranks	13[b]	9.50	123.50		
	Ties	16[c]				
Often-EAP	Negative Ranks	5[a]	4.40	22.00	-2.399[f]	.016
	Positive Ranks	11[b]	10.36	114.00		
	Ties	19[c]				

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One-EAP	Negative Ranks	3[a]	3.50	10.50	-2.854[f]	.004
	Positive Ranks	12[b]	9.13	109.50		
	Ties	20[c]				
EAP-the most used	Negative Ranks	4[a]	8.50	34.00	-1.777[f]	.076
	Positive Ranks	12[b]	8.50	102.00		
	Ties	19[c]				
EAP-the most useful	Negative Ranks	4[a]	8.63	34.50	-2.245[f]	.025
	Positive Ranks	14[b]	9.75	136.50		
	Ties	17[c]				
EAP-overall	Negative Ranks	3[a]	3.50	10.50	-3.011[f]	.003
	Positive Ranks	13[b]	9.65	125.50		
	Ties	19[c]				
EAP-web links	Negative Ranks	5[a]	4.90	24.50	-2.861[f]	.004
	Positive Ranks	14[b]	11.82	165.50		
	Ties	16[c]				
EAP-glossary	Negative Ranks	6[a]	5.50	33.00	-2.517[f]	.012
	Positive Ranks	13[b]	12.08	157.00		
	Ties	16[c]				
EAP-online dictionary	Negative Ranks	5[a]	4.80	24.00	-2.882[f]	.004
	Positive Ranks	14[b]	11.86	166.00		
	Ties	16[c]				

EAP-feedback	Negative Ranks	4[a]	5.75	23.00	-2.757[f]	.006
	Positive Ranks	14[b]	10.57	148.00		
	Ties	17[c]				
EAP-information	Negative Ranks	4[a]	4.00	16.00	-2.515[f]	.012
	Positive Ranks	11[b]	9.45	104.00		
	Ties	20[c]				
EAP-explanation	Negative Ranks	4[a]	4.50	18.00	-3.123[f]	.002
	Positive Ranks	15[b]	11.47	172.00		
	Ties	16[c]				
EAP-improve	Negative Ranks	3[a]	3.00	9.00	-2.754[f]	.006
	Positive Ranks	11[b]	8.73	96.00		
	Ties	21[c]				
EAP-teachers' importance	Negative Ranks	5[a]	3.90	19.50	-2.527[f]	.012
	Positive Ranks	11[b]	10.59	116.50		
	Ties	19[c]				
EAP-enjoyable	Negative Ranks	5[a]	7.00	35.00	-2.439[f]	.015
	Positive Ranks	14[b]	11.07	155.00		
	Ties	16[c]				
EAP-easy	Negative Ranks	4[a]	5.50	22.00	-2.401[f]	.016
	Positive Ranks	12[b]	9.50	114.00		
	Ties	19[c]				

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EAP-help	Negative Ranks	5[a]	5.50	27.50	-2.942[f]	.003
	Positive Ranks	15[b]	12.17	182.50		
	Ties	15[c]				
EAP-good feedback	Negative Ranks	3[a]	7.17	21.50	-2.657[f]	.008
	Positive Ranks	14[b]	9.39	131.50		
	Ties	18[c]				
EAP-reinforce	Negative Ranks	5[a]	3.50	17.50	-2.986[f]	.003
	Positive Ranks	13[b]	11.81	153.50		
	Ties	17[c]				
Often-Online	Negative Ranks	7[a]	9.29	65.00	-.909[f]	.363
	Positive Ranks	11[b]	9.64	106.00		
	Ties	17[c]				
Online-Rate	Negative Ranks	7[a]	7.29	51.00	-.529[f]	.597
	Positive Ranks	8[b]	8.63	69.00		
	Ties	20[c]				
Online-Feedback	Negative Ranks	7[a]	5.36	37.50	-.122[f]	.903
	Positive Ranks	5[b]	8.10	40.50		
	Ties	23[c]				
Online-Rate feedback	Negative Ranks	6[a]	4.25	25.50	-1.411[f]	.158
	Positive Ranks	7[b]	9.36	65.50		
	Ties	22[c]				

Online-Teachers' Importance	Negative Ranks	8[a]	8.69	69.50	-.712[f]	.477
	Positive Ranks	10[b]	10.15	101.50		
	Ties	17[c]				
EAP-success luck	Negative Ranks	8[a]	8.56	68.50	-1.086[f]	.277
	Positive Ranks	11[b]	11.05	121.50		
	Ties	16[c]				
Online-success luck	Negative Ranks	7[a]	7.71	54.00	-.362[f]	.717
	Positive Ranks	8[b]	8.25	66.00		
	Ties	20[c]				
EAP-success ability	Negative Ranks	6[a]	6.83	41.00	-2.202[f]	.028
	Positive Ranks	13[b]	11.46	149.00		
	Ties	16[c]				
Online-success ability	Negative Ranks	6[a]	8.50	51.00	-1.537[f]	.124
	Positive Ranks	12[b]	10.00	120.00		
	Ties	17[c]				
EAP-success effort	Negative Ranks	7[a]	6.00	42.00	-.238[e]	.812
	Positive Ranks	5[b]	7.20	36.00		
	Ties	23[c]				
Online-success effort	Negative Ranks	11[a]	8.77	96.50	-1.532[e]	.125
	Positive Ranks	5[b]	7.90	39.50		
	Ties	19[c]				

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EAP-success strategy	Negative Ranks	10[a]	8.90	89.00	-.611[e]	.541
	Positive Ranks	7[b]	9.14	64.00		
	Ties	18[c]				
Online-success strategy	Negative Ranks	10[a]	8.75	87.50	-1.593[e]	.111
	Positive Ranks	5[b]	6.50	32.50		
	Ties	20[c]				
EAP-failure luck	Negative Ranks	7[a]	10.14	71.00	-.656[f]	.512
	Positive Ranks	11[b]	9.09	100.00		
	Ties	17[c]				
Online-failure luck	Negative Ranks	9[a]	9.78	88.00	-.289[f]	.772
	Positive Ranks	10[b]	10.20	102.00		
	Ties	16[c]				
EAP-failure ability	Negative Ranks	7[a]	12.36	86.50	-1.320[f]	.187
	Positive Ranks	15[b]	11.10	166.50		
	Ties	13[c]				
Online-failure ability	Negative Ranks	9[a]	11.33	102.00	-.114[f]	.909
	Positive Ranks	11[b]	9.82	108.00		
	Ties	15[c]				
EAP-failure effort	Negative Ranks	10[a]	6.15	61.50	-.086[e]	.931
	Positive Ranks	5[b]	11.70	58.50		
	Ties	20[c]				

Online-failure effort	Negative Ranks	11[a]	9.36	103.00	-.775[e]	.438
	Positive Ranks	7[b]	9.71	68.00		
	Ties	17[c]				
EAP-failure strategy	Negative Ranks	10[a]	13.40	134.00	-.466[f]	.641
	Positive Ranks	14[b]	11.86	166.00		
	Ties	11[c]				
Online-failure strategy	Negative Ranks	15[a]	13.60	204.00	-.370[e]	.712
	Positive Ranks	12[b]	14.50	174.00		
	Ties	8[c]				
EAP-class teacher	Negative Ranks	10[a]	7.70	77.00	-.024[e]	.980
	Positive Ranks	7[b]	10.86	76.00		
	Ties	18[c]				
Online-class teacher	Negative Ranks	7[a]	7.50	52.50	-1.216[f]	.224
	Positive Ranks	10[b]	10.05	100.50		
	Ties	18[c]				
Online-class methodology	Negative Ranks	6[a]	7.25	43.50	-1.290[f]	.197
	Positive Ranks	10[b]	9.25	92.50		
	Ties	19[c]				
EAP-class methodology	Negative Ranks	7[a]	9.14	64.00	-.949[f]	.343
	Positive Ranks	11[b]	9.73	107.00		
	Ties	17[c]				

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Confidence-read online	Negative Ranks	5[a]	10.20	51.00	-1.573[f]	.116
	Positive Ranks	13[b]	9.23	120.00		
	Ties	17[c]				
Confidence-express online	Negative Ranks	11[a]	8.32	91.50	-.728[e]	.466
	Positive Ranks	6[b]	10.25	61.50		
	Ties	18[c]				
Confidence—feedback online	Negative Ranks	11[a]	11.73	129.00	-.281[f]	.779
	Positive Ranks	12[b]	12.25	147.00		
	Ties	12[c]				
Confidence-correct online	Negative Ranks	10[a]	9.65	96.50	-.999[e]	.318
	Positive Ranks	7[b]	8.07	56.50		
	Ties	18[c]				
Confidence-correct from EAP	Negative Ranks	7[a]	5.86	41.00	-.730[f]	.465
	Positive Ranks	7[b]	9.14	64.00		
	Ties	21[c]				
Confidence-feedback from EAP	Negative Ranks	5[a]	8.80	44.00	-.924[f]	.356
	Positive Ranks	10[b]	7.60	76.00		
	Ties	20[c]				
Confidence-support from EAP	Negative Ranks	11[a]	8.23	90.50	-.594[f]	.583
	Positive Ranks	9[b]	13.28	119.50		
	Ties	15[c]				

Confidence-read in class	Negative Ranks	4[a]	4.50	18.00	-1.976[f]	.048
	Positive Ranks	9[b]	8.11	73.00		
	Ties	22[c]				
Confidence-express in class	Negative Ranks	4[a]	4.50	18.00	-1.026[f]	.305
	Positive Ranks	6[b]	6.17	37.00		
	Ties	25[c]				
Confidence-comment in class	Negative Ranks	8[a]	7.38	59.00	-.981[e]	.326
	Positive Ranks	5[b]	6.40	32.00		
	Ties	22[c]				
Confidence-correct in class	Negative Ranks	8[a]	7.25	58.00	-.360[e]	.719
	Positive Ranks	6[b]	7.83	47.00		
	Ties	21[c]				
Confidence-feedback in class	Negative Ranks	8[a]	6.88	55.00	-.159[e]	.873
	Positive Ranks	6[b]	8.33	50.00		
	Ties	21[c]				
Confidence-support in class	Negative Ranks	10[a]	8.95	89.50	-.636[e]	.525
	Positive Ranks	7[b]	9.07	63.50		
	Ties	18[c]				
Belief-online easy	Negative Ranks	5[a]	6.00	30.00	-2.043[f]	.041
	Positive Ranks	11[b]	9.64	106.00		
	Ties	19[c]				

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Belief-online fun	Negative Ranks	5[a]	4.90	24.50	-.250[e]	.803
	Positive Ranks	4[b]	5.13	20.50		
	Ties	26[c]				
Belief-online well	Negative Ranks	8[a]	10.25	82.00	-1.503[f]	.133
	Positive Ranks	14[b]	12.21	171.00		
	Ties	13[c]				
Belief-Online improve	Negative Ranks	9[a]	11.17	100.50	-.171[f]	.864
	Positive Ranks	11[b]	9.95	109.50		
	Ties	15[c]				
Belief-online increase	Negative Ranks	8[a]	6.63	53.00	-.545[e]	.558
	Positive Ranks	5[b]	7.60	38.00		
	Ties	22[c]				
Belief-online aware	Negative Ranks	6[a]	10.17	61.00	-1.413[f]	.158
	Positive Ranks	13[b]	9.92	129.00		
	Ties	16[c]				
Belief-EAP aware	Negative Ranks	9[a]	10.11	91.00	-.870[f]	.384
	Positive Ranks	12[b]	11.67	140.00		
	Ties	14[c]				
Belief-class easy	Negative Ranks	8[a]	7.94	63.50	-.204[e]	.838
	Positive Ranks	7[b]	8.07	56.50		
	Ties	20[c]				

Belief-class fun	Negative Ranks	11[a]	10.73	118.00	-.955[e]	.340
	Positive Ranks	8[b]	9.00	72.00		
	Ties	16[c]				
Belief-class free	Negative Ranks	11[a]	8.18	90.00	-.651[e]	.515
	Positive Ranks	6[b]	10.50	63.00		
	Ties	18[c]				
Belief-class improve	Negative Ranks	9[a]	8.22	74.00	-.326[e]	.744
	Positive Ranks	7[b]	8.86	62.00		
	Ties	19[c]				
Belief-class increase	Negative Ranks	10[a]	9.70	97.00	-.084[e]	.993
	Positive Ranks	9[b]	10.33	93.00		
	Ties	16[c]				
Belief-computer aware	Negative Ranks	6[a]	7.42	44.50	-.892	.372
	Positive Ranks	9[b]	8.39	75.50		
	Ties	20[c]				
Belief-class feedback aware	Negative Ranks	5[a]	7.50	37.50	-.963[f]	.336
	Positive Ranks	9[b]	7.50	67.50		
	Ties	21[c]				
Online help	Negative Ranks	3[a]	8.83	26.50	-1.030[f]	.303
	Positive Ranks	9[b]	5.72	51.50		
	Ties	23[c]				

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Online opportunity	Negative Ranks	5[a]	7.50	37.50	-.124[f]	.902
	Positive Ranks	7[b]	5.79	40.50		
	Ties	23[c]				
Online skills	Negative Ranks	8[a]	11.69	93.50	-.064[f]	.949
	Positive Ranks	11[b]	8.77	96.50		
	Ties	16[c]				
Online new concepts	Negative Ranks	11[a]	9.14	100.50	-1.174[e]	.241
	Positive Ranks	6[b]	8.75	52.50		
	Ties	18[c]				
Online opportunity support	Negative Ranks	7[a]	7.93	55.50	-.193[e]	.847
	Positive Ranks	7[b]	7.07	49.50		
	Ties	21[c]				
Online aware	Negative Ranks	8[a]	9.50	76.00	-.449[e]	.653
	Positive Ranks	8[b]	7.50	60.00		
	Ties	19[c]				
EAP help	Negative Ranks	5[a]	9.10	45.50	-.446[f]	.656
	Positive Ranks	9[b]	6.61	59.50		
	Ties	21[c]				
EAP support	Negative Ranks	11[a]	9.50	104.50	-1.345[e]	.179
	Positive Ranks	6[b]	8.08	48.50		
	Ties	18[c]				

EAP aware	Negative Ranks	9[a]	9.83	88.50	-.575[e]	.565
	Positive Ranks	8[b]	8.06	64.50		
	Ties	18[c]				
EAP skills	Negative Ranks	7[a]	10.21	71.50	-.240[f]	.811
	Positive Ranks	10[b]	8.15	81.50		
	Ties	18[c]				
EAP strategy	Negative Ranks	7[a]	13.93	97.50	-.283[f]	.777
	Positive Ranks	13[b]	8.65	112.50		
	Ties	15[c]				

N: Number of participants

Post Questionnaire<Pre Questionnaire b. Post Questionnaire>Pre Questionnaire c. Post Questionnaire=Pre Questionnaire d. The sum of negative ranks equals the sum of positive ranks. e. Based on the positive ranks. f. Based on negative ranks.

Appendix N

Table 25: Spearman's rank-order correlation between success and their self-efficacy in the EAP Toolkit in pre-questionnaire

			EAP success Luck	EAP success ability	EAP success effort	EAP success strategy
Spearman's rho	Correct- EAP	Correlation Coefficient	.508**	.496**	.467**	.593**
		Sig. (2-tailed)	.002	.002	.005	.000
		N	35	35	35	35
	Feedback- EAP	Correlation Coefficient	.392*	.447**	.490**	.612**
		Sig. (2-tailed)	.020	.007	.003	.000
		N	35	35	35	35
	Support- EAP	Correlation Coefficient	.418**	.463**	.414**	.593**
		Sig. (2-tailed)	.013	.005	.013	.000
		N	35	35	35	35
	Aware- EAP	Correlation Coefficient	.497**	.258	.464**	.551**
		Sig. (2-tailed)	.002	.135	.005	.001
		N	35	35	35	35

Note: *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 26: Spearman's rank-order correlation between failure and their self-efficacy in the EAP Toolkit in pre-questionnaire

			EAP failure Luck	EAP failure ability	EAP failure effort	EAP failure strategy
Spearman's rho	Correct- EAP	Correlation Coefficient	.606**	.618**	.440**	.368*
		Sig. (2-tailed)	.000	.000	.008	.030
		N	35	35	35	35
	Feedback- EAP	Correlation Coefficient	.544*	.659**	.506**	.409*
		Sig. (2-tailed)	.001	.000	.002	.015
		N	35	35	35	35
	Support- EAP	Correlation Coefficient	.606**	.737**	.525**	.457**
		Sig. (2-tailed)	.000	.000	.001	.006
		N	35	35	35	35
	Aware- EAP	Correlation Coefficient	.485**	.475**	.389*	.387*
		Sig. (2-tailed)	.003	.004	.021	.022
		N	35	35	35	35

Note: *. Correlation is significant at the 0.01 level (2-tailed). **. Correlation is significant at the 0.05 level (2-tailed).

Table 27: Spearman's rank-order correlation between success and their self-efficacy in the EAP Toolkit in post-questionnaire

			EAP success Luck	EAP success ability	EAP success effort	EAP success strategy
Spearman's rho	Correct- EAP	Correlation Coefficient	.549**	.432**	.585**	.519**
		Sig. (2-tailed)	.001	.010	.000	.001
		N	35	35	35	35
	Feedback- EAP	Correlation Coefficient	.541*	.469**	.344**	.309**
		Sig. (2-tailed)	.001	.004	.043	.071
		N	35	35	35	35
	Support- EAP	Correlation Coefficient	.549**	.389*	.654**	.519**
		Sig. (2-tailed)	.001	.021	.000	.001
		N	35	35	35	35
	Aware- EAP	Correlation Coefficient	.530**	.460**	.297	.329
		Sig. (2-tailed)	.001	.005	.083	.054
		N	35	35	35	35

Table 28: Spearman's rank-order correlation between failure and their self-efficacy in the EAP Toolkit in post-questionnaire

			EAP failure Luck	EAP failure ability	EAP failure effort	EAP failure strategy
Spearman's rho	Correct- EAP	Correlation Coefficient	.706**	.510**	.590**	.389*
		Sig. (2-tailed)	.000	.002	.000	.021
		N	35	35	35	35
	Feedback- EAP	Correlation Coefficient	.493**	.337*	.379*	.208
		Sig. (2-tailed)	.003	.048	.025	.230
		N	35	35	35	35
	Support- EAP	Correlation Coefficient	.706**	.421*	.792**	.476**
		Sig. (2-tailed)	.000	.012	.000	.004
		N	35	35	35	35
	Aware- EAP	Correlation Coefficient	.508**	.285	.364*	.195
		Sig. (2-tailed)	.002	.097	.031	.031
		N	35	35	35	35

Correlation is significant at the 0.01 level (2-tailed).**

Correlation is significant at the 0.05 level (2-tailed).*

Appendix O

The examples to show how scaffolding types enabled participants to develop learning strategies

Scaffolding Type	Tactics	Learning Strategy	Function
Technical	The base form of a word is important for building your vocabulary as it can be altered through adding **prefixes** or **suffixes** … What is this one prefixes? Abbreviation, prefixes. Suffixes, just here OK... (He prefers to click on the hyperlinks and see the meanings.) (Raman, 1)	Cognitive (ibid.)	Using the visual sense to understand and remember
Strategic **(Implicit)**	*Here are some strategies that you might use to select items of vocabulary to learn for productive purposes and examples of such vocabulary in the text above: • Select general language that might be useful for a particular purpose: e.g. expressing with caution: tends to / It may be necessary to / seems... • Select general language structures that might be useful in your own writing e.g. ...can be related / in such a way as to... • Select general vocabulary which might be useful in other contexts: e.g. multifaceted, vitality, suppress, harmonious, distress, hinder.• Select subject-specific vocabulary which is in everyday use: e.g. migraines, arthritis, antibiotics, bronchitis, bacteria.* OK. Now, I want to compare what I understand from this…. I determined [to learn] some words that I don't know the meaning of them. (Goran 1)	Meta-cognitive (ibid.)	Paying attention to cognition Evaluating cognitive progress and performance
Procedural	*But, unfortunately they did not translate, for the topic it is not useful. And I have to guess all of this one. Asset, capital, creditor, dividend…, I have to, ecology or this one, behaviour, cog…. I think psychology. I think here. Jury, acquit, plaintiff…. testimony, I think it is about law. Not law or, medicine, ecology, ecology, I think ecology. Wound, diagnose, pathology, immunise, surgery, surgery, I know. Five words, I just understand surgery. Fibre, rayon, spindle, weave, yarn, weave, this word, I just want to translate the one word (He speaks Persian.), weave (He speaks Persian), ecology, medicine, psychology, banking, I think banking. Ecosystem, acid rain, biodiversity,*	Cognitive (ibid.) Meta-cognitive (ibid.)	Going beyond the immediate data-predicting Obtaining resources for cognition

	non-renewable resources, biodegradable, I think, spring up, what is it, (he translates biodegradable in Persian and speaks in Persian.) It is a very difficult vocabulary, maybe easier vocabulary, because we are studying English course, and maybe we don't understand what is what. Psychology, I think psychology. This one is ecology. Banking, that is enough I think. Because I don't want to waste time. This one is banking. Fibre, yarn, I think, not this one, I think. I have to copy and translate all of this one here. (He speaks Persian).Yeah this one is textiles, maybe this one, I am not sure. Maybe this one is this one. (Baran 1)		
Motivational (explicit)	*I am good in opinion and fact, believe me! (Salar 3)*	Meta-affective (ibid.)	Evaluating affect-evaluating affective progress and states
Motivational (explicit)	There is just one word in the context I did not. It is OK. Good! I finish this part. Let's go to the next part. (Raman 3)	Metacognitive (ibid.) Affective (ibid.)	Monitoring cognition-monitoring cognitive performance during a task Activating supportive emotions, beliefs and attitudes-substituting positive emotions, beliefs and attitudes for negative ones
Procedural (Implicit)	*Solved. So we can now know what the plagiarism is. (Bob 2)*	Meta-cognitive (ibid.)	Evaluating cognition-evaluating cognitive progress and performance

Conceptual (Implicit)	Every university or college will have a definition of plagiarism and a statement about the penalties students will incur if they commit plagiarism during their studies. Here are two specific definitions of plagiarism produced by different universities in the UK: • Plagiarism is "the reproduction or paraphrasing, without acknowledgement, from public or private (ie: unpublished) material (including material downloaded from the internet) attributable to, or which is the intellectual property of, another including the work of students." (University of Southampton, 2012) • Plagiarism is defined as "presenting someone else's work, in whole or in part, as your own. Work means any intellectual output, and typically includes text, data, images, sound or performance." (University of Leeds, 2012)… OK. I thought I should just select one check box. That is why I selected one. I selected one near the definition of plagiarism. OK. It was wrong and I made a mistake. (Goran 2)	Meta-cognitive (ibid.)	Evaluating cognition-evaluating cognitive progress and performance

Appendix P

The examples of learning strategies used by participants in observations and interviews

Instrument	Learning Strategy	Basic Functions	Examples
Observation	Meta-cognitive	Paying attention to cognition	From definition of Wikipedia, *plagiarism is considered academic dishonesty and a breach of journalistic ethics*; so, we can, we can pay more attention to, to two (xxx) of our essay writing. (Bob 2)
			I think it is not useful all the time I use the dictionary but I always want to focus about the vocabulary to learn, I don't have enough time, force, for spend time for reading and for everything. Just translate easier for understanding. (Baran 1)
			OK, this, this subject was not easy for me. That is why I didn't focus on vocabulary or what the subject said. Just I tried to read this paragraph. Now I am repeating again, and try to focus what, try to understand what it says. (Goran 1)
		Planning for cognition	Now in the Toolkit, I have to practise identifying plagiarism and avoiding poor practice. (Raman2)
			I think this exercise is finished. So I will go to another exercise. (Tasleem 1)
		Obtaining resources for cognition	I assume that I can't understand. And that I will open a new tab, and I am looking a website Google. And that, these words I don't understand, egoism, lets copy the word and search in Google. (Bob 1)
			I have three words that I don't understand. And::: they are plaintiff, litigation, testimony. Maybe they mean, they mean nearly, we can search these words I don't understand, on Google. (Bob 1)
			First, we should know what is plagiarism. (0.5) And:::: [He clicks on plagiarism, and search it in Google]. First, we search it on the website. (Bob 2)
			Yeah I have to search in Google translate some words. Because I don't understand some words, and I have to understand this word, between receptive vocabulary and productive vocabulary. (Baran 1)
			And you can understand what is the meaning of this word in this topic, maybe if you use the dictionary for this word,

			it will give you different meaning, and I think it is very best to learn words in the topic. (Baran 1)
			So before I have to see dictionaries. (Raman3)
			I don't understand any of these words, but I will try to, I will see the list, I don't understand any word, I try to translate them. I use Google translation, because it is very easy. I will translate into my language. And it gives me, yes I can understand it now. (Tasleem 1)
			I don't understand ecology. I think it is ecology. Also, I am going to type this word in the translation. Ecology, e-co-l—gy, ecology. Now I understand the word. I think it will be for the final one. It is about nature. (Tasleem 1)
			I don't understand this one. *Undecided, indecisive, decisively*, I will copy and see the translation. (Tasleem 1)
			I have to translate this one, because I don't know what is this one. I will use again Google translation. (Tasleem 2)
		Monitoring cognition	Service yes, noun, great! … Right, advertise yeah. … I think employees, yeah. … I think...aaa legality noun. Manage, legal yeah. … Managed adjective yeah. … Margination, ermm, adverb, aaa (0.5). … Marginally, adverb yeah. (Gazala 3)
			(OK. I thought I should just select one check box. That is why I selected one. I selected one near the definition of plagiarism. OK. It was wrong and I made a mistake. Goran 2)
			… Ok. My answer was correct… (Goran 2)
			OK. Let's see. The first one is cheating. Yeah. ... Yes first one is cheating. But I checked it as acceptable. The second one is true, cheating. This is clear plagiarism. The third one is cheating. And the last one is acceptable. OK. Just I did a mistake in the first one. I made a mistake in the first one. (Goran 2)
			Oow most of them are wrong, just two of them are correct. (Goran 3)
			Now I have to check. This one is not correct. … This one is ok. (Raman2)
			Ok. Show. Good, bad, bad, good. OK. My answers are right. (Raman2)
			Decide is ok, manage is ok. Here account is OK. (Raman3)

			I got three, how much, one, two, three, four, five, six. OK. 50% good! (Salar1)
			Wow I got only two. Ohh, I know this one as well. (Salar1)
			I put it only one. Maybe, paraphrasing ideas you have read without acknowledgement. Ok all of this. (He corrects himself after seeing the feedback.) (Salar2)
			Wow. I missed it. OK. (Salar2)
			Cheating, of course! ... Good. … Cheating as well, because sourcing got. This is clear plagiarism, yeah! … Cheating, of course! … I am not sure about this one. … Yeah, acceptable. … Good. (Salar2)
			Examples of what... yeah we got three from three, no, two. (Salar3)
			We got 5 from 5. That is good point. (Salar3)
			Yes that is general. (Salar3)
			Fact, yeah good. ... Where is your statistics about it? I am good in opinion and fact, believe me! … It is opinion. Where is your evidence? … Maybe statistics. Fact, this is a fact, yeah. (Salar3)
			Could you identify which parts of speech the other words represent? Decision (noun). Oh! (She goes back to her answer and then, the feedback again). (Tase 1)
			(She drags the definitions.) Let's check. Oh, OK. I am happy with this (she answers all correctly.) (Tase 1)
			I will try to show feedback. All of these statements reflect what the act of plagiarism involves… Yeah, all of these statements reflect what the act of plagiarism involves and they all represent actions which are wrong to do. (Tase 2)
			Yeah I got all them right. I could guess from the record. That is not easy. It is very beneficial. (Tase 2)
			True. Ok, this activity is very good, because it gives me information about what my PRP is. … I don't think so. Yeah, Quotations should be kept to a minimum. … True, oh, false. I will read the answer. … Hmmm. (Tase 2)
			I will see the, erm, the first one is banking, right. Second one is right, third one is right, fourth one is right, this one is right, even though I did not know the words, but, I could guess it because after I looked at other words. This one I

			left it in the fifth one, yeah, but I need to translate some words, because I did not get all of these words. (Tasleem 1)
			Let's see the feedback. Aaaa, when it is difficult to understand, is a bad advice. Actually it is a bad advice. ... I always use it when it is difficult to understand. … OK, this feedback is good, helpful, this feedback. … Yes. I think this feedback is good. Especially, I am using this one. I quote when I am not understanding, so this feedback is helpful. (Tasleem 2)
			Let's see the feedback. Ok. I said it is true. Ok, I understand it. Yeah, good. (Tasleem 2)
			OK, I think I can understand the feedback telling me that might is not used with this kind of meaning, because might is not sure, but I think the person in this sentence is sure, should have no problem. (Tasleem 3)
			The first one is right ability, the second one is right possibility, the third one is aaa obligation not necessity, wrong. And the fourth one is necessity, it is wrong also. Number 5 is intention, ok that is good. And number 6 is prediction, ok. That was very good exercise. I saw a new thing, this activity was very good and very useful. (Tasleem 3)
			For example, the first one I will check it, *asset, capital* OK. The second one *stimulus, egoism cognition,* all, it belongs to psychology, I did wrong. The third one is OK. *Medicine, textile*, also the last one is OK. I have to, it is meaning that you have to check all of them. One, two, three, four, five, six, I make one mistake, fault in here in psychology. *Behaviour, cognition, egoism, stimulus, trait, show feedback* again, it is now OK. (After showing feedback, he finds out his mistake and tries again to do the same question in the correct way.) (Ziver 1)
			All of these statements reflect what the act of plagiarism involves and they all represent actions which are wrong to do. All of them are plagiarism we selected. (Ziver 2)
		Evaluating cognition	Solved. So we can now know what the plagiarism is. (Bob 2)
			Now, I want to compare what I understand from this, this instruction before I look at feedback. I thought I had to determine some words bold, which, which I think they will be useful for some practical works. Also, I determined some words that I don't know the meaning of them. For example, toddler, I don't know the meaning of toddler, I don't know the meaning of heal. OK. (Goran 1)

			I found a lot information I didn't know about quotation and paraphrasing. I know that I quote just one word, small word. Now I know that I can quote long sentences, one or two sentences or long paragraph. It says here, it is Ok. I can, like government document, I can quote whole thing. (Tasleem 2)
			I have a lot of mistakes, because I don't understand how to solve. For example in the beginning, employment, manage, managed, *managed* is adjective, also *margin, marginally* I have many mistakes. (Ziver 1)
	Cognitive	Going beyond the immediate data -Predicting	And other meaning is, ermm, *synonym* is *selfishness (…) self-interest, self-love*. So these five words may be about *psychology*. (Bob 1)
			And I have to guess all of this one. Asset, capital, creditor, dividend…, I have to, ecology or this one, behaviour, cog…. I think psychology. (Baran 1)
			So I will see the closest word I understand. Behaviour I understand; so, it may be about psychology, about behaviour. (Tasleem 1)
			Textiles, it is fibre, rayon, spindle, weave closes. Ecology (he misreads ecosystem as ecology), *acid rain, biodiversity* (he skips the rest to read*) i*t seems to be talking about *ecology*. *Non-refundable, resource, biodegradable* I have to looking ecology. (Ziver 1)
		Going beyond the immediate data -Inferring	capital, economy *Ecosystem*, it should be *ecology*. (Raman1)
			It should be, ermm, capital, ermm, banking. (Raman3)
		Reasoning -Deductive	*… the importance of not plagiarising the work of another writer*. Sometimes we start to, we start to write our essay. Maybe, we, maybe we can use some (articles) from some of us and writers. It is easy to pla-, plagiarism. (0.10). [The observer reminds him of speaking aloud]. So, so, so::: we should figure out the plagiarism. (Bob 2)
			Plagiarism… I think, ermm, if you want to write something in the essay, PRP, you find the resources and you copy all of the word in this book or in this resource. This is plagiarism. (Baran 2)

			I will use google to understand. If I don't understand a word, I use google translate. And I use not Turkish, I understand Persian and Arabic. Just, I am sorry about that. Hes makor (Persian) yeah. Planning how to meet your workload. You can expect to be given different work to do by different tutors on your course… yeah, I understand something about planning. (Baran 3)
		Conceptualizing broadly -Summarizing	And yeah, this one is for check and understanding. (Baran 2)
	Meta-affective	Evaluating affect	Show feedback. And I think I am zero. Asset… and Banking, which one banking. Oh the one of banking yeah, the one of banking yeah. Congratulation for myself. The first, just one of the right. Second one is not right. And yeah third one is right. I just guessed. That is good. (Baran 1)
	Affective	Activating supportive emotions, beliefs and attitudes-Substituting positive emotions, beliefs and attitudes for negative ones	There is just one word in the context I did not. It is OK. Good! I finish this this part. Let's go to the next part. (Raman3)
Interviews-The EAP Toolkit	Meta-cognitive	Paying attention to cognition	For me, ermmm, for me I think listening and speaking may be beneficial for me. (Bob 1)
			If you ee only, if you only concentrate on this and you don't have any study,… useful for you (Perwin 3)
			I learned a lot, because first thing, this is my problem as well, I want to focus it, now gradually I can fix it, reading instructions as well, because I missed a lot of words from the activity, here exercises, because I did not know how to apply, how to follow the exercises, because the instruction about it is very useful. (Salar 1)
		Planning for cognition	I attempt to do many activities and use it in my spare time, holiday. (Gazala 2)
			In academic writing I choose academic writing because it is important. For example in writing essay. And in writing if you sometimes you, describing for example chart or diagram how you describe in academic writing you make

			decided to before anything you understanding the title essay and you understanding how use the key in the title all of them you ee answer in your essay. After that you decided the structure you make in your essay structure for example introduction body and conclusion. (Perwin 3)
			I think now it is better, still, as you know I am busy with reference list, I can use here, I have a referencing, articles, online articles and books, and reports, I have to study in referencing, but how I can reference a report. Already, my plan, I have to look it and learn from it. I think it is useful. (Raman2)
			… so I know, for my next project, I will use more quotation, because my teacher told me actually, she marked me for the quotation, and I didn't use any quotation for my project. Because I thought that quotation is not very important if you just paraphrase, paraphrase, paraphrase everything, even if your paraphrasing is bad, it is better than using the quotation. But I saw that quotation is good, also. (Tasleem 2)
			I am, even when I go back to holiday, when I have leisure time, I will go to the EAP, I have to go to the EAP because EAS study here, like English for Academic Studies there is many many thing, if you know in the EAP , in the future, maybe you will avoid this mistake. (Ziver 3)
		Obtaining resources for cognition	… Time I need to I have free time I need to study I open this. (Perwin 3)
			If I don't understand it, I will go to the dictionary, but still English, we have a problem in English, because the meaning of words during the context it is completely may be different. The words have more than one meaning, maybe I can find a word like bank, bank have more than 10 meanings, everything you can put together and use the meanings of banks, bank of (unclear), bank of, I don't know everything means bank. (Raman1)
			And I tried to go to the dictionary and see it was. Because it is important. It is a part of vocabulary when you have tried to use it, you have to use in the correct, in the right pronunciation. If people, if you still use some words, but in wrong pronunciation, maybe the people, natives or audience don’t understand you. It is important I think. (Raman 3)
			If all doors for me are close, I never think about them. Maybe I have never idea about this meaning, I use the dictionaries. It is useful. It helps you to, sometimes, for pronunciation, for the meaning, for synonyms, for

			colloquoation, where you can use it. And I think these are very very useful. (Raman3)
			… I use it for reading I used it for writing, as well. I am not using for listening as well. I'm not sure about listening I use rather. (Salar2)
			Yes, new vocabulary. I see new vocabulary and, but I need to, like here it, sometime I take new vocabulary and then google, also they pronounce it. Yes. (Tasleem 1)
		Monitoring cognition	When I found this one, you said it is useful for me, when I did my exams or assessments, my vocabulary is more higher, because my degree is for vocabulary. I got more score. (Raman1)
			Erm, feedback, I tried to all of them, to have feedbacks, to check by my answers, my thought are right about, and the questions are not. And I think it is helpful, feedback, because it gives you more information and if you are right, maybe I have a different idea about choosing, still I am right, I choose right questions, but when I read, the feedbacks maybe some areas, I didn't notice, but they give me answers, what is the feedback, why, how and ... (Raman2)
			The feedback, I think, in every subject, it is right. When you find it, because I did some practices, and from seven, I had just one wrong. And I tried to say that yes I know. This is why, because I, for this one, practise, some words are strange for me. And I didn't recognise it. But other ones, when I did, I just did by guess. When I came to see the feedback, I say my guess is wrong. Because I did by guess. (Raman3)
			It helps me to learn English as well as do, ermm, enjoy. Because you will find yourself where is your score by this feedback. (Salar 1)
		Evaluating cognition	Yeah, answer, in feedback, at first, explanation that this passage is not completely academic, it is not academic, it is unacademic style. OK. And second one, just mention how I can use, how can I benefit from unacademic passage if I read some unacademic passages, what can I learn from this passage. For example, this explanation for four type of explanation I can use them, I can learn from this passage and use them in my, maybe in my academic. (Goran 1)
			Because I said, just I read the first instruction but not, I made a mistake just in one word, and I answered to the question, I didn't answer the question correct. I made a mistake in my answer. Because I made a mistake in instruction, understanding the instruction. … If I have more

			focus on instruction. … It was my mistake, it was not about instruction. Instruction is full complete, it is good. But it was my mistake because I didn't read it carefully. (Goran 2)
			For me no, because I am not good in language. I need language. Before, that fifty fifty. Because I understand but not 100%. (Perwin 3)
			For my special more more important right now. I have a good, sometime I am just working on the vocabulary. Vocabulary is very important, because before I came here, I had a good background in English in general. But when I came here, I see that I am weak in some part of my study exactly in vocabulary, I have to extend or expand because I am limited. (Raman1)
			If you compare for the the first time I found it is easier to use than first time and it is understandable more maybe my English improved why understanding this EAP Toolkit. And the most of topic is here, our tutor here they are telling us if you perceived your tutors to do EAP Toolkit may you will get high marks in order because it is kind of repetition for you should will be. (Salar 2)
			Choosing the main points in an essay, or any article, it is not easy. But this you need time when you have. I found myself, my progress well. (Salar 3)
			Because I told you, I found it was a bit hard when they use a little very academic words, my academic word is very low. So, I have to translate sometimes. But I think this one is better, Because now it is one month, our first time when we met (unclear). I think I developed some of my vocabulary so I think now it is better. (Tasleem 2)
	Cognitive	Using the sense to understand -the haptic sense	And after that, if you read more, and sometimes, if you not understand some word, you can write the meaning of word, and good for your vocabulary. (Perwin 2)
			Yeah. Building your vocabulary, because it will be a, if I know the base of the word, maybe I can just, by practice I can learn more than four or five other words related to the base as adjectives, adverbs, and the type of nouns for the places, for adjectives, how you can make them, as a prefixes or suffixes you can add you will give another word. It is good idea. (Raman1)
			Yes, this is, but sometime I just think I did good all because I see new word even if I like to memorise their spelling, but I get this a lot. I get erm all… (Tasleem 1)

		Using the sense to understand -the combined senses	I listen to audios and write it, and have no problem. I read, I write it one of them correctly. And I have another question about audios, I think writing something is good. (Ziver 2)
		Going beyond the immediate data	Yeah, I just understand this one. I know this one is banking, but I don't understand another one, just guess and I put a, someone and just right. (Baran 1)
			Sometimes, if I can't understand some options, questions, I use random, just for try, (Baran 3)
		Reasoning -inductive	And second one, just mention how I can use, how can I benefit from unacademic passage if I read some unacademic passages, what can I learn from this passage. For example, this explanation for four type of explanation I can use them, I can learn from this passage and use them in my, maybe in my academic. (Goran 1)
		Reasoning -deductive	I tried to understand the general meaning of the sentence. I tried to catch the general idea of sentences, or of what was about. (Goran 3)
	Meta-affective	Paying attention to affect	I think I used it once, but it was like very fast, and I wasn't like concentrating, I was trying to just develop my language and the same time, I was thinking of my project, so I used it so fast, and I didn't think it. I think this one I used now is much better. Because I am free, I finish my project, and I get my grade, I am now like more relaxed. I just sit here, and I was reading the question more carefully. When I am reading, I try to understand. This time is better than the time I last time used by myself. (Tasleem 2)
			Yeah. If you don't know the topic, you cannot learn the meaning of the answer. You have to careful to read each sentence, each word in the sentence to answer the question in the EAP Toolkit. First of all, you have to be relaxed, comfortable psychologically. Actually, I feel sad about that. Because it is my fault. I did not concentrate on that (Ziver 3)
		Planning for affect	No, because I don't decide it until may come back to study English. I just want to relax and after June, I will come back here, after that maybe in pre-sessional course, I come back here, I use the EAP Toolkit, some of them. I want to learn something about grammar. But I don't know it has anything about grammar or no. (Baran 3)

		Obtaining and using resources for affect	Sometimes I cannot what I am feeling or what I am thinking to reading, still reading to feel good, to feel well about word. (Raman1)
		Organizing for affect	Because that I think, you must go home and you relax, you don't think about anything and after that, you use activity. (Baran 3)
		Evaluating affect	It does not score. But if you, because I am right three one I am happy. Three one is right…. here one is right and two one is not right not correct. But, I think I am success this one, but maybe two one is guess not I am not sure about. (Baran 1)
	Metasociocultural-interactive	-planning for contexts, communication and culture	No, because I don't decide it until may come back to study English. I just want to relax and after June, I will come back here, after that maybe in pre-sessional course, I come back here, I use the EAP Toolkit, some of them. I want to learn something about grammar. But I don't know it has anything about grammar or no. But I use the EAP Toolkit. (Baran 3)
	Sociocultural-interactive	-interacting to learn and communicate	My tutor as a, you know C, he is very friendly, I used my time to listen to C, and speaking. He speaks too much, and I tried to use him to practise my speaking. Also, other tutors. This is my experience. (Raman3)
			I asked for in my country as well, here, I asked some of maybe professors from our country they told me that there is a software you can detect anything (anywhere. (Salar2)
Interview-Other OLRs	Meta-cognitive	Paying attention to cognition	Not all of them. Sometimes I like to understand. I concentrate on this activity. If you not, you not need, I don't concentrate on this. (Perwin 2)
			Because I like listening and because I do listen to TVs, news, but I would rather to listen while, and concentrate especially in those... (Tase 1)
		Planning for cognition	I will pass the course, or forced to take the pre-sessional course. Then I seriously will read my field and increase my vocabulary listening based on the websites, online resources. (Gazala 3)
			Why is it useful or why is it unuseful? You know, for my presentation, I need some specific, some very particular things and it was very difficult for me to go to library and look at the books which one contains this data for example, or not. But when I search online, for example, I search I need data about for example, (unclear) in the UK, and it was very easier than going to the library and looking at firstly find which book is about population and fertility,

			which one is not, and after that, I have to look at that book which contains the fertility subject, for example, which one contains data, which one does not contain data. After I should look at data, which one is that I need or I can use or I can'' use in my presentation. It is very maybe difficult than, takes more time. But if I do online, I can, I think it is easier... (Goran 3)
			Next semester, to be more prepared academic here, and don't forget what I learned last summer, try to improve them. Because there is no tutor. I am not here. I should use online learning resources. (Goran 3)
			I am planning something else. I am planning something else on holiday. I will use some of uefpa.com. And I will choose BBC, all the BBC to listening, and reading, some text, some, you know, to improve my vocabulary from the news. (Salar3)
			I have four months to start my master degree, maybe five months, I am not sure yet. Sometimes I have to do IELTS. So I will just sit down and improve my English, because it is not my first language, I have to always work on it. Because if I stop using some words, I will forget about them. I have to use them every time and see them in sentence, so I will always remember them. (Tasleem 3)
			Resources, some of them, I get it and neglect it. Even I tried to read it, I don't give the information that is wanted (?). I give up one side, I put it one side sorry and the other side, I need to benefit (unclear) Toolkit (?) benefit from English, the other idea that is for. (Ziver 2)
		Obtaining resources for cognition	And for example, for my writing, essay writing, I need to search some sources to support my points, and I think Google Scholar is very good. (Bob 2)
			Because the tutors provide many websites, of course, it is impossible I use them all. I can use some according to the actual condition. For example, listening is initially my weakness. My tutor provides some useful websites for me such as BBC News and Oxford podcast and some magazines. But from, briefly, my ability does not meet the requirement, so I can choose the easy websites like BBC Learning English. If my ability improves, I can choose the harder one such as BBC News or the podcasts. (Bob 3)
			Actually, in BBC and British Council, I do a lot listening. And I would like to improve my speaking skills, so I do many tasks, for example, writing, reading, just listen, and show the transcript, download the transcript and try to take some explanation I would like to improve, just maybe speaking (Gazala 2)

			I used TED, because I had listening exams. Also I had seminar and presentation exam. I focused on TED. (Goran 2)
			… Sometimes I look at dictionaries. (Goran 2)
			I read some articles or I look at some websites. Maybe they are, they were some useful information or useful articles I saved them. If there is no article, there was just a text inside the website, I tried to copy or write it down, use it in my PRP or in my presentation. (Goran 2)
			BBC all of them I use in listening. BBC iPlayer, and BBC news use listening only. And all of them I use some sites, online I show some YouTube and teach speak for example, adjective, noun and structure of writing academic, in YouTube. (Perwin 1)
			practice, they give me more practice, sometimes I read newspaper from the news from BBC for reading and sometime, there is some, some, some, some, some sources give you type of essay, how you can write essay and what is the meaning of the essay, or to understand the title of each essay, some sources I can find through Google, you can find it and use it. (Raman1)
			Yes, I am, sometime for my listening and for my presentation, I, TEDtalk it is useful, because maybe it is, when I practise my listening, take noting, I use this one. (Raman2)
			if you have a problem in independent study, and you haven’t answer, you want to learn more about the subject, and using the websites, I think they are very useful, because they, you can get more information about the subject when you don't know. (Raman3)
			I try to buy books and CDs to learn the language. (Tase 2)
			We look for, search sometimes very easy to look at, when I don't catch, explore in the newspaper, for example, I have to go to another website for more info. (Ziver 2)
			I have to, a new resource. I go to google scholar, I don't find it, I go to the newspaper, I don't find it, I go to TD net, so I try to use multi-websites, multi-search to get the information I need. (Ziver 2)
			I use it for listening, something to improve my listening. (Ziver 3)
			Ted.com they have descriptions of all (unclear) you have to look for which type of vocabulary difficult they used it, you

			don't know, you have to look for the meaning of them whether in the EAP Toolkit dictionary or Macmillan dictionary you have it. (Ziver 3)
		Organizing for cognition	Some, if this is my, when I feel, I am not in the good situation to achieve something, I have take rest, I have change the situation. Otherwise, last night, for example, when I revised for second my PRP, I can't change anything else, because I am not focused, I am tired, just I leave it, left my PRP and sleep. Good sleep, because I need to fresh, I woke up early and you know new energy and focused, this kind of issue. We have to find an appropriate time for using them, still in the website, if you are just for losing time or spending your time, maybe you use some website is not useful for you. But if you look in general, some words, some new things or some new activities you found. (Raman2)
		Monitoring cognition	Yeah. Sometimes I am taking notes, you know, new words I heard, I check with the dictionary after that. (Salar1)
			I found myself that my writing skills is the lowest one, so I just focus on the writing with in the EngVid with in the EAP Toolkit in previous time. (Salar2)
		Evaluating cognition	Watched five video, I waste my time watching video, I do the activity after that. No I don't do activity, I understand I watched another video. I think this is problem in the semester one and all the time I use English video and I don't do the activity. Because I think activity is very useful, now I understand. (Baran 2)
			I can evaluate myself, my information, or my knowledge, something like that. If I solve or answer the test or the question, and after that I look at the feedback, not just look at the question and look at the feedback, what is the answer. I have to solve it first by myself…. And compare where is the difference. Yeah, especially, I have more improved listening last semester, semester 1, and I think my strategy was good. (Goran 1)
			Usually they have instruction but maybe some instructions are enough, maybe some instructions are not enough. Maybe sometimes, I misunderstand the instruction. After I do the activity and come back to the answer, after that, I find out the real... the real purpose of what the activity wants me to do. (Goran 2)
			I used grammar I used vocabulary I used video to learn how speak English how you used but I need more really I need more… More study by myself and more practice for speaking for listening for all of them. (Perwin 3)

			I did it for my vocabulary and they say that your vocabulary is good right now. Because I just compare with my first October when I arrived…when I have good information and when I have a good vocabulary I can answer the questions, or through these answers, I learned something I can answer it. (Raman 1)
			This is good for me, and in seminars, in our seminars, I found myself, I am better than the people there using sources from the seminar one. I am using the sources, I have sources for debating, speaking. (Salar1)
	Cognitive	Conceptualizing broadly	You want to search some topics, you can click the key word about it and then there are many information in Google Scholar. You can summarise and paraphrase from the article of those, and have your essay well. (Bob 2)
		Using the senses to understand	All the time, after I watched this one, for activity, I, the first time, I watch a movie. Because you enjoy. Honestly, I like series, movie. Just for series, movie. Because it is a some word, you can repeat this word, and... (Baran 1)
			This video is 6 minutes. I write, take note. (Baran 3)
			They can, ermm, learn write the activities, do it again and try many times, ermm I can listen many times, I can, I have a control to, to, re, reagain the the tab. (Gazala 1)
			BBC (unclear) he asked us to listen every week, we should listen just five minutes or four minutes, and I need record listening, write what we heard, yes, I chose BBC Learning English. They are useful in pronunciation, they give you correct pronunciation, you can practise it may times, you can hear the word many times and get the correct pronunciation. Also, you will feel confident, you can also have some listening. You can listen and transcript, this is a good way to follow. (Gazala 3)
			Not online, just I read references and take notes. (Goran 1)
			For example, looking at TED, no just look at it, try to take some notes, practise and take notes and catching main ideas, supporting ideas, but there is no feedback. (Goran 3)
			Yeah. Sometimes I am taking notes, you know, new words I heard, I check with the dictionary after that. (Salar1)
			Our vocabulary, because, you know we need to read a lot and sometime when you get vocabulary, we remember it by writing. (Tasleem 2)

	Meta-affective	Obtaining and using resources for affect	… Eah, I don't understand this, I don't know what is the meaning of queue. And this video, two months ago I watched the one Pakistani, the tutor asked, asking 'Tell me some words starting with q', he just laughing, q, q, q and this q start in my mind, qu, what is the meaning of queue, and I think in the vide, mind your language, something about this one, but have a lot of, now just I not read all of this website. (Baran 1)
	Metasociocultural-interactive	Planning for contexts, communication and culture	This semester, believe me, we are very busy, and I told my friend send me some websites for writing, because here, I think, we ned for writing, and he sent me. And for, this year, I stayed here, I didn't come back to my country. And here in holiday, I researched about... (Baran 2)
		Obtaining and using resources for contexts, communication and culture	But as far as I know, they almost have no instruction and feedback, so you can just practise and know the answers. And sometimes if you do it in correct way, but you don't know why it is correct or wrong… Because the answers, they don't have feedback… Maybe I can ask my tutor, search the information about it. (Bob 3)
			There is a variety of activities which cover all aspects of language, speaking, writing, listening, reading. And except reading, writing, I think I have not used any website which is care about writing, and give me a feedback about writing, when I write something and submit it at that time.… Reading and writing, for example, because, the reason why I have not sended my work, the work to this site, because, I don't know if they are reliable or. Ermm... Especially writing. For example if, for example, some, ermmm, bo... (unclear), ermm, well-known sites such as BBC, or British Council, ermm, if there is something like I sent my written work to them and they correct me, maybe I will give it, because they are reliable, they are well-known, ermm, I, but other sites, I think actually I have no idea about them. I don't know if they are. (Gazala 1)
	Sociocultural-interactive	Interacting to learn and communicate	Both. (Help from both the tutor and friends) Because the tutors provide many websites, of course, it is impossible I use them all. I can use some according to the actual condition. For example, listening is initially my weakness. My tutor provides some useful websites for me such as BBC News and Oxford, podcast and some magazines. But from, briefly, my ability does not meet the requirement, so I can choose the easy websites like BBC Learning English. If my ability improves, I can choose the harder one such as BBC News or the podcasts. (Bob 3)

			Yeah, yeah, in English with my friend, another my friend is pilot, all the time chatting with him. Another one... (unclear) learning English. (Baran 1)
			told my friend send me some websites for writing, because here, I think, we ned for writing, and he sent me. (Baran 2)
			But here for example, I can speak with a group, some students. Speak with them online, improve my speaking. (Gazala 2)
			For example, some words you translate it, but you cannot match the words and context. You need your tutor. This is an example, and there are some cases you have to, you need the explanation of your tutor, sometimes in writing you need, how to put this word, this word is suitable for this context. (unclear) with my PRP, you know, the word, software, when you click synonyms, but not also synonyms, for example, will not go with the context, so, for example, in this case, you can ask your tutor. (Gazala 3)
			Yeah. I asked three people, some one said beside, someone said besides. (Goran 3)
			And there is online learning English, there is a course about how to speak. I got this link from my brother, ermm, my classmates, but online learning, for me. But I asked my tutors why they are doing some kind of stresses. They gave me an explanation that people doing this by the need of debate, in order to ask you, in order to influence on your situation, to make you more, you cannot discuss more. (Salar1)

Appendix Q

Web links of other OLRs

British Council: http://learnenglish.britishcouncil.org/en/

Word on the Street: http://learnenglish.britishcouncil.org/en/word-street

Using English for Academic Purposes (UEFAP): http://www.uefap.com/

BBC 6 minute English: http://www.bbc.co.uk/worldservice/learningenglish/general/sixminute/

EngVid: http://www.engvid.com/

English town: http://www.englishtown.com/community/portal/default.aspx)

English 4u: http://www.english-4u.de/

English Club: https://www.englishclub.com/

Activities for ESL/EFL Students (A4ESL): http://a4esl.org/

Ted.com: http://www.ted.com/

Appendix R

Table 29: Frequency and Percentage of Rating the EAP Toolkit Reported in the Pre-questionnaire

Rating Scales	Enjoyable		Easy		Helpful		Providing good feedback		Reinforcing learning	
	F	%	F	%	F	%	F	%	F	%
SD	0	00.0	0	00.0	1	2.9	0	00.0	0	00.0
D	3	8.6	2	5.7	1	2.9	3	8.6	2	5.7
N	5	14.3	4	11.4	5	14.3	3	8.6	4	11.4
A	3	8.6	6	17.1	4	11.4	5	14.3	6	17.1
SA	3	8.6	2	5.7	3	8.6	3	8.6	2	5.7
N/A	21	60.0	21	60.0	21	60.0	21	60.0	21	60.0
Total	35	100.0	35	100.0	35	100.0	35	100.0	35	100.0

Note: SD= Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree, N/A= Not applicable F= Frequency, %= Percent

Table 30: Frequency and Percentage of Rating the EAP Toolkit Reported in the Post-questionnaire

Rating Scales	Enjoyable		Easy		Helpful		Providing good feedback		Reinforcing learning	
	F	%	F	%	F	%	F	%	F	%
SD	1	2.9	1	2.9	0	00.0	0	00.0	0	00.0
D	1	2.9	3	8.6	2	5.7	1	2.9	0	00.0
N	13	37.1	8	22.9	5	14.3	14	40.0	9	25.7
A	7	20.0	10	28.6	15	42.9	5	14.3	13	37.1
SA	1	2.9	1	2.9	1	2.9	3	8.6	1	2.9
N/A	12	34.3	12	34.3	12	34.3	12	34.3	12	34.3
Total	35	100.0	35	100.0	35	100.0	35	100.0	35	100.0

Table 31: Frequency and Percentage of Rating Online Language Learning Resources Reported in the Pre-questionnaire

Rating the usefulness of OLRs	Frequency	Percent
Moderately useful	9	25.7
Useful	15	42.9
Very useful	7	20.0
Not Applicable	4	11.4
Total	35	100.0

Table 32 : Frequency and Percentage of Rating Online Language Learning Resources Reported in the Post-questionnaire

Rating the usefulness of OLRs	Frequency	Percent
Moderately useful	8	22.9
Useful	21	60.0
Very useful	4	11.4
Not Applicable	2	5.7
Total	35	100.0

Table 33 : Frequency and Percentage of Rating the EAP Toolkit overall and in terms of its Scaffolders Reported in the Pre-questionnaire

Rating	Overall		Web links		Glossary		Dictionary		Feedback		Information		Explanation	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	1	2.9	0	00.0	0	00.0	1	2.9	0	00.0	0	00.0	0	00.0
2	2	5.7	0	00.0	1	2.9	1	2.9	1	2.9	1	2.9	2	5.7
3	5	14.3	6	17.1	5	14.3	4	11.4	5	14.3	4	11.4	5	14.3
4	4	11.4	4	11.4	6	17.1	5	14.3	4	11.4	5	14.3	3	8.6
5	2	5.7	2	5.7	1	2.9	1	2.9	3	8.6	3	8.6	2	5.7
N/A	21	60.0	23	65.7	22	62.9	23	65.7	22	62.9	22	62.9	23	65.7
Total	35	100.0	35	100.0	35	100.0	35	100.0	35	100.0	35	100.0	35	100.0

Note: 1=Not useful, 2=Less useful, 3=Moderately useful, 4=Useful, 5=Very useful, N/A= Not applicable, F= Frequency, %= Percentage

Table 34 : Frequency and Percentage of Rating the EAP Toolkit overall and in terms of its Scaffolders Reported in the Post-questionnaire

Rating	Overall		Web links		Glossary		Dictionary		Feedback		Information		Explanation	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	0	00.0	0	00.0	0	00.0	0	00.0	1	2.9	0	00.0	0	00.0
2	2	5.7	2	5.7	3	8.6	2	5.7	2	5.7	1	2.9	2	5.7
3	7	20.0	9	25.7	9	25.7	12	34.3	6	17.1	10	28.6	9	25.7
4	14	40.0	9	25.7	10	28.6	6	17.1	12	34.3	9	25.7	10	28.6
5	0	00.0	3	8.6	1	2.9	3	8.6	2	5.7	2	5.7	2	5.7
N/A	12	34.3	12	34.3	12	34.3	12	34.3	12	34.3	13	37.1	12	34.3
Total	35	100.0	35	100.0	35	100.0	35	100.0	35	100.0	35	100.0	35	100.0

Table 35 : Frequency and Percentage of Rating Feedback from Online Language Learning Resources Reported in the Pre-questionnaire

Rating the usefulness of feedback	Frequency	Percent
Less useful	1	2.9
Moderately useful	7	20.0
Useful	5	14.3
Very useful	3	8.6
Not Applicable	19	54.3
Total	35	100.0

Table 36 : Frequency and Percentage of Rating Feedback from Online Language Learning Resources Reported in the Post-questionnaire

Rating the usefulness of feedback	Frequency	Percent
Less useful	2	5.7
Moderately useful	5	14.3
Useful	10	28.6
Very useful	3	8.6
Not Applicable	15	42.9
Total	35	100.0

Table 37: Frequency and Percentage of Participants' Attributions for their Success Reported in the Pre-questionnaire

Factors of attributions for Success	Frequency(F), Percent (%)	Rating Scales					
		SD	D	A	SA	NA	Total
Luck in the EAP	F	4	12	10	1	8	35
	%	11.4	34.3	28.6	2.9	22.9	100.0
Luck in OLRs	F	4	15	9	4	3	35
	%	11.4	42.9	25.7	11.4	8.6	100.0
Ability in the EAP	F	2	11	8	1	13	35
	%	5.7	31.4	22.9	2.9	37.1	100.0
Ability in OLRs	F	2	11	9	4	9	35
	%	5.7	31.4	25.7	11.4	25.7	100.0
Effort in the EAP	F	0	3	16	6	10	35
	%	00.0	8.6	45.7	17.1	28.6	100.0
Effort in OLRs	F	0	2	20	10	3	35
	%	00.0	5.7	57.1	28.6	8.6	100.0
Strategy in the EAP	F	0	0	22	4	9	35
	%	00.0	00.0	62.9	11.4	25.7	100.0
Strategy in OLRs	F	0	2	24	7	2	35
	%	00.0	5.7	68.6	20.0	5.7	100.0

Note: SD= Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree, N/A= Not applicable

Table 38: Frequency and Percentage of Participants' Attributions for their Success Reported in the Post-questionnaire

Factors of attributions for Success	Frequency(F), Percent (%)	Rating Scales					
		SD	D	A	SA	NA	Total
Luck in the EAP	F	1	16	10	2	6	35
	%	2.9	45.7	28.6	5.7	17.1	100.0
Luck in OLRs	F	1	18	11	2	3	35
	%	2.9	51.4	31.4	5.7	8.6	100.0
Ability in the EAP	F	0	15	10	3	7	35
	%	00.0	42.9	28.6	8.6	20.0	100.0
Ability in OLRs	F	1	12	14	3	5	35
	%	2.9	34.3	40.0	8.6	14.3	100.0
Effort in the EAP	F	0	1	18	5	11	35
	%	00.0	2.9	51.4	14.3	31.4	100.0
Effort in OLRs	F	0	2	20	7	6	35
	%	00.0	5.7	57.1	20.0	17.1	100.0
Strategy in the EAP	F	0	2	19	4	10	35
	%	00.0	5.7	54.3	11.4	28.6	100.0
Strategy in OLRs	F	0	1	20	7	7	35
	%	00.0	2.9	57.1	20.0	20.0	100.0

Table 39: Frequency and Percentage of Participants' Attributions for their Failure Reported in the Pre-questionnaire

Factors of attributions for failure	Frequency(F), Percent (%)	Rating Scales					
		SD	D	A	SA	NA	Total
Luck in the EAP	F	7	17	1	0	10	35
	%	20.0	48.6	2.9	00.0	28.6	100.0
Luck in OLRs	F	9	19	1	2	4	35
	%	25.7	54.3	2.9	5.7	11.4	100.0
Ability in the EAP	F	1	9	13	0	12	35
	%	2.9	25.7	37.1	00.0	34.3	100.0
Ability in OLRs	F	0	11	18	0	6	35
	%	00.0	31.4	51.4	00.0	17.1	100.0
Effort in the EAP	F	1	4	15	4	11	35
	%	2.9	11.4	42.9	11.4	31.4	100.0
Effort in OLRs	F	2	5	20	4	4	35
	%	5.7	14.3	57.1	11.4	11.4	100.0
Strategy in the EAP	F	2	13	10	2	8	35
	%	5.7	37.1	28.6	5.7	22.9	100.0
Strategy in OLRs	F	3	14	12	4	2	35
	%	8.6	40.0	34.3	11.4	5.7	100.0

Table 40: Frequency and Percentage of Participants' Attributions for their Failure Reported in the Post-questionnaire

Factors of attributions for failure	Frequency(F), Percent (%)	Rating Scales					
		SD	D	A	SA	NA	Total
Luck in the EAP	F	4	18	3	0	10	35
	%	11.4	51.4	8.6	00.0	28.6	100.0
Luck in OLRs	F	7	20	2	2	4	35
	%	20.0	57.1	5.7	5.7	11.4	100.0
Ability in the EAP	F	1	7	16	2	9	35
	%	2.9	20.0	45.7	5.7	25.7	100.0
Ability in OLRs	F	1	10	16	2	6	35
	%	2.9	28.6	45.7	5.7	17.1	100.0
Effort in the EAP	F	1	8	13	3	10	35
	%	2.9	22.9	37.1	8.6	28.6	100.0
Effort in OLRs	F	1	7	17	4	6	35
	%	2.9	20.0	48.6	11.4	17.1	100.0
Strategy in the EAP	F	4	18	3	0	10	35
	%	11.4	51.4	8.6	00.0	28.6	100.0
Strategy in OLRs	F	7	20	2	2	4	35
	%	20.0	57.1	5.7	5.7	11.4	100.0

Table 41: Frequency and Percentage of their Attributions to Teachers' influence Reported in the Pre-questionnaire

Items of attributions to teacher	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
The class helps success in the EAP	F	0	2	19	4	10	35
	%	00.0	5.7	54.3	11.4	28.6	100.0
The class helps success in OLRs	F	1	3	22	5	4	35
	%	2.9	8.6	62.9	14.3	11.4	100.0
The methods learned in the class help success in the EAP	F	1	0	22	5	7	35
	%	2.9	00.0	62.9	14.3	20.0	100.0
The methods learned in the class help success in the OLRs	F	1	2	20	1	11	35
	%	2.9	5.7	57.1	2.9	31.4	100.0

Table 42: Frequency and Percentage of Participants' Attributions to Teachers' influence Reported in the Post-questionnaire

Items of attributions to teacher	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
The class helps success in the EAP	F	0	5	20	2	8	35
	%	00.0	14.3	57.1	5.7	22.9	100.0
The class helps success in OLRs	F	0	5	21	7	2	35
	%	00.0	14.3	60.0	20.0	5.7	100.0
The methods learned in the class help success in the EAP	F	1	4	19	8	3	35
	%	2.9	11.4	54.3	22.9	8.6	100.0
The methods learned in the class help success in the OLRs	F	0	3	18	5	9	35
	%	00.0	8.6	51.4	14.3	25.7	100.0

Table 43: Frequency and Percentage of Participants' Confidence in E-learning Environments Reported in the Pre-questionnaire

Items of feeling confident when…	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
I read online	F	0	8	17	6	4	35
	%	00.0	22.9	48.6	17.1	11.4	100.0
I express my opinions online	F	0	8	18	5	4	35
	%	00.0	22.9	51.4	14.3	11.4	100.0
Receiving feedback online	F	2	6	15	5	7	35
	%	5.7	17.1	42.9	14.3	20.0	100.0
I am corrected by OLRs	F	0	4	23	5	3	35
	%	00.0	11.4	65.7	14.3	8.6	100.0
I am corrected by the EAP	F	0	4	18	2	11	35
	%	00.0	11.4	51.4	5.7	31.4	100.0
I receive feedback from EAP	F	0	3	18	3	11	35
	%	00.0	8.6	51.4	8.6	31.4	100.0
I receive support from EAP	F	1	3	13	7	11	35
	%	2.9	8.6	37.1	20.0	31.4	100.0

Table 44: Frequency and Percentage of Participants' Confidence in E-learning Environments Reported in the Post-questionnaire

Items of feeling confident when…	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
I read online	F	0	5	19	9	2	35
	%	00.0	14.3	54.3	25.7	5.7	100.0
I express my opinions online	F	3	8	21	1	2	35
	%	8.6	22.9	60.0	2.9	5.7	100.0
Receiving feedback online	F	1	7	18	3	6	35
	%	2.9	20.0	51.4	8.6	17.1	100.0
I am corrected by OLRs	F	0	3	24	3	5	35
	%	00.0	8.6	68.6	8.6	14.3	100.0
I am corrected by the EAP	F	0	3	18	4	10	35
	%	00.0	8.6	51.4	11.4	28.6	100.0
I receive feedback from EAP	F	0	2	12	10	11	35
	%	00.0	5.7	34.3	28.6	31.4	100.0
I receive support from EAP	F	0	3	15	7	10	35
	%	00.0	8.6	42.9	20.0	28.6	100.0

Table 45: Frequency and Percentage of Participants' Confidence in the Classroom Reported in the Pre-questionnaire

Items of feeling confident when…	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
I read in class	F	0	6	23	3	3	35
	%	00.0	17.1	65.7	8.6	8.6	100.0
I express myself in class	F	1	0	25	6	3	35
	%	2.9	00.0	71.4	17.1	8.6	100.0
I receive comments in class	F	0	0	22	12	1	35
	%	00.0	00.0	62.9	34.3	2.9	100.0
I am corrected in class	F	0	3	20	11	1	35
	%	00.0	8.6	57.1	31.4	2.9	100.0
	F	0	2	19	12	2	35

I receive feedback in class	%	00.0	5.7	54.3	34.3	5.7	100.0
I receive support in class	F	0	3	17	14	1	35
	%	00.0	8.6	48.6	40.0	2.9	100.0

Table 46: Frequency and Percentage of Participants' Confidence in the Classroom Reported in the Post-questionnaire

Items of feeling confident when…	**Frequency(F), Percent(%)**	**Rating Scales**					
		SD	**D**	**A**	**SA**	**NA**	**Total**
I read in class	F	1	3	25	6	0	35
	%	2.9	8.6	71.4	17.1	00.0	100.0
I express myself in class	F	1	2	23	8	1	35
	%	2.9	5.7	65.7	22.9	2.9	100.0
I receive comments in class	F	1	0	22	10	2	35
	%	2.9	00.0	62.9	28.6	5.7	100.0
I am corrected in class	F	0	2	20	11	2	35
	%	00.0	5.7	57.1	31.4	5.7	100.0
I receive feedback in class	F	0	1	23	9	2	35
	%	00.0	2.9	65.7	25.7	5.7	100.0
I receive support in class	F	0	0	22	10	3	35
	%	00.0	00.0	62.9	28.6	8.6	100.0

Table 47: Frequency and Percentage of Participants' Beliefs about their Online Learning Reported in the Pre-questionnaire

Items of beliefs about online learning	**Frequency(F), Percent (%)**	**Rating Scales**					
		SD	**D**	**A**	**SA**	**NA**	**Total**
Learning online is easy	F	1	13	12	5	4	35
	%	2.9	37.1	34.3	14.3	11.4	100.0

Learning online is fun	F	0	3	25	6	1	35
	%	00.0	8.6	71.4	17.1	2.9	100.0
I can express myself well	F	1	6	18	4	6	35
	%	2.9	17.11	51.4	11.4	17.1	100.0
My performance improves when I receive feedback in OLRs	F	0	7	19	2	7	35
	%	00.0	20.0	54.3	5.7	20.0	100.0
My interest in learning increases when I receive feedback in OLRs	F	0	5	21	5	4	35
	%	00.0	14.3	60.0	14.3	11.4	100.0
The support from the EAP makes me aware of the way to learn	F	0	5	19	4	7	35
	%	00.0	14.3	54.3	11.4	20.0	100.0
The feedback from the EAP makes me aware of the way to learn	F	1	5	10	6	13	35
	%	2.9	14.3	28.6	17.1	37.1	100.0

Table 48: Frequency and Percentage of Participants' Beliefs about their Online Learning Reported in the Post-questionnaire

Items of beliefs about online learning	**Frequency(F), Percent (%)**	**Rating Scales**					
		SD	**D**	**A**	**SA**	**NA**	**Total**
Learning online is easy	F	0	9	21	3	2	35
	%	00.0	25.7	60.0	8.6	5.7	100.0
Learning online is fun	F	2	5	25	1	2	35
	%	5.7	14.3	71.4	2.9	5.7	100.0
I can express myself well	F	1	5	20	5	4	35
	%	2.9	14.3	57.1	14.3	11.4	100.0
My performance improves when I receive feedback in OLRs	F	0	2	23	8	2	35
	%	00.0	5.7	65.7	22.9	5.7	100.0
My interest in learning increases when I receive feedback in OLRs	F	0	4	20	9	2	35
	%	00.0	11.4	57.1	25.7	5.7	100.0
The support from the EAP makes me aware of the way to learn	F	0	4	22	8	1	35
	%	00.0	11.4	62.9	22.9	2.9	100.0
The feedback from the EAP makes me aware of the way to learn	F	0	2	24	8	1	35
	%	00.0	5.7	68.6	22.9	2.9	100.0

Table 49: Frequency and Percentage of Participants' Beliefs about their Classroom Learning Reported in the Pre-questionnaire

Items of beliefs about classroom learning	Frequency(F), Percent (%)	Rating Scales					
		SD	D	A	SA	NA	Total
Learning in class is easy	F	2	7	17	7	2	35
	%	5.7	20.0	48.6	20.0	5.7	100.0
Learning in class is fun	F	2	3	21	7	2	35
	%	5.7	8.6	60.0	20.0	5.7	100.0
I can express myself in class freely	F	0	6	19	7	3	35
	%	00.0	17.11	54.3	20.0	8.6	100.0
My performance improves when tutors give feedback in class	F	0	0	22	10	3	35
	%	00.0	00.0	62.9	28.6	8.6	100.0
My interest in learning increases when I receive feedback from tutors in class	F	0	2	21	9	3	35
	%	00.0	5.7	60.0	25.7	8.6	100.0
The comments from tutors in class make me aware of the way to learn	F	0	3	20	8	4	35
	%	00.0	8.6	57.1	22.9	11.4	100.0
The feedback from tutors in class makes me aware of the way to learn	F	0	4	22	7	2	35
	%	00.0	11.4	62.9	20.0	5.7	100.0

Table 50: Frequency and Percentage of Participants' Beliefs about their Classroom Learning Reported in the Post-questionnaire

Items of beliefs about classroom learning	Frequency (F), Percent (%)	Rating Scales					
		SD	D	A	SA	NA	Total

Learning in class is easy	F	2	7	17	7	2	35
	%	5.7	20.0	48.6	20.0	5.7	100.0
Learning in class is fun	F	2	3	21	7	2	35
	%	5.7	8.6	60.0	20.0	5.7	100.0
I can express myself in class freely	F	0	6	19	7	3	35
	%	00.0	17.11	54.3	20.0	8.6	100.0
My performance improves when tutors give feedback in class	F	0	0	22	10	3	35
	%	00.0	00.0	62.9	28.6	8.6	100.0
My interest in learning increases when I receive feedback from tutors in class	F	0	2	21	9	3	35
	%	00.0	5.7	60.0	25.7	8.6	100.0
The comments from tutors in class make me aware of the way to learn	F	0	3	20	8	4	35
	%	00.0	8.6	57.1	22.9	11.4	100.0
The feedback from tutors in class makes me aware of the way to learn	F	0	4	22	7	2	35
	%	00.0	11.4	62.9	20.0	5.7	100.0

Table 51: Frequency and Percentage of Rating Computer Use in General and for Academic Purposes Reported in the Pre-questionnaire

Rating of computer use	**Computer use in general**		**Computer for academic purposes**	
	Frequency	**Percent**	**Frequency**	**Percent**
Extremely Good	10	28.6	6	17.1
Good	16	45.7	13	37.1
Neither	9	25.7	14	40.0
Bad	0	00.0	2	5.7
Total	35	100.0	35	100.0

Table 52: Frequency and Percentage of Rating Computer Use in General and for Academic Purposes Reported in the Post-questionnaire

Rating of computer use	Computer use in general		Computer for academic purposes	
	Frequency	Percent	Frequency	Percent
Extremely Good	5	14.3	4	11.4
Good	27	77.1	22	62.9
Neither	2	5.7	8	22.9
Bad	1	2.9	1	2.9
Total	35	100.0	35	100.0

Table 53: Frequency and Percentage of Use of Computer and Online Applications in Hours Reported in the Pre-questionnaire

Number of hours in which	Use of computer		Use of online applications	
Computer and online applications are used	Frequency	Percent	Frequency	Percent
12 or more	1	2.9	1	2.9
9-11	0	00.0	2	5.7
6-8	6	17.1	10	28.6
4-5	21	60.0	7	20.0
2-3	7	20.0	10	28.6
0-1	0	00.0	5	14.3
Total	35	100.0	35	100.0

Table 54: Frequency and Percentage of Use of Computer and Online Applications in Hours Reported in the Post-questionnaire

Number of hours in which	Use of computer		Use of online applications	
Computer and online applications are used	Frequency	Percent	Frequency	Percent
12 or more	0	00.0	0	00.0
9-11	3	8.6	6	17.1
6-8	11	31.4	3	8.6
4-5	13	37.1	7	20.0
2-3	7	20.0	16	45.7

0-1	1	2.9	3	8.6
Total	35	100.0	35	100.0

Table 55: Frequency and Percentage of Confidence in Computer Use Reported in the Pre-questionnaire

Rating of confidence	Frequency	Percent
Not confident	2	5.7
Less confident	11	31.4
Confident	16	45.7
Very Confident	6	17.1
Total	35	100.0

Table 56: Frequency and Percentage of their Confidence in Computer Use Reported in the Post-questionnaire

Rating of confidence	Frequency	Percent
Not confident	13	37.1
Less confident	12	34.3
Confident	10	28.6
Very Confident	6	17.1
Total	13	37.1

Table 57: Frequency and Percentage of Improvement in English by means of the Toolkit Reported in the Pre-and Post-Questionnaires

Rating of improvement in English	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
Not	0	00.0	0	00.0
Not much	1	2.9	2	5.7
Not very much	4	11.4	3	8.6
Much	6	17.1	15	42.9
Very much	3	8.6	3	8.6
Not Applicable	21	60.0	12	34.3

Total	35	100.0	35	100.0

Table 58: Frequency and Percentage of the Importance of Teacher's Presence during learning in the EAP Toolkit Reported in the Pre-and Post-Questionnaires

Response	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
I cannot work on my own	0	00.0	0	00.0
I cannot work on my own very well	1	2.9	4	11.4
I can moderately work on my own.	6	17.1	10	28.6
I can work on my own well	5	14.3	7	20.0
I can work on my own very well	2	5.7	2	5.7
Not Applicable	21	60.0	12	34.3
Total	35	100.0	35	100.0

Table 59: Frequency and Percentage of the Importance of Teacher's Presence during learning in other OLRs Reported in the Pre-and Post-Questionnaires

Response	Pre-Questionnaire		Post-Questionnaire	
	Frequency	Percent	Frequency	Percent
I cannot work on my own	1	2.9	0	00.0
I cannot work on my own very well	2	5.7	2	5.7
I can moderately work on my own.	14	40.0	14	40.0
I can work on my own well	13	37.1	15	42.9
I can work on my own very well	1	2.9	1	2.9
Not Applicable	4	11.4	3	8.6
Total	35	100.0	35	100.0

Table 60 : Frequency and Percentage of the Relationship between Learner Autonomy and Scaffolding Provided in the EAP Toolkit Reported in the Pre-questionnaire

Items of the EAP Toolkit	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
It helps me to be independent learners.	F	1	2	21	4	7	35
	%	2.9	5.7	60.0	11.4	20.0	100.0
Feedback supports my independent learning.	F	0	2	18	7	8	35
	%	00.0	5.7	51.4	20.0	22.9	100.0
It makes me aware of my own learning.	F	0	3	18	7	7	35
	%	00.0	8.6	51.4	20.0	20.0	100.0
It helps me to develop my learning skills.	F	0	3	17	7	8	35
	%	00.0	8.6	48.6	20.0	22.9	100.0
It helps me to improve their learning strategy. Items of the EAP Toolkit	F	1	5	15	6	8	35
	%	2.9	14.3	42.9	17.1	22.9	100.0

Table 61: Frequency and Percentage of the Relationship between Learner Autonomy and Scaffolding Provided in the EAP Toolkit Reported in the Post-questionnaire

Items of the EAP Toolkit	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
It helps me to be independent learners.	F	0	2	20	6	7	35
	%	00.0	5.7	57.1	17.1	20.0	100.0
Feedback supports my independent learning.	F	0	2	17	4	12	35
	%	00.0	5.7	48.6	11.4	34.3	100.0
It makes me aware of my own learning.	F	0	3	16	7	9	35
	%	00.0	8.6	45.7	20.0	25.7	100.0
It helps me to develop my earning skills.	F	0	3	18	7	7	35
	%	00.0	8.6	51.4	20.0	20.0	100.0
It helps me to improve their learning strategy.	F	0	3	18	6	8	35
	%	00.0	8.6	51.4	17.1	22.9	100.0

Table 62: Frequency and Percentage of the Relationship between Learner Autonomy and Scaffolding Provided in Online Learning Resources in the Pre-questionnaire

Items of OLRs	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
They help me to be independent learners.	F	0	2	25	7	1	35
	%	00.0	5.7	71.4	20.0	2.9	100.0
They give me opportunities to learn in my own way.	F	0	1	24	10	0	35
	%	00.0	2.9	68.6	28.6	00.0	100.0
They help me to extend my learning skills.	F	0	3	22	9	1	35
	%	00.0	8.6	62.9	25.7	2.9	100.0
They support me to explore new concepts.	F	1	1	22	10	1	35
	%	2.9	2.9	62.9	28.6	2.9	100.0
They give me opportunities for independent learning.	F	1	1	27	5	1	35
	%	2.9	2.9	77.1	14.3	2.9	100.0
They make me aware of my learning.	F	0	7	24	3	1	35
	%	00.0	20.0	68.6	8.6	2.9	100.0

Table 63: Frequency and Percentage of the Relationship between Learner Autonomy and Scaffolding Provided in Online Learning Resources in the Post-questionnaire

Items of OLRs	Frequency(F), Percent(%)	Rating Scales					
		SD	D	A	SA	NA	Total
They help me to be independent learners.	F	0	1	22	11	1	35
	%	00.0	2.9	62.9	31.4	2.9	100.0
They give me opportunities to learn in my own way.	F	0	2	19	13	1	35
	%	00.0	5.7	54.3	37.1	2.9	100.0
They help me to extend my learning skills.	F	0	1	21	10	3	35
	%	00.0	2.9	60.0	28.6	8.6	100.0
They support me to explore new concepts.	F	0	2	21	8	4	35
	%	00.0	5.7	60.0	22.9	11.4	100.0
They give me opportunities for independent learning.	F	0	1	24	7	3	35
	%	00.0	2.9	68.6	20.0	8.6	100.0
They make me aware of my learning.	F	0	6	22	4	3	35
	%	00.0	17.1	62.9	11.4	8.6	100.0

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