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USING A VIRTUAL LEARNING ENVIRONMENT TO INCREASE THE USE OF
INFORMATION AND COMMUNICATION TECHNOLOGY
BY UNIVERSITY TEACHERS AT JAZAN UNIVERSITY, SAUDI ARABIA

by
Mohammed Ageel

A thesis submitted for the degree of Doctor of Philosophy

Southampton Education School
University of Southampton
United Kingdom

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UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF LAW, ARTS AND SOCIAL SCIENCES

SCHOOL OF EDUCATION

Doctor of Philosophy

USING A VIRTUAL LEARNING ENVIRONMENT TO INCREASE THE USE OF

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This thesis is primarily instigated and directed by the researcher's previous small-scale studies. These revealed Saudi teachers' low usage and negative perceptions about technology in teaching in schools and higher educational institutions.

For further our understanding, this study investigates the use of technology by a Saudi university's teachers in their instruction and attempts to explore the viability of training within a Virtual Learning Environment (VLE) for their professional development. The study engages a mixed-method approach where a VLE training programme is facilitated among 40 teachers of Jazan University. It observes changes in their perceptions about technology and the level of use of Information and Communication Technology (ICT) tools in teaching. Interviews and questionnaires are used to collect data in two phases, before and after the VLE training, on their use of a range of ICT tools.

The research data shows a significant improvement in the teachers' usage of a number of ICT teaching tools after they received VLE training. Additionally, it points to positive change in the attitudes, knowledge and skills of these teachers and promises an active role in the teachers' professional development for these aspects. Moreover, a number of influential factors that may affect the attitude, knowledge and skills relating

to the use of technology are identified, necessitating a Continuous Professional Development (CPD) scheme.

By analysing the research findings it is recognised that a CPD scheme delivered via a VLE can positively change university teachers' knowledge, attitude, and skills about technology, and consequently increase the use of ICT tools in teaching and learning. However, the study also reveals a number of difficulties and concerns among the teachers regarding VLEs and CPD, and provides recommendations to overcome these. Additionally, the research proposes some directions on possible future studies based on this research work.

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Abbreviations

ICT	Information and Communication Technology. The term refers to any computer-based technology that supports learning and teaching through communication (access, presentation and analysis of information) using various technological tools.
VLE	Virtual Learning Environment.
CPD	Continuing Professional Development, in this thesis. It is also termed Continuous Professional Development in some countries. However, they both generally refer to the similar concepts and meanings in this paper.
University teachers	Teachers who work at universities.
Before stage	Time before receiving six-week VLE training.
While stage	During six-week VLE training.
After stage	Time after receiving six-week VLE training.

Chapter 1 Introduction

1.1 Introduction

Most university teachers still engage in traditional methods of disseminating information to their students, and thus often follow traditional procedures when teaching (Bingimlas, 2009). As the use of ICT in educational activities has been found efficient and appropriate in utilising valuable resources and time, teachers of higher educational institutions are strongly recommended to adopt ICT in their educational activities (Paechter et al., 2010). Its use has also been found effective in facilitating research and development through computing systems, software and internal and external data networks (Concannon et al., 2005; Gonzalez, 2010). Additionally, it has been shown to improve the personal skills of teachers and may place them in appropriate position to stay on a par with the advancing world in terms of ICT (Bingimlas, 2009).

However, recent research found that limited use of technology, particularly ICT tools, by the teachers at Jazan University in Saudi Arabia (Ageel, 2011). Based on this initial evidence, there is a need to formulate research to examine the feasibility of new methods for training university teachers that may enhance its use in their teaching.

This research is broadly a mixed-method practitioner research study that investigates the impact of a VLE on increasing usage of ICT in teaching by the teachers of Jazan University, Saudi Arabia. The research seeks to determine the current use and reviews the teachers' ICT skills, knowledge and attitudes when they attend a VLE course on a CPD programme. The research tests the effect of the VLE in improving these teachers' knowledge, attitudes, skills and use of ICT. Additionally, it tries to help bring a better understanding of the use of ICT in teaching, and the viability of using VLE for CPD to support this.

1.2 Rationale for the Study

Prior first-hand knowledge of the contemporary importance of ICT in education and its poor utilisation by the teachers at Jazan University in Saudi Arabia suggested that the situation required in-depth investigation (Ageel, 2011). However, assessing the use of

ICT by these teachers was not possible because most offered their course materials through traditional methods; even the use of audio-visual materials in their teaching was severely limited (Ageel, 2011). Besides, measuring the quality and the quantity of ICT in their lectures seemed problematic as most lacked the necessary technological skills to use ICT (Ageel, 2011). Considering these reasons, the researcher felt the need to explore the viability of a VLE as a method of Continuing Professional Development (CPD) for the university teachers of Saudi Arabia, and for assessing the use of Information and Communication Technology (ICT) tools in their teaching practices. This study takes the view that the application of ICT can ease the teaching, learning and research processes in an educational setting. Additionally, the developments in ICT usage can build-up institutional decision support systems which can assist the teachers as well as policy makers in considering and implementing educational and administrative decisions. Moreover, through incorporating ICT tools in their teaching the university teachers can take up a convenient position from which to develop strategies to counter the difficulties in adopting technology in university education.

1.3 The Focus of the Study

This research seeks to provide a clear understanding of ICT usage by university teachers in their teaching and, in this connection, attempts to evaluate the viability of a VLE for their CPD. Although personal ICT use should encourage university teachers to adopt it in their teaching, a high percentage of Saudi Arabian teachers may not be able to do so due to their lack of knowledge and skills. This study therefore seeks to determine the current usage of ICT of the teachers of a Saudi Arabian university and review their ICT knowledge, attitudes and skills. These factors are later explored by implementing a VLE course in a CPD programme for a number of university teachers. Finally, the research attempts to measure the impact of the VLE on their knowledge, attitudes, skills and usage.

1.4 The Focus of the Study

The aims of the study are to:

- Test the efficacy of a VLE in improving ICT usage by Jazan University teachers in a CPD programme.

- Identify and explore the effects of VLE-based programmes on the university teachers' existing knowledge of ICT.
- Identify and explore the effects of the VLE on teachers' skills and attitudes to ICT.
- Bring about a better understanding of ICT issues at Jazan University.
- Review the concerns of the university teachers and make the necessary recommendations for both university teachers and the policy makers, after acquiring a better understanding of the situation.

1.5 Research Questions

Both theoretical explanations and empirical evidence claim that a VLE can support teacher training successfully and enhance participating teachers' use of ICT in their classes. However, there are no research findings that explain how teachers' ICT knowledge, skills and attitudes interplay in this type of technology-supported professional training. Moreover, because of the unique educational and cultural circumstances, it is necessary to explore whether, or to what extent, a VLE can change the use of ICT in the Saudi Arabian higher education context. Therefore, the research questions are:

1. Can a VLE affect the use of ICT in teaching by university teachers in Jazan University to support their teaching?
2. What is the effect of the VLE-based programme on university teachers' knowledge of ICT at Jazan University?
3. What is the effect of the VLE-based programme on university teachers' attitudes toward ICT usage at Jazan University?
4. What is the effect of the VLE-based programme on university teachers' ICT skill at Jazan University?

1.6 Study Outline

This research is a mixed-method practitioner research study that tries to explore the status of ICT usage of the teachers of Jazan University, Saudi Arabia. It also examines

the impact of the VLE on their use of technology when teaching. The study uses a VLE design course (called a Moodle) as an ICT training programme to orient the university teachers to the benefits of implementing ICT through various teaching methods. The investigation deals with bounded and rich, but representative, sets of data. The approach can be categorised as a mixed-method practitioner research study for its applied nature and relevance to educational perspectives, and also for its consideration of both quantitative and qualitative data.

1.7 Expectations of the Study

The expectations of the study are to:

- a) Aid the understanding of the current situation with regard to the method, quality and extent of ICT usage by university teachers at Jazan University.
- b) Reveal the university teachers' knowledge, attitudes, skills and usage of ICT.
- c) Identify the imaginary and real concerns of university teachers over the use of ICT at the institution.
- d) Identify the appropriateness of implementing VLE courses in the CPD programme for teachers at Jazan University.
- e) Make the necessary recommendations for both university teachers and policy makers after acquiring a better understanding of the situation.

1.8 The Structure of the Study

This **Introduction** provides the basis of the research by offering the rationale, focus and aims of the study, and also the research questions. In addition, it draws a brief outline including the expectations for the research.

There are seven further chapters. The content of these chapters is briefly mentioned below:

ICT in Higher Education in Saudi Arabia, the second chapter, gives the background of the higher education system along with ICT usage in higher educational institutions in Saudi Arabia. Additionally, it discusses the difficulties of implementing ICT in those educational institutions.

Chapter 3 is a **Literature Review** that discusses the concepts and relevant evidences of three focus areas: ICT, CPD, and VLE. In discussion, the aspects of higher education and the context of Saudi Arabia are specially emphasised.

Study Framework, the fourth chapter, proposes a conceptual framework for applying a number of information and communication tools within a VLE through a CPD programme. This also critically evaluates the possible impact of this type of teaching and learning on adult learners, particularly in the Saudi Arabian context.

Chapter 5 is entitled **Research Design and** outlines a research structure involving a mixed-method approach. It particularly explains the boundedness and richness of the case study approach and the use of interview and questionnaire methods for investigation. This chapter explains the pilot study scheme and the data analysis procedures.

Chapter 6, **Results**, lists the research findings, providing both the qualitative and quantitative data collected through interviews and questionnaires.

The next chapter, Chapter 7, is **Discussion** and critically evaluates the research findings, analysing them according to the research questions of the thesis.

Chapter 8, **Conclusion and Recommendations**, summarises the overall study. It provides critical reflections on the main learning from the research, particularly on aspects of methods adopted, their shortcomings, potential bias, and scope for further improvements. Additionally, it lists a number of recommendations for ensuring the effective use of technology in teaching at higher educational institutions in Saudi Arabia, and also provides some possible future directions for similar kinds of research.

Chapter 2 ICT in Higher Education in Saudi Arabia

2.1 Introduction

Higher education is the key to economic progress (Ramsden, 1992), and this is evident in the fact that most economic activities in the present business environment depend for success on people skills, innovation and technology (Arthur et al., 1999). At no time in human history has the welfare of nations been so closely linked to the quality and reach of their higher education systems and institutions (UNESCO, 2009). Saudi Arabia, too, has witnessed an increasing focus on its higher education over the past few years (Alromi et al., 2008; Al-Jarf, 2007). It is interesting to note that the Arab countries have experienced increased diversification in the number of higher education institutions across the region and a remarkable increase in educational opportunities (Education, 2006; Fergany, 2000).

During the past few decades, around the globe teaching and learning processes have undergone vast changes in terms of learning environments and the teaching aids used by teachers (Loveless and Ellis, 2001). As with all aspects of human communication, technology has played an influential role in contemporary educational activities (Anderson, 2002; Cox, 2005; Gulbahar, 2008; James, 2002). The conventional classroom has been replaced by computer-enabled learning environments facilitated by the use of internet and multimedia technology tools. The use of information and communication technologies in the education sector has revolutionised the learning process (Kirkup and Kirkwood, 2007). It has opened up new possibilities for the scope of the application of technology, especially distance learning programmes dependent on computer-mediated communication technologies (Beller and Or, 2006; Franciscato, 2007; Hayes, 2007).

Concepts of space and time are changing, and how and with whom people can collaborate, discover communities, explore resources and ideas, and learn are being challenged (Salmon, 2000). As a result, the revolution in ICT has had a profound effect on the teaching and learning process. The change is clearly visible in the development

of online learning communities. Most countries, even those with developing economies, stress the use of computers as an instructional medium. Advanced technology and communication tools greatly enhance the process of teaching and learning, provided that teachers are equipped to use them to their advantage to deliver effective learning systems. The integration of computer-mediated communication with multimedia courseware, electronic libraries and databases has led to the emergence of a whole new kind of educational experience, namely e-learning or networked learning (Rosenburg, 2001). The personalised learning environment offered by this medium has been found to have great potential to enhance the learning processes considerably. Colleges and universities are adopting this way of enhancing the learning efficiency of students.

Based on the above advantages of technology in education, this research expects to contribute to the knowledge and understanding of ICT usage by teachers at Jazan University in Saudi Arabia (location of both country and university are marked on the following map). As the research focuses on how the integration of ICT in the teaching processes of the university teachers is influenced by a VLE-based training programme within a CPD framework, it tests the efficacy of VLE to enhance the teachers' ICT-related knowledge, attitudes, skills and use.



Figure 2-1: Jazan University on the Map

This chapter provides an in-depth analysis of both ICT use in Saudi higher education and its impact on the educational system. For the purpose of improved understanding and knowledge, the chapter starts with a discussion of the development of the Saudi higher education system, and is followed by an exploration of the growth and emergence of ICT and e-learning in educational institutions. Additionally, the chapter highlights the practical difficulties in and limitations to the implementation of ICT in Saudi Arabia, and proposes plans to address these challenges.

2.2 Saudi Higher Education System – Historical Overview

The education system in Saudi Arabia can be broadly categorised into three distinct sectors – general, technical (or vocational), and the higher education (World Data on Education, 2011/12). The country's higher education sector has evolved over the past few decades to incorporate widespread changes and developments in the way education is delivered to students (Robertson and Al-Zahrani, 2012). It is incontrovertible that higher education around the globe is witnessing overwhelming increases in innovation in educational practices and a growth spurt in educational distance learning systems (Ali, 2010). The changes are largely attributed to rapid advancements in technology and the shift of economies towards a knowledge-intensive workforce where the role of information and communication is considered inevitable (Saltari et al., 2012). As a result, many countries like Saudi Arabia focus their efforts on improving the quality of education to meet growing social, economic, and educational demands of the changing world.

However, the conventional Saudi Arabian higher education system and its performances have not been found to be adequate to keep pace with changing times and educational demands (Al-Karni, 1999; Al-Hamidi et al., 1999). One of the reasons may be the complexity of the educational system at this higher stage and the resulting slow pace of upgrading facilities, in the face of the rapid globalisation (Fergany, 2000). Additionally, 'the absence of coordination and cohesion between planners and teachers-researchers' also hinders the transition (Alghafis, 1992: 49). Moreover, there is a gender issue, an inadequate number of higher education institutions, a lack of quality teachers, an unequal distribution of institutions across geographic locations, and low motivation or opportunities to pursue higher studies. The higher education system in Saudi Arabia is characterised by low female enrolment, and there is a wide gap between numbers of males and females. However, the past few years have witnessed

significant developments in this area. Technical institutes and institutions for postgraduate studies, offering various disciplines, have increased over the past few years and the number of students in higher education has increased from 2.3 million in 1998–1999 to 7.1 million in 2007–2008 (UNESCO – Arab Report, 2009). The country’s focus on higher education was motivated by the need to provide skilled professionals to assist in the growth of the country’s ‘increasingly sophisticated economy’ (MOE, 2006). **Table 2-1** provides information on the number of students enrolled in various universities in the country, 1995–1999.

Table 2-1: Number of Students Enrolled in Universities in Saudi Arabia

University	New Entrants			Graduates		
	Male	Female	Total	Male	Female	Total
King Saudi University	26,000	14,595	40,595	21,880	9,730	31,610
King Abdul Aziz University	27,176	17,936	45,112	15,002	12,970	27,972
King Fahd University	6,833	4,538	11,371	3,418	3,129	6,547
King Fahd University	6,000		6,000	3,322		3,322
Islamic University	5,990		6,000	3,322		4,300
Imam University	33,280	7,285	40,565	24,515	4,085	28,600
Umm Al-Qura University	10,825	9,195	20,020	6,945	6,340	13,285
Girls' Colleges		75,396	75,396		50,885	50,885
Total	116,104	128,945	245,049	79,382	87,139	166,521

Source: adapted from Saudi-net

Historically, the development of higher education in Saudi Arabia started late in comparison to other countries across the globe. Until the 1950s Saudi Arabia was a country without many resources, with people living a simple lifestyle devoid not only of luxury but basic infrastructure. The region witnessed a growth spurt after the discovery of oil resources and economic development lead to changes in people’s lifestyles. Traditionally, Islamic society encouraged learning in mosques and informal study circles that transferred knowledge of religion, mathematics and other sciences from one generation to another. ‘Mulla’ was the term used to refer to the Islamic teachers responsible for educating the younger generation in worldly wisdom and knowledge related to various subject matters. A formal education system did not exist in the country until before 1925 (Alromi et al., 2008). Education in this period was limited to elementary schools and the region established its first university in 1957. The

first was King Saud University with just nine teaching staff and 21 students (Saleh, 1986). It should be noted that education in Saudi Arabia was mainly for male students (Alaugab, 2007), but this gender issue was not confined to the Muslim world as there was a similar trend in developed countries (World Bank, 2012).

The number of higher education institutions gradually increased to seven, and by 1982 there was a total of 63,563 students and 6,906 teachers (Saleh, 1986) in Saudi Arabia. Educational growth and development in the country was limited by various constraints; in the education sector the slow development was primarily due to lack of financial resources. Moreover, there were inadequate qualified teachers in the higher educational institutions (Alromi et al., 2008). The Ministry of Higher Education was formed in 1953 with the primary objective of encouraging student enrolment across all economic and social sectors of the population. Living accommodation for students in higher education was free and the government provided a grant of \$250 per month. These steps resulted an increased student enrolment (Alromi et al., 2008). The country presently boasts 21 government universities, 78 colleges and a large number of other vocational training and education institutions, providing students with scope to pursue higher education in their field of interest (MOHE, 2010).

The Saudi education system is designed to eliminate illiteracy and to ensure the country's religious, economic, and social needs are met (MOE, 2006). The literacy rate among males in the country rose to 98 per cent in 2003–2007 and the female literacy rate to 96 per cent (UNICEF, 2010). The development of the education system and infrastructure in the past few decades has been largely due to government initiatives and supportive policies to promote education for all. The total number of colleges and universities in Saudi has increased within the past ten years (UNESCO – Arab Report, 2009).

Admission to higher education institutions in Saudi Arabia is based on the grading of students at high school level. This system has been highly effective in securing admission for deserving candidates, but creates a gap in fulfilling admission conditions for international students or students from less developed regions with lower levels of educational infrastructure. Growing economic prosperity and global influences have triggered changes in this policy to promote increased opportunities to students from these different regions and backgrounds (UNESCO – Arab Report, 2009). Efforts to increase student enrolment in higher education have also focused on increasing the percentage of female students through specialised education policies

focusing on improved social structures. Moreover, the country's higher education system has evolved to provide students with greater choice of specialisation.

Private colleges have also had a significant impact on improving higher education facilities within the country. They receive extensive support from the Ministry of Higher Education, which endeavours to provide incentives directly to private universities and colleges to serve the nation, as they provide the employment market with graduates of different specialities (MOHE, 2010). There are a total of eight different private universities in the country offering a wide range of subjects for specialisation in bachelor and master degree programmes. There is currently a total of 20 private colleges and eight private universities in the country. **Table 2–2** provides a list of the private universities in Saudi Arabia.

Table 2-2: Private Universities in Saudi Arabia

University	City
King Abdullah University for Science and Technology	Jeddah
Prince Sultan University	Riyadh
Arab Open University	Riyadh
Prince Mohammad Bin Fahd University	Al Khobar
Alfaisal University	Riyadh
Al-Yamamah University	Riyadh
Effat University	Jeddah
Dar Al Uloom University	Riyadh

(Source: Adapted from MOHE 2009)

2.3 ICT and E-learning in Saudi Higher Education Institutions

E-learning is commonly referred to as the international use of networked ICT in teaching and learning. It also refers to educational processes that use ICT to mediate asynchronous as well as synchronous learning and teaching activities (Naidu, 2006). Naidu claims that the growth of e-learning is directly related to increasing access to information and technology, as well as its decreasing cost. The capacity of ICT to support multimedia resource-based learning and teaching is also relevant to the growing interest in e-learning. Growing numbers of teachers are ICT to support their teaching. The introduction of ICT methods in higher education institutions in the late 1990s took place when university students and teachers adopted the internet to research

subject matter. A recent study conducted by Al-Shawi and Al-Wabil (2008) on internet usage by faculties in Saudi higher education observes that, although some universities in the Kingdom had limited internet access before 1998, the achievement of wide-scale internet connectivity across local campuses in December of that year resulted in heightened rates of internet usage by university teachers and students.

The information revolution has had a major impact on learning and education processes, and this is linked to the knowledge, economy, and globalisation of higher education. A concentrated effort on the part of the government of Saudi Arabia to implement ICT within the education sector is evident in the ICT goal outlined by the Ministry of Higher Education in its strategic plan: to develop the infrastructure of information and communication technology and its employment in education and learning (MOE, 2008). The Computer and Information Centre was established in the Ministry of Education in 1996 and since then it has achieved new heights in terms of infrastructural facilities, range of applications within the education and learning environment, and innovative applications advancing technology in distance learning and VLEs. This includes enabling video conferencing facilities in higher educational institutions and installing wide area networks connecting higher education institutions to the head office of the Ministry of Education in Riyadh, which facilitates students' access to unrestricted and expanded information through its central database (MOE, 2008). The focus of the strategies of the Ministry of Education is on designing, developing and implementing an advanced e-learning infrastructure that enables increasing numbers of students to avail themselves of higher education facilities.

Saudi Arabia has organised various centres and institutions to support the growth and development of higher education institutions to meet the growing economic demands for a specialised workforce and skilled labours. The global trend towards the application of ICT in the higher education sector has made a significant impact on initiatives to develop educational policies and infrastructures based on a similar framework. Educational organisations also reap extensive benefits in providing e-learning and distance learning courses to students based in remote locations.

A major achievement in the context of ICT implementation in higher education institutions in Saudi Arabia is the establishment of virtual universities in various regions within the past few years, with a number of centres offering distance learning courses using digital and advanced collaborative technologies. The ICT application in higher education institutions is visible in the form of Intranet facilities, e-portals, e-

libraries, scientific research databases, video conferencing tools, advanced collaborative applications and improved networking infrastructural growth (UNESCO – Arab Report, 2009).

The growing needs of the business environment, coupled with rapidly advancing technology, have led to new methods of learning and increasing opportunities to access knowledge resources. The ICT goals of the Ministry of Higher Education in Saudi Arabia, affiliated with UNESCO, are framed according to these learning principles and objectives:

1. Boosting innovation, creativity and practical applications of ICT by capacity building and developing professional skills.
2. Enabling the design, preparation, production and distribution of knowledge products to achieve sustainable development goals.
3. Encouraging the creation and dissemination of Arab digital content.
4. Facilitating the gathering of resources, technical knowledge and private sector participation in applying ICT (UNESCO – Arab Report, 2009).

2.4 ICT Usage in Saudi Higher Education Institutions

The total number of educational institutions in Saudi Arabia offering e-learning courses was just six in 2007, but has been growing steadily. The students and teachers of the country are now finding increased scope for learning online (Al-Jarf, 2007). The number of online courses in various fields of study has multiplied over the past few years and contributed to growth in learning opportunities and exposed students and teachers to new modes of learning (Ageel, 2011; Al-Gahtani, 2005; Al-Khalifa, 2010).

The development of ICT for education has triggered changes and adaptations by higher education system to emerging trends. The number of institutions offering virtual learning modules, specialised training courses and professional courses online has grown significantly in Saudi Arabia (Drew et al., 2012). There are various means of ensuring that training needs are met through online programmes delivered over the internet or by providing customised online training courses to meet specific training requirements. Quality education, innovation, and development were the watchwords of the Arab Regional Conference on Higher Education (UNESCO, 2009). Educational institutions have started realising the significance of ICT tools in enhancing the learning processes. However, the pace of development is still slow and the universities

in the country still suffer from major infrastructural weaknesses that restrict the level of ICT usage for educational purposes.

A research study undertaken by Al-Jarf (2007) on the e-integration challenges for rectors and deans in higher educational institutions in Saudi Arabia found that only six universities (43%) then offered online courses using WebCT or Blackboard. Moreover, the nature of online courses offered was not in proportion to the number of colleges, departments and faculties at those universities. It was observed during the course of the study that faculty members lacked the motivation, online teaching skills, training and awareness of blended learning or technology integration approaches, administrative support and infrastructural facilities to make effective use of ICT tools. **Table 2-3** shows the number of online courses and WebCT facilities used by the six universities in Saudi Arabia that have adopted ICT tools.

Table 2-3: Online Courses and WebCT facilities at Six Universities

University Name	Courses using WebCT
King Faisal University	621
King Saud University	89
King Abdul Aziz University	27
King Khaled University	12
Umm Al-Qura University	Blackboard licence
King Fahad University	WebCT licence

(Source: adapted from Al-Jarf 2007)

The figures relate to the number of online courses offered by these universities in various categories. Some of the universities, such as King Abdul-Aziz University, have adopted the learning management systems (LMS) to develop and offer online courses. King Umm Al-Qura University and King Fahad University have licences to use WebCT and Blackboard technologies but do not offer any online courses.

Al-Jarf (2007) has identified a number of factors influencing the level of ICT usage in higher education in Saudi Arabia. According to his report, the country's education system is wholly controlled by the Ministry of Higher Education, which takes all the decisions on education practices. This administrative system may be termed centralised; any attempt to change the existing education culture, or to request funding to do so, must be passed by different stages in the administrative hierarchy. Introducing distance learning programmes has thus required Ministry approval and hence the level of usage is comparatively low. Another factor identified by the researcher is that the integration of technology tools with education has been a

relatively a slow process. Faculty training remains a core issue as 50 per cent of the teaching staff in higher education institutions possess only basic computer skills such as online browsing and using email: just 5 per cent have in-depth knowledge of online courses and only 1 per cent claim to be expert users. Al-Jarf also found that the technology infrastructure in colleges and universities is inadequate for the number of staff and teachers. Internet connections are slow owing to limited bandwidth, and only King Abdul Aziz University is known to have an online learning centre.

However, Saudi Arabia has already adopted new strategic goals and plans to increase the effectiveness of the learning processes and enrolment of students in higher education. This development has been vastly enabled by the use of ICT tools and e-learning concepts, including computer-mediated communication tools such as web conferencing, audio, video and Chat. The Ministry has extended additional funding and support to facilitate increasing use of such tools and technologies to promote higher educational goals and greater learning effectiveness.

2.5 Difficulties in Implementation ICT in Higher Education Institutions

There is no doubt that higher education services and infrastructure, as discussed in previous sections, have improved dramatically over the past few years and the percentage of students enrolling in higher education has also multiplied. However, there are still distinct challenges that require concerted effort if they are to be overcome. These include low enrolment rates in higher education, inequality of educational opportunities across various segments of society, and the limited number of skilled faculty members. The UNESCO Arab Report (2009) observed that in Saudi Arabia the major obstacle for implementing ICT in teaching at higher educational institutions is the lack of quality teachers able to handle this new approach. This poor situation in fact proves the need to design suitable curricula and for research into standardised and high quality teaching modules, along with ensuring mandatory ICT training.

The research report by Al-Shawi and Al-Wabil (2008) identified two primary barriers to the adoption of ICT tools in higher education in Saudi Arabia – limited access to the internet and lack of computer skills. It is clear that an extensive infrastructure for faster downloads and online collaboration, in the form of high speed

internet connectivity, would be required to implement ICT and e-learning programmes in higher educational institutions. Similarly, as online learning environments are highly dependent on technology, a number of non-conventional approaches are needed to be designed and followed. For example, a team of professionals would be required and a number of servers would need to be located in remote locations to manage the installed technology. Moreover, the type of network configuration and browser would have to be appropriate: limited bandwidth makes it difficult to upload and view large audio, video and image files. In recent years the government in Saudi Arabia has finally increased the budget for building infrastructural support for ICT usage, and as a result internet subscribers have significantly increased in number, from 0.3 million in 2002 to 1.17 million in 2008 (Al-Khalifa, 2010), which indicates a steady growth of ICT services and infrastructure in the region. However, a lack of skilled and qualified teachers has emerged as one of the chief obstacles to the implementation of ICT in higher education institutions.

Another barrier to the use of ICT in higher education is the integration of technology with the curriculum (Harris et al., 2009). For effective ICT use, the traditional curriculum needs to adapt to changing trends and developments in learning processes. It is important to acknowledge that training, especially for professionals, has shifted to more informal learning environments that encourage instant collaboration such as Intranets, internet searches, online meetings and an extended knowledge base. These provide additional knowledge on related areas and enhance individual skills and capabilities (Sandarst, 2012; Garcia-Penalvo et al., 2012). Reviewing the training needs of learners, setting the learning goals and establishing suitable strategies to address the training needs and objectives are of prime importance in the contemporary learning and teaching process. For this reason, training modules are now expected to feature specific delivery styles according to the subject matter. Logically, it is to be expected that some training modules are most effectively taught with the aid of audio-video presentations, whereas for other subjects text and audio presentation is enough.

Moreover, most of the e-learning content is in English and this poses a distinct challenge for Saudi Arabian teachers and students, for whom it is a foreign language. English as a second language has not gained prominence in the education curriculum and this has created a relative lack of skills in both spoken and written English

(Bacherman, 2007). Therefore, there is a need to design Arabic language VLEs and Web 2.0 technology for Saudi Arabian users.

2.6 Plans to Increase ICT Usage in Higher Education

ICT policy and strategy play a significant role in promoting the right kind of environment for the use and application of ICT in various sectors. Information and detailed insights relating to the trends and development in the ICT field is imperative in framing supportive policies that identify existing limitations, possible solutions and strategic implementation plans (ITU, 2007).

The Saudi Arabian Ministry of Higher Education plans to improve the levels of ICT implementation in higher education institutions by addressing these limitations. Its objective is to improve the quality of higher education through increased usage of advanced and innovative technology that promotes further course enrolment. The shortage of skilled trainers and qualified teachers can be addressed by increased cooperation with other Middle Eastern countries and global economies to recruit academic trainers conversant in e-learning technologies. Moreover, the consultancy approach can help to address the need for high quality teachers in higher education. Experts in their field of knowledge can be invited on a regular basis to deliver lectures, training programmes and online courses and teach through VLEs. This will provide institutions with expert guidance on building the knowledge base, the creation of well-structured content and improved collaboration in developing innovative ICT applications to suit the needs of the learners.

Saudi higher education institutions are in the process of integrating technology in the teaching-learning process to keep up with the latest developments in educational technology and e-administration (Al-Jarf, 2007). The barriers limiting the extent of ICT usage in higher education institutions need to be addressed to enable Saudi Arabian universities to meet global standards in online education. The universities need to equip themselves with the necessary resources to meet the needs of the online learning process. This includes integrating technology with educational objectives and future learning plans, setting up a centre for developing structured online learning courses, and devising a plan for introducing learning courses that meet global standards in terms of course delivery, feedback and evaluation. It is imperative to improve awareness of online learning techniques and blended learning approaches by providing training to teachers and instructors on the various aspects of technology used to boost the

effectiveness of learning. Overall, a complete understanding of the e-learning processes and scope of ICT tools used in higher education settings is mandatory. There must be education of society in general, and faculty and policy makers in particular, about online instruction (Alaugab, 2007).

A partnership between IT corporations and higher education institutions can have the desired impact on improving the effectiveness of ICT implementation in universities. Al-Jarf (2007) recommends the ‘Arabizing’ of software and learning management systems to help instructors use the tools effectively. Additionally, this may help in overcoming the barrier posed by the fact that English is a second language in Saudi Arabia.

2.7 Summary

The chapter highlights some distinctive challenges faced by Saudi Arabia in the implementation of ICT plans in its higher education sector. These challenges have been identified as a significant gap between instructional technologies and teachers’ background, formal training of university faculties in ICT tools and technologies, and lack of adequate e-learning content to guide an effective learning programme. The past few years have seen a rapid advancement in the area of reducing the gap between technology and teachers’ abilities, but there is still much to overcome.

The chapter also discusses that ICT tools and technologies can act as to propel various economic sectors to new heights. To achieve this, governments and educational institutions must make redoubled efforts to exploit the benefits of advanced technology through improved usage and applications. Saudi Arabia has come a long way in establishing and developing new initiatives in the field of higher education and promoting enrolment of students through effective usage of enhanced ICT tools and applications. However, the country still lags behind other developing countries and faces distinctive challenges, as analysed in this chapter. The area has tremendous potential to develop its educational effectiveness by employing the new tools and technologies that are now rapidly emerging.

Chapter 3 Literature Review

3.1 Introduction

Technology has been used in one form or another since the beginning of civilisation (Schreyer, 2000). Over the years, simple yet beneficial tools and primitive machinery used by early man evolved to become digital tools in educational reform. As education needs to keep pace with the demands and advancements in society continually, the integration of ICT in education has become crucial to this contemporary world (Lowe and McAuley, 2000).

ICT in general is defined as a ‘diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information’ (Tinio, 2002: 4). It is widely observed that ICT in education plays an important role, not only in the development of the field of education, but as a tool to bring about change and enhance both students’ learning and teachers’ teaching (Lowe and McAuley, 2000). The focus of this thesis is the application of ICT in teaching and teachers’ attitudes towards its use in their work.

Additionally, this research aims to investigate ICT usage amongst teachers at Jazan University and, at the same time, to measure the change in their ICT knowledge, skills and attitudes through a VLE-enabled CPD programme. This research is expected to provide a better understanding of the feasibility of using VLE in CPD to increase the use of ICT to support teaching in the context of the higher education institutions of Saudi Arabia.

This literature review mainly covers recent literature on three salient elements: ICT, CPD, and VLE. Each is thoroughly discussed by providing various types of research evidence and relevant source materials expected to benefit from the development of the research concepts, and also the formulation of a conclusion to the research findings with relevant recommendations.

3.2 Teacher, Teaching, and the Use of Technology

The importance of teaching in education cannot be ignored, as it tries to focus on learning contexts and learning outcomes, helps students develop cognitive and social skills (Biggs, 2003) and, ultimately, ‘makes learning possible’ (Ramsden, 2003: 115). However, because of the various limitations and difficulties, effective teaching does not happen all the time and teachers do not perform according to their expectations.

3.2.1 *Expectations from Teachers*

If we analyse the traditional view of teaching, we find there are many expected professional practices that teachers are required to perform. For example, teachers are likely to possess a certain amount of wisdom that they have had to acquire through self-knowledge, experience and practical performance (Schwen, 1998). Similarly, they need to be prepared for ‘effective enactment’, where they act to solve complex educational problems, both situational and pedagogical (Kim et al., 2012). Developing the self, both personally and professionally, is also vital for teachers’ effective teaching. According to Cranton (2001), teachers need to undergo both teaching and learning experiences and therefore effective teachers not only use their personal skills and knowledge for teaching but achieve professional development through various learning processes.

Darling-Hammond and Bransford (2005) mention the need for teachers to develop ‘adaptive expertise’. According to them, this type of expertise ensures the involvement of the two dimensions of efficiency dimension and innovation dimension. Firstly, efficiency dimension can equip teachers with ‘greater abilities to perform particular tasks without having to devote too many additional resources to achieve them’. The innovation dimension may facilitate them ‘moving beyond existing routines and often requires people to rethink key ideas, practices, and even values in order to change what they are doing’ (Darling-Hammond and Bransford, 2005: 361). In summary, the following ideal qualities of teachers listed by Davies et al. (2005: 186-187) are:

... enthusiasm, clarity, showing good management of student behaviour, demonstrating well developed interpersonal skills, being able to provide intellectual stimulation, showing respect for students, being organised and having good presentation skills.

3.2.2 *New Teaching and Learning Approaches*

Teaching and learning objectives in the twenty-first century have extended and diversified as students are increasingly exposed to extensive and intensive global ideas and events. One of the major responsibilities of present day teachers has therefore become assisting students to grow as internationalists, ‘able to understand and work with people from other countries and cultures [and also simultaneously can develop] values outcomes such as shared understandings, acceptance, openness, interconnectivity, mutual respect, plurality and world peace’ (Sanderson, 2011: 66). However, teachers may find these expectations difficult to meet as the process requires many professional qualities.

In the past two decades the role of professional development for teachers in higher education has undergone rapid change and teaching approaches have experienced extensive reform; for example, lecture-based teaching has begun to shift towards learner-centred instruction (Lindholm et al., 2005). Although lectures are economically viable and easy to administer, the rate of learning under this method is often unsatisfactory (Walkin, 2000). Besides, new educational concepts and practices such as collaborative learning, active learning, and learning in communities have been suggested to achieve higher learning outcomes (Cox et al., 2011). Tight (1996) observed the present trend of learner-centred teaching approaches and reported that it is ‘no longer seen as imparting knowledge and doing things to the student, but is redefined as facilitation of self-directed learning’ (p. 26). As a consequence of the decrease of the didactic teaching methods, new approaches of facilitation have emerged that have created a wider scope for the teachers to play different teaching roles through applying diverse teaching and learning techniques. Therefore, the relationship among teachers and students has become more flexible, and students are being encouraged to challenge and argue, even with their teachers (Freeth and Parker, 2003). It is believed that if the teachers are open and flexible, learners can themselves become more critical thinkers, problem solvers, and able to analyse concepts more intellectually (Haith-Cooper, 2003). However, in order to perform well the teachers have to evaluate their own teaching approaches and should bring about the necessary changes. It is important to acknowledge that the teaching profession is mainly reflection-based (Schon, 1983). Therefore, teachers are expected to be reflective thinkers (Hamilton, 2005; Williams and Burden, 1997) to reflective practitioners and share the citations with Ebtesam who will appreciate it, so that they can evaluate and reorganise their own teaching practices

with due consideration to contextual variety (Kim and Hannafin, 2008). The adoption of technology in teaching can also be an effective measure of all the new concepts of teaching (Means et al., 2009).

3.2.3 Technology in Educational Perspective

In recent years the use of educational technology, particularly for classroom teaching, has increased dramatically in many countries (Livingstone, 2012). Haynes et al. (2004: 161) provided the following scenario of a typical technology supported classroom of a British university:

Staff have initially used IT to support their current working arrangements, such as the production of typed hand-outs and lecture presentations and are more confident using IT to reinforce existing working practices rather than embark on radical new learning practices ... [which] has led to ... implementation of IT in higher education with gradual application of IT to support current teaching, learning and administration.

According to Kim et al. (2012), technological exploitation in educational activities has now extended beyond the classroom, and has become extensively informal, collective, social and multi-modal in nature. They discuss how the use of technology in teaching and learning can supply teachers with both adaptable and transferable knowledge and skills to help deal with various teaching-related challenges such as lesson preparation, lesson delivery, learning monitoring and assessment. The use of technology has also been claimed to be efficient in addressing most sectors of education and its multi-faceted applications can provide easy and effective access to the world of learning (Selinger, 2011). The major impact of the greater interventions of technology has been observed to bring about two initial changes in education: firstly to influence the perceptions of learners on both academic and non-academic matters, and then to change the teacher-student relationship dramatically (Khan, 2012). Means et al. (2009) found in their research that learning through internet and multimedia is more advantageous than the face-to-face. The statement of Punie et al. (2006) also reinforces this claim; according to them, the various applications of modern technological tools are effective in managing complex educational demands through enhancing the users' problem-solving and critical thinking abilities along with creativity and strategy-building skills.

Conversely, prevailing concerns over the use of technology in educational perspectives cannot be overlooked. First of all, its implementation is still at its beginning stage and the overall impact on teaching and learning is not significant enough to measure in most country contexts (Livingstone, 2012). Secondly, despite the rapid increase of the use of technology in higher education, the research findings do not support any widespread and sustainable impact of this new approach on teaching and learning (Zemsky and Massy, 2004 cited in Kirkup and Kirkwood, 2005). Moreover, it has been observed in many cases that the focus has been on technology, not on the teaching or learning (Ofsted, 2009). However, it is extensively discussed that the effective exploitation of technology in teaching requires adequate teacher training, and designing and application of proper technological tools (Attewell et al. 2009). Additionally, teachers have to go through an extended trial-and-error process of practising the use of certain technological applications (Setter, 2008). In order to obtain the maximum benefit from using technology, teachers need to access facilities beyond their own premises. Koh and Divaharan (2011) studied a wide number of theoretical and empirical claims, and suggested three conditions for the effective utilisation of technology in teaching. Firstly, there is the need to ‘foster acceptance’ by teachers of the technological interventions in teaching through introducing them to the instructional strategies of those tools. Next, teachers’ technological proficiency is required. This can be acquired through relevant training and practices. Finally, there should be the scope for pedagogical applications, which teachers can do by using technological tools in their teaching and personal learning. In fact, it is important to remember that the incorporation of technology for teaching should aim to modify ‘the natural environment to satisfy perceived human wants and needs’ (ITEEA 2007: 9) and therefore relevant technology skills are required successfully to connect content, pedagogy, and technology if expected teaching and learning objectives are to be achieved (So and Kim, 2009). However, there should be proper consideration on various influencing factors, such as learning purpose and age (as indicated by Livingstone, 2012), which can affect the application of technology in both teaching and learning processes.

As the use of technology in teaching and learning has increased dramatically, in contemporary educational discussions the term ‘Information and communications technology’ or ICT has become common. ICT is generally considered as a monolithic and homogenous term that represents most technological tools and approaches to

educational purposes (Sein and Harindranath, 2004). The following sections of this chapter try to define ICT in educational context and elaborate how it has become an inevitable part of the modern teaching and learning practice, particularly in higher education.

3.3 Information and Communication Technology (ICT)

This technological age has brought benefits to various aspects of life and society, and in recent years the advancements have evolved rapidly (Schreyer, 2000). Consequently, the vast scope of advancement and innovation together has created a demand for education to keep pace with fields that have already started to integrate technology into their activities. It is clear that innovation in ICT provides opportunities for people to gain instant access to a world of information, which offers unprecedented opportunities for learning through using technology. The existence of ICT also paves the way not only for innovation in the field of education, but for development in the teaching and learning processes (Lowe and McAuley, 2000).

This literature review therefore attempts to detail the use of ICT in higher education settings and provide information about barriers to its implementation in different contexts, with due emphasis on teachers' attitudes, abilities (both knowledge and skills-related), and performance.

3.3.1 What is Information and Communication Technology (ICT)?

ICT has been variously defined, and a number of characteristics attributed to it. A broad and general definition states that ICT is 'the study of technology used to handle information and aid communication' (Boudreau et al., 1998: 122). This definition categorises the type of ICT by indicating its usage areas. The United Nations Development Programme (UNDP) explains ICT as a 'diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information' (Tinio, 2002: 4). From this definition we can infer that ICT can be considered as a potentially useful tool for imparting knowledge.

The European Computer Driving Licence (ECDL, 2008) refers to the belief that ICT can play a key role in society and for individuals. It also mentions that its use is vital to achieving the universal goals of education, and enriching the educational experience of students as well as contributing to the productivity of teachers around the

globe (2008). Focusing on the field of teaching and learning, ICT is also defined as ‘an innovation that would be pedagogically more effective and a means to promote real and efficient change in education’ (Waring and Boardman, 2004: 1). According to this definition, ICT in education can be an effective tool for change as well as a tool offering practical learning.

Aside from the above general definitions, there are other ways of understanding ICT such as in the context of ICT literacy skills. Previously, ICT literacy in education was generally measured by knowledge and functioning of such technologies (Trotter, 2009). Today, the concept goes further and it evaluates operational skills such as collecting information and analysing it (Trotter, 2009). This definition particularly focuses on the operational skills required to become literate in ICT. Katz (2005: 2) identifies ICT literacy more elaborately: ‘the ability to effectively research and communicate using technology—necessary to navigate and make good use of the overabundance of information today’. This definition details what is expected as a result of the usage of ICT in education.

In summary, it can be said that ICT is capable of involving a wide array of technologies for enhancing knowledge as well as real-life learning, which are two factors in the development of students as well as teachers in the field of education. However, for effective integration of any ICT tools, ICT literacy skills are in potential users to help them keep pace with both society and educational settings, both of which have experienced frequent innovations.

3.3.2 The Nature of ICT in Education

Advancement in technology has provided various benefits as well as opportunities to people, especially in the field of education. Easy access to information resulting from ICT is one reason why innovation has become so important in education (Katz, 2005). Although there might be a number of challenges in designing and implementing ICT tools in education, numerous forms of improvements in systems and applications have been devised to overcome them. As a result, ICT has become an effective means for delivering knowledge, imparting skills and forming appropriate attitudes to respond to the various challenges in educational fields. It is essential that ICT is visible and its ultimate results are demonstrable to potential users (Al-Gahtani, 2005). Aside from the role of an information provider, ICT is also beneficial for teachers in facilitating effective teaching and motivating students through interactive functions (Katz, 2005).

Besides, ICT represents a convenient and flexible option for teachers preparing lessons. It is evident that such innovation is important in the field of education, and technology can promote this.

At the same time, the emphasis in the use of ICT in education has generally been on approaches and strategies for its administration. However, as ICT has been found to influence various behavioural and cultural factors, it has become important to discuss relevant social agendas (Clegg et al., 2003). For example, a number of societal problems have arisen from the use of ICT such as a digital divide, cybercrime, and impaired data privacy. For this reason, it is important to recognise that, although there is much scope for creating interventions of technology in education, there is also scope to work in the field of social justice and digital equity in technology-based educational practices (Davis, 2003). In this connection, many educationists (such as Magenheim, 2003) recommend evaluating of ICT applications and materials thoroughly and regularly. Similarly, new workplace conditions and changes to core activities are also needed to ensure teachers' motivation to use ICT in teaching (Hayes, 2005). By investigating five Norwegian universities, Stensaker et al. (2007) have found that to ensure an effective role for ICT in educational activities, pedagogical, organisational and human development issues need to be acknowledged together. These are in fact crucial in the Saudi Arabian higher education context where the number of regular ICT users is still limited, and it is a challenge to provide equal technological opportunities to all teachers. Moreover, higher educational institutions require suitable infrastructure in the workplace and proper training on ICT for teachers for effective professional development, and enhanced teaching and learning.

3.3.3 The Benefits of ICT in Education

In its simplest form, if teachers put text and pictures on the web for students or learners, they can be considered to have a 'course of study on the web', or an ICT-oriented learning system. Fisser and Geloxen (2000: 17) note that 'with some additional [ICT] knowledge it is possible to integrate more interactivity, such as discussion lists, simulations and feedback possibilities'. These developments can be further enhanced to create a web-enabled learning environment where both students and their teachers can communicate before, during and after lectures or learning sessions. It is noteworthy that hands-on instruction on ICT use is necessary where ICT is deemed to be a vital

component of the teaching and learning processes (Trucano, 2005). Some of the general benefits of ICT in education are identified by Katz (2005):

- a) A higher level of competence
- b) An innovative means of communication
- c) Encouraging for students and their learning.

However, one of the main problems in adapting ICT in education is that it is often a lengthy process because, to secure effective outcomes, users need to adapt gradually (Kirkup and Kirkwood, 2007). Moreover, this teaching and learning approach requires essential training and preparation to bring about change in the attitude of vulnerable users and their performances (Muir-Herzig, 2004). Additionally, there is a need for applicable policies, practical implementation frameworks, and specific roles of the users for the effective inclusion of technology in educational activities (Mohamad and Woollard, 2009).

ICT in Learning

The use of ICT in education has been found to develop and improve students' learning: it is said to promote 'active learning' (Tinio, 2002). According to UNDP, the use of ICT in learning may provide students with the opportunity to develop critical and analytical thinking as well as resolve problems in real-life situations (Tinio, 2002). From this explanation we can see that students can be actively engaged in learning inside the classroom with the help of ICT. It is also seen as a catalyst for collaborative learning, and this can encourage students to interact with their peers (Katz, 2005). ICT can provide students with opportunities to learn from diverse cultures and this can support the educators' goal to 'enhance learners' teaming and communicative skills as well as their global awareness' (Katz, 2005: 29).

In the field of education, learning is said to happen in two most effective ways: firstly by solving problems in real-life situations (according to the cognitivist theorists such as Byrness, 1996, and Sweller, 2005), and secondly by learning through interaction (according to the social constructivist theorists Laurillard, 2002, and Wenger et al., 2002). This literature review provides considerable evidence on how ICT promotes learning within the classroom.

Advantages and Disadvantages of Using ICT in Education

Various studies on the integration of ICT in education reveal advantages in students' learning processes. Kennewell et al. (2007) explain how it promotes a student-centred learning environment in an interactive manner. According to Di Pilla (2005), the use of ICT in education facilitates the learning through discovery, inquiry and problem-solving activities. This means that, in a student-centred learning environment, the needs as well as the capabilities of students are given due consideration. This type of learning also provides opportunities for students to learn independently, together with their teachers, and with ICT-enhancing learning itself. In student-centred learning, students are provided with improved opportunities to develop critical thinking as well as to develop those problem-solving skills necessary in working life (Di Pilla, 2005).

It is clear from the research evidence that there have been great advancements in the way students in higher learning institutions can acquire learning materials and lecturers, and can disseminate educational materials using various ICT tools (Young, 2002; Glennie et al., 2012). A study by Rising and Watson (2002) reveals how a 'web-based study group' can be a successful means of education, whether at university or in a work-study environment. The importance of the role of ICT in motivating diverse learner groups in learning is also noticeable. The study carried out by Brooks et al. (2002) on ICT-enabled vocational training showed that vocational students with learning disabilities are also able to use a virtual environment and are motivated to learn using this method.

It is also clear that the majority of higher education students use ICT to communicate efficiently and to relay their ideas, and to portray openly their fervour for their studies. Although in most instances the primary ICT learning tools provide students with enhanced learning and reliance on information between themselves and lecturers, the ICT system standards may not be always balanced across the institutions. In some cases, this imbalance may be magnified if lecturers only use those ICT tools with which they are confident. Therefore, it is important to ensure standardisation of the technological tools and their interventions. Effective quality management (QM) practices must also be established so that unexpected managerialism does not result in an absence of shared vision and a match between QM techniques and educational processes (Srikanthan and Dalrymple, 2002). It can be claimed that the proper utilisation of ICT in higher education can not only enhance academic sectors but promote educational councils and board matters, and ultimately develop efficient

institutional management systems. For this reason, in many universities a new style of teaching has emerged with the aim of producing a cohesive group of professionals by using formal approaches to decision making, but relying more on ICT so as to become more productive and responsive in our changing times. It is apparent that student satisfaction with the use of ICT is significantly associated with the provision of lecture notes, bulletin boards, on-line assessment and other tools such as Chat and video summaries (De Lange et al., 2003).

According to Maguire and Zhang (2007), some of the advantages of ICT in learning are:

1. Facilitating transfer of a wide variety of knowledge
2. Providing opportunities for lifelong learning
3. Generating student-centred lessons, wherein lessons are directly based on students' strengths and limitations
4. Providing an invigorating learning atmosphere
5. Allowing opportunities for independent learning.

Despite the above benefits there are some disadvantages to using ICT in education, as detailed by James (2002):

1. Difficulty in learning independently, especially for students who experience difficulty when working alone
2. The high cost of education – this includes the necessary technology as well as training for teachers.

ICT in teaching

Although the integration of ICT in education is said to have various effects on students' learning, its impacts on teaching processes is also equally significant. According to UNDP, one question that resounds in everyone's mind, especially teachers', is: 'Will ICT replace the teacher?' (Tinio, 2002: 22). UNDP maintains that the integration of ICT in no way replaces teachers; in fact, it argues that 'the teacher's role in the learning process becomes even more critical' (Tinio, 2002: 22). Teachers remain more than just learning facilitators; they teach students to develop problems and ask questions as well as develop assumptions based on the assessment of the information gathered. Thus, UNDP identifies the teachers' role as crucial, because it is still their responsibility to

help the students to develop the necessary problem-solving skills while using ICT tools. In this connection, Ageel (2012) elaborates the role of teachers further:

Teachers are supposed to be the vehicles, the foot soldiers, and the active implementers of ICT in teaching, after states pass policy guidelines on ICT use in education, after schools fund ICT projects and after scholars argue for the benefits of ICT-aided teaching. (p. 3)

It is undeniable that teachers play the main role in using ICT in teaching and learning activities, and this literature review details how ICT is employed as an integrated element of the teaching process operated by teachers. However, as every educational system requires a proper and systematic assessment programme as well as an authentic system for tracking students' performance, ICT-based teaching has to integrate curriculum and assessment tasks (Wiggins, 1997).

For example, from research evidence in various contexts around the world it is found that technology can facilitate both distance and campus-based learning opportunities by offering improved access to learning resources, and through increased interaction between teachers and students (Bennett and Lockyer, 2004). However, many teachers are concerned about the use of ICT tools, such as their role while teaching and the proper functionalities of the tools in delivering lessons (Harden, 2002). In this regard, Gillingham and Tooper (1999) suggest that familiarising teachers with modern ICT tools helps effective utilisation of technology in teaching, and can be achieved through various activities such as technology infusion and single courses. Moreover, to gain effective results from the technology-based teaching, a number of professional development activities and favourable organisational structures are necessary to make the transition from traditional to technology-based teaching (Hinson and LaPrairie, 2005). While planning strategies to activate technology in teaching, it is also important to remember that the success of using ICT in teaching mainly depends on teachers' perceptions and motivations about their newly gained knowledge and skills of technology (Hughes, 2005).

Advantages and Disadvantages of using ICT in Teaching

As a result of the evident impact of ICT on educational systems and processes, instructional delivery methods (for example, the virtual lecture room, also known as a VLE) have been considerably enhanced. ICT-based learning tools are used in education

in two general ways: to support existing ‘traditional’ pedagogical practices (teacher-centric, lecture-based, rote learning) and to enable more learner-centric, ‘constructivist’ learning models (Trucano, 2005).

Katz (2005) has identified a number of advantages of ICT for teachers.

According to him, ICT can:

1. Help teachers with the planning of lessons and broaden the options for materials to use
2. Provide teachers with the opportunity to develop their perceived professionalism with students and colleagues
3. Facilitate better teaching
4. Provide up-to-date information and data resources.

On the other hand, there might be difficulties using ICT in teaching that may hinder its implementation. One factor identified is that some academic staff have low self-confidence when it comes to ICT (Bingimlas, 2009; Clemente, 2007). That is why similar studies to this research have recommended providing teachers with training to give them sufficient skills, competence and confidence to make use of such technologies in class (Akiba, LeTendre and Scribner, 2007).

Vajargah et al. (2010) also identify problems in incorporating ICT in teaching:

1. Lack of budget for the materials and tools
2. Fear of being unable to provide the ‘missing technical substructures’ necessary for assessment procedures
3. Being unable to consider culture as an important element of disseminating information and lessons.

It cannot be denied that adapting teaching practices poses a number of potential barriers related to the use of technology for teachers to circumvent, overcome and eliminate (Etmer, 1999). However research findings (such as Lai and Eugenia, 2011) show that the use of ICT in teaching can greatly enhance the level of competency of teachers. While using ICT-based hardware and software they can gain the capability to deliver an enhanced graphics-oriented presentation (Khan, 2001). It is also found that the leadership qualities of the teachers increased by using technology in teaching, as the teachers try to find more ways to implement the various ICT tools (Gao and Tinto, 2006). Many ICT tools have been found appropriate in education, and even commercial

electronic tutoring services and online courses have been recognised as an effective approach for both teachers and students (Marie and Sharon, 2009). However, to take advantage of ICT in teaching it is best to adopt these new practices gradually and maintain consistency with the institutions' traditions and the learning styles of both teachers and students (Garrison and Kanuka, 2004).

Functions of ICT in teaching

Beside general teaching and learning utilities, ICT has the potential to integrate many sophisticated teaching functions in higher learning institutions such as advising and counselling, which can be done from a database of performance indicators supplied by an ICT system. It is worthy to mention that, 'through the use of VLEs, teachers' technology skills can clearly be both instinctively and sub-consciously improved' (Waring and Boardman, 2004: 8). Consequently, effectiveness in lecturing may be enhanced from the perspective of both lecturers and students. Many scholars (such as Cox et al., 2000; Bailey et al., 2004; Katz, 2005; Yusuf and Onasanya, 2004) discuss the following key functions of ICT in teaching. According to them, ICT can:

- a) Provide teachers with the enhanced materials needed for the presentation of lessons.
- b) Promote learning through the use of multimedia, laboratories, workshops or studios.
- c) Provide opportunities for teachers to make teaching more appealing to students.
- d) Extend professional support through the internet.
- e) Perform administrative tasks such as paperwork and worksheets preparation as well as students' reports production, and learning assessment.
- f) Offer the use of online information and data as resources for lessons.
- g) Allow teachers and learners to communicate using technology through e-mail, mail lists, newsgroups, and Chat rooms.
- h) Play an important role by allowing teachers to impart the necessary skills to their students, which might be advantageous when entering professional life.

- i) Allow students access to various databases to gather information.
- j) Provide opportunities to access libraries, meaning that it increases the opportunity for empirical research.

However, the functionalities of the ICT tools may be strongly dependent on the users' state of ICT 'affordances', in other words how they recognise the functional aspects of the ICT tools that they are using (Salomon, 1993). There might be several factors influencing users' ICT 'affordances' such as 'accessibility', 'speed of change', 'diversity', 'communication and collaboration', 'reflection' and 'risk' (Conole and Dyke, 2004).

3.3.4 Teacher-student interaction in ICT-enabled education

Classrooms are a reflection of complex social systems, and therefore the student-teacher relationships are evolved with multifaceted aspects of society and education (Pianta et al., 2012). Because of the important role of this relationship in formal education, interaction is considered vital as it greatly influences students' cognitive, affective, and social development (Getzels and Thelen, 1960). According to Gupta and Fisher (201: 41), 'the interaction which teachers have with their students determines the nature of their interpersonal relationship and enables the teacher to improve their teaching practices'. It is indisputable that teaching involves emotional, interpersonal and environmental factors that act simultaneously in the mind of both teachers and students (Fisher et al., 2007). If a teacher fails to manage all these factors in teaching, there is a high risk of poor academic performance and inappropriate behaviour (Wubbels, 2007).

Various measures have been proposed to enhance teacher-student interaction in educational situations. Researchers and educationists claim that personalised help and emotional support can trigger students' learning effort and academic achievements (Patrick et al., 2007). Motivation has also been proved highly effective in this regard (Gungoren, 2009). Building collaboration and cooperation (Wubbels et al., 2006), and understanding students' beliefs and feelings have also been found to increase interaction (Schunk and Meece, 2006). Moreover, a flexible and encouraging learning environment has been found to enhance higher rates of learning (Dorman, 2002).

To develop effective interaction between teachers and students, the comprehensive proposals of Pianta et al. (2012: 379) conclude there are four key requirements for good teacher-student relationships in formal education:

- i) teachers' knowledge and cognition of their interactions with students
- ii) availability of on-going relational supports for teachers themselves
- iii) teachers' regular exposure to individualised feedback about their actual interaction with students
- iv) a standard and valid 'target' on which to focus efforts to change interaction.

Although the inclusion of ICT in teaching in higher educational institutions is a comparatively recent phenomenon, similar might be expected within a technology-supported educational environment. However, the task is made more difficult as many teachers find the use of technology a barrier to collaborative and learner-centred educational environment, and consequently will persist with traditional teaching approaches (Hermans et al., 2008).

Yet, ICT can enhance teacher-student interaction. For example, incorporating PowerPoint presentations, video clips and web-based discussions can yield a highly interactive session (Pianta et al., 2007). These ICT tools can generate reflections and help both the teachers and students exchange feedback (Pianta et al., 2008). However, in using any ICT tools such as the Internet or multimedia, teachers are required to establish a positive relationship with students with adequate consideration to mutual respect, support and a sense of affiliation (Patrick et al., 2007). Lawless and Pellegrino (2007) claim that the use of technology can achieve high student satisfaction when applied systematically and repeatedly. Moreover, according to Ertmer and Ottenbreit-Lefwich (2010), teachers' knowledge and attitudes towards ICT need to be positively changed for the effective incorporation of ICT tools in teaching.

3.3.5 ICT in Higher Education

The integration of ICT in higher education has now taken place in many institutions, and the use of ICT there is considered to be of key importance (Tejedor et al., 2006). However, even developed countries like US, United Kingdom, Finland, Australia and Belgium have higher institutions that still lack effective implementation of technology in teaching and learning (Wende and Beerkens, 1999). Beller and Or (2006) show that

universities across the world face difficulties in adopting ICT, particularly in ensuring internet-based learning.

Despite the fact that the internet has only recently been widely used for knowledge dissemination, for the past decade it has prompted a boom in ICT-based learning opportunities. Through the implementation of online learning programmes, new paradigms of learning, new teacher roles and functions, and new didactic technologies have emerged (Barajas, 2002).

The adaptation to ICT in many higher learning institutions is two-fold – the academic and the non-academic (or the administrative). These are interfaced and integrated to provide an information system administered by academic and non-academic managers, including the aspects of accounting, budgeting and financial operations necessary to keep the whole system under control.

Globalisation is affecting educational systems to the extent that efficient and effective management of the administrative and academic processes is now technology-based. The need to adopt ICT-oriented systems is recognised as it can monitor and strengthen the decision-making process in an institutional higher learning setting. A number of higher learning institutions worldwide have therefore adopted ICT-oriented systems both for instruction and administrative systems to support academic core processes, and are experiencing continuous learning through meeting the shared learning needs of communities of practice within a virtual environment (Booth et al., 2003). In addition, as it is considered that in 'higher education there must be full opportunity for achievement so far as aspiration seeks and ability allows' (Galbraith, 1996: 74), the use of ICT is proven to have great potential to be a core educational area. A number of core educational processes can be supported and enhanced by the implementation of ICT, such as enrolment and registration, student information systems to address the monitoring of the progress of every student in every programme, faculty monitoring systems that undertake the close supervision of the profile, punctuality, performance and tenure of every trainer/lecturer/instructor, as well as financial systems for recording, reporting and controlling transactions (Oliver, 2002).

Another facility of ICT is the online library systems, such as the On Line Public Address (OPAC), that can provide excellent learning enhancements for attaining ICT-oriented training and learning systems, readily accessible and usable by the students around the world. Additionally, the effectiveness of ICT-oriented teaching and learning is evident in the means and measures used for setting up test examination banks as well

as grading systems, removing the task of manually administering student ratings and grades. Moreover, university or college students appreciate being able to access lectures through alternative means of learning material delivery. Research evidence paints a picture of great improvement in higher education and the use of ICT in training material/content dissemination, as well as rising standards in students' learning. However, Littlejohn (2002) warns that common shortcomings in educational design in higher education have not been fully addressed during this rapid shift towards online and resource-based learning. Additionally, there is a need for national policy, standards and guidelines on incorporating technology in teaching and ensuring training for teachers (Selinger and Austin, 2003). According to Gulbahar (2008), three areas need to be improved to ensure effective usage of ICT in teaching: infrastructural facilities of technology, teachers' in-service training and quality lessons in the technology supported curriculum. Geoff (2006) adds that, for effective utilisation of technology in education, it is important to acknowledge the role of the respective society and culture, and also to consider a CPD plan.

3.3.6 Why should university teachers use ICT in their teaching?

In many cases, teachers clamour about the quality of training available to them in higher education, and thus the delivery methodologies and the consequential learning processes seem to have eluded them in many institutions (Jodlbauer et al., 2011). Srikanthan and Dalrymple (2002) emphasise that lecturers have to learn about quality in higher education – how to enhance it and how to evaluate it to help develop standard measures required to revolutionise and enhance the learning processes through productive information communication technology medium. It is however noteworthy that,

as increasing numbers of staff adopt ICT... there is a need to ensure that e-learning staff development provision blends technical skills with the pedagogic understanding of how and where the technologies can be effectively implemented to enhance student learning (Newland et al., 2006: 37).

Teachers are often unfairly represented as deeply afraid of using ICT in their teaching: in many cases, the technology incorporated in their educational activities is designed around assumptions (Orlando, 2009) rather than their or their students' demands (Larn, 2000). Indeed, the teachers of many higher educational institutions

give positive reports on their use of ICT in teaching. For example, Brill and Galloway (2007) found through their investigation with the public universities in the US that most of the teachers comment favourably on current trends in technological interventions in teaching and learning, and think that there are opportunities to use classroom-based technology in higher education. Incorporating technology-based instruction has also been found popular and effective in a number of field-based teacher education programmes (Brush et al., 2003).

A cross-cultural study by Mahrous and Ahmed (2010) focused on the effectiveness of the use of information and communication technology primarily as a pedagogical tool inside the classroom, and reveals that perceptions of students regarding the effectiveness of various pedagogical tools in the classroom varies, especially among students in Middle East countries (Mahrous and Ahmed, 2010). This study provides valuable information about the benefits that students might secure from the integration of ICT teaching tools in the classroom and could represent good reasons for teachers to consider such modes of teaching in order to promote maximum learning. Teachers also need to know that successful integration of ICT into the educational systems can allow access to the provision of richer content and enhanced learning resources for lecturers and students at universities (McCann, 1998). Moreover, emphasis on using appropriate technologies may lead to better access to information and better educational processes as well as to enhancing and supporting effective learning.

Some reasons why teachers in higher education should make use of ICT in teaching (based on the remarks of Srikanthan and Dalrymple, 2002; McCann, 1998; Tiffin and Rajasingham, 1995; Cox et al., 2005; Mahrous and Ahmed, 2010; Yusuf and Onasanya, 2004) are for:

- a) Enhancing learning and promote development in the educational system
- b) Providing a diverse and motivating atmosphere for learning
- c) Creating opportunities for teachers to develop the ICT literacy skill for students.

These skills might be necessary for the students as they head towards professional life.

3.3.7 University Teacher's Knowledge, Attitudes, Skills and Usage of ICT

After noting various benefits of the teaching of university teachers using ICT, it is now vital to consider the factors that play important roles in the phase of implementation. These include students' acceptance of the approach and their participation, and teachers' professional development (Guskey, 2002; Cordingley et al., 2004), ICT knowledge and expertise (Conlon and Simpson, 2003), and ICT-related beliefs and attitudes (Vannatta and Fordham, 2004). A significant amount of research evidence can be cited to support this.

Research findings show that technology-oriented teaching and learning can be widely problematic and many university teachers may not be interested to work with their students collaboratively via the use of various ICT tools (Pachler and Daly, 2006). However, improved knowledge and skills about technology may enhance the usage of ICT by teachers. Again, teachers' technological knowledge, skills and motivations may depend on factors such as self-efficacy, professional training, time and professional freedom to choose and apply technology in teaching (Vannatta and Fordham, 2004). Even gender, age and level of work experience can be vital in this regard (Jung et al., 2006). Besides, teachers' professional confidence about adapting technology for teaching tools is important and can be boosted by their perceptions of technology and their skill (Ross et al., 1999). Moreover, teachers' attitudes to the use of ICT in their teaching may be guided by the context and general teaching experiences (Albirini, 2006).

From the research evidence it can be seen that an orientation to the use of ICT tools and teachers' professional development are both essential to greater ICT engagement (Watson, 2001). This orientation can be provided in the following ways.

Firstly, easy access to various ICT tools for teachers and supportive institutional policies are essential for enhancing the use of technology (Ertmer, 2005). If the use of technology is merged with traditional best practices in teaching, it may bring more effective outcomes (Mauza, 2009). Additionally, the pedagogical and policy consequences need to be addressed in the plan for adoption (Krischner and Selinger, 2003). If the users are made familiar with various ICT options, their confidence in may improve and they may try harder to activate technology in their teaching (Adamy and Boulmetis, 2006). To achieve a greater success in technology-based teaching, the integration of technology should be extended beyond classroom practice and for personal and social purposes and the educational institutions also need to support the

entire process (Adamy and Heinecke, 2005). It should be noted that the primary focus of the integration of information and communication technology inside the classroom is not merely related to ‘pedagogical change’ (Kozma, 2003); rather, it is to improve traditional pedagogical methods with the help of such innovations. In traditional education, ‘the primary role of the teacher in the learning process [is] more focused on lecturing and providing information’ (Kozma, 2003: 45), whereas the integration of technology encourages teachers to shift their role from that of information provider to that of director of learning. Some of the further developments brought by ICT include ICT as pedagogical tools, ICT as promoter of collaborative learning, and ICT as an information management system (Kozma, 2003).

Secondly, it is widely recognised that enhanced internet technologies are required for lecturing, research and learning in higher educational establishments. It is expected that in universities or other higher learning institutions ‘staff are supported in developing the full range of skills in the technical utilization of the VLE as well as effective pedagogic implementation of e-learning’ (Newland et al., 2006: 42). The focus on the skills development of the teachers themselves is therefore important. In this regard, professional development training in the application of technology can provide sufficient preparation for teachers, and may alert them to the scope for using technology effectively in teaching (Lei, 2009). Additionally, teachers may gain the necessary skills in various approaches of content delivery; this may also determine how much their students will learn (Hughes et al., 2005). It is vital to consider that the use of technology in teaching can help change the teaching practices and beliefs of the users. For example, Park and Ertmer (2007) find that the use of technology in teaching can transform teacher-centred teaching into student-centred learning. However, it is crucial to bear in mind that, if only a few teachers of an educational institution are technology-literate, it may cause a great barrier to ensuring use of ICT among other teachers and students. Therefore, the provision of ICT training must be to all academic staff and it is essential to involve them all in using ICT tools in teaching (Muema and Muia, 2011).

Globally

While discussing the process of integrating ICT into professional development schemes, a number of researchers (for example, Khan, 2012; Yang, 2012) have suggested changes in learning instructions, administration procedures and infrastructural settings. Curricula in higher education institutions and the roles of both

faculty members and students in the class have also been put forward for reform (Orellana et al., 2005). Orellana et al. researched the level of ICT use on the 'personal-professional level' of faculty members at two universities in Comunidad Valenciana, and found a significant difference in the professional and personal levels of usage by faculty members. The results reveal that the level of ICT use was higher in basic applications than those that require design and programming by teachers (Orellana et al., 2005). It is evident that the focus of this study is on the level of use ICT in teaching as well as in the personal motivations or abilities of the university faculty members.

Programmes like Blackboard as well as WebCT portals are currently in use in various higher learning institutions and establishments for improved teaching and learning processes (Hwang and Kim, 2011). Seen as highly efficient in providing enhanced teaching capabilities, they are now used globally by lecturers and trainers. Because of the variety and diversity of applications and complexity of the usage, it seems vital to provide teachers with the necessary skills to use these technologies effectively.

However, the task of providing successful training to the teachers of higher education, thus ensuring proper use of technology, may be difficult to accomplish for a number of reasons. A research project undertaken by Xu and Meyer (2007) reveals that the use of technology is mainly individual choice, and thus faculty members' views and perceptions of the use of ICT technologies is vital. In reality, quality instruction takes up time for both institutions and trainers and lecturers, who normally need to prepare lecture plans, examinations and test materials, presentations enriched by online materials from a university server system and even systems for individually monitoring students' progress through computer software.

Similarly, one of the problems in implementing technology-supported teaching such as VLE is that it requires competence in technological and organisational aspects as well as new skills in applying relevant didactic methods (Barajas, 2002). Higher learning institutions are also required to maximise and optimise their resources in order to justify the cost of establishing and maintaining an ICT infrastructure. This usually includes an array of electronic instruction systems, hardware and software programmes, test materials and electronic student grading systems. The focus of ICT in teaching and learning is necessarily on educating and enlightening participants, adding value to their capability and ultimately empowering them (Altowjry, 2005). More than just a development and an innovation in the field of education, an important factor said to

play a crucial role in the integration of ICT inside the classroom is that teachers also need technological skills.

Again, it is noticed that, despite the growing expansion and surge of ICT from the hardware to the software components of the VLE, lecturers in most higher learning institutions respond poorly to the use of the technology. This has generally been attributed to 'technophobia'. It is a fact that technological change is altering the way teachers deliver subject content (Usluel et al., 2008). Thus, many opportunities which might have been taken by lecturers to become mainstream users of ICT instruction systems have been met with sufficient fear and resistance to delay their participation in training and development. Reeves (2001) emphasises the impact of this lack of openness to technology, in this case attributed to the fear of technology, which leads to a lack of utilisation despite the availability of ICT equipment and training provided by universities. Again, studies such as Demetriadis et al. (2003) show a necessity to emphasise the need to professionalise the ranks of lecturers as the demand for skills and technical competence grows.

Yusuf and Onasanya (2004) discuss knowledge, another important factor that they suggest must be considered in implementing ICT in teaching. According to them, in order for teachers in higher education to make use of ICT in teaching they should possess subject competence. Subject competence is defined as 'knowledge of the functions, operational use and features of ICT and how ICT can be used to support teaching and learning' (Yusuf and Onasanya, 2004: 70). A further study mentions another type of knowledge that teachers must possess to achieve effective utilisation of ICT in teaching: Cox et al. (2000) argue the importance of teachers' knowledge of the specific topic within the programme, as well as how that information could best be conveyed with the help of ICT. The development of a method that can be employed with regard to this kind of technological usage to support and disseminate information in the teaching process is the primary point of this particular study. These studies are relevant to this research because it is important to understand why knowledge is an important factor in the use of ICT among university teachers' teaching.

'It can be noticed that ICT-based learning can portray the potential to affect nearly every person on earth in some way' (Clark, 2002: 158), and huge resources are devoted to its wider implementation. Recent findings (for example, Fry and Love, 2011) reveal that university lecturers' attitudes towards the use of ICT in educational systems, as well as their perceptions of computer competence, have improved

significantly. Anderson (2002) notes that lecturers' attitudes towards ICT are connected to factors such as socio-cultural, professional and technological aspects.

Recently it has been observed that both teachers and students in higher education are increasingly exposed to different types of ICT-based interactive learning activities supported with text, stills images and animations, and that these influence their attitude towards the use of technology (Allen et al., 2012; Hattangdi and Ghosh, 2008). Two theories attempt to explain the phenomena of their behaviours and attitudes towards the events and planned actions in a technology supported learning environment. The first is Ajzen and Fishbein's (1980) theory of reasoned action (TRA), and the second is the technology acceptance model (TAM), a version of the previous developed by Davis (1986) and Bagozzi et al. (1992). The principal objective of discussing TRA is to understand the nature and relationships among human attitudes and actions. At the same time, it is hoped that the discussion on TAM model will provide a detailed understanding of the impact of technology use on human attitudes, behaviours and activities. These two theories are very important for this research as they can help explain the impact of a technology supported continuing professional development on a group of participating university teachers.

The major claim of the TRA is that behaviour is determined by behavioural intentions formed by personal or 'attitudinal' and a social or 'normative' factor (Vallerand et al., 1992). The following TRA model represents how behavioural outcomes take place with the intervention and influence of people's attitude toward a specific behaviour, their subjective norms, and perceived behavioural control.

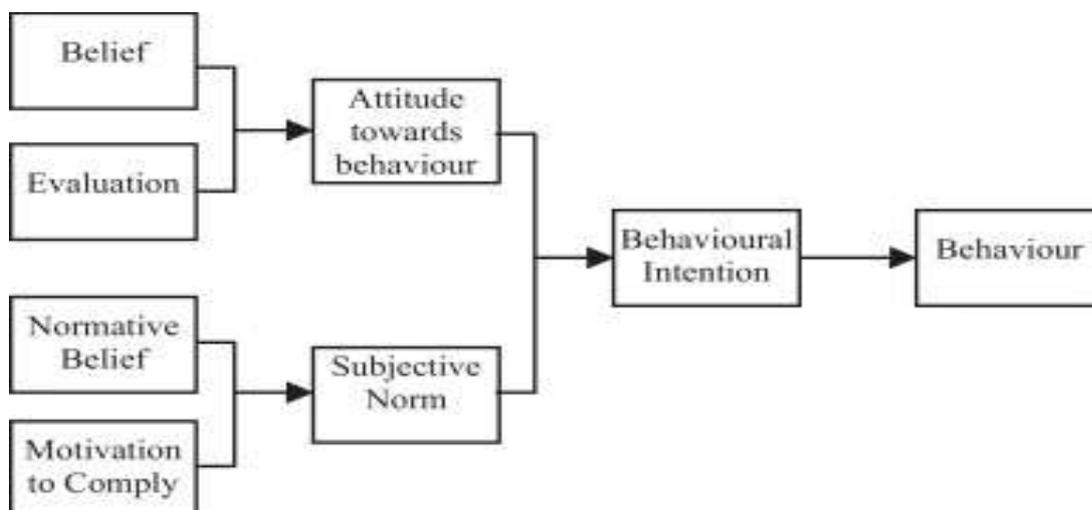


Figure 3-1: Theory of Reasoned Action (Ajzen and Fishbein, 1980)

Based on the TRA theory, Ajzen (2012) has provided instructions on preparing questionnaires for investigating the elements of human behaviour. According to his advice, this type of questionnaire should contain the following characteristics:

- a clear definition of behaviour with the consideration of time, target, action and context
- a clear specification of the research population
- formulation of items which have been planned to measure
- structuring research instruments with clear time and measurement scales.

On the other hand, as an extension version of the TRA, 'the TAM is among the first models to include psychological factors that affect technology acceptance' (Teo, 2012). According to this theory, the behavioural intention of technology users is influenced by their attitude to the usage of the technology. According to TAM principles, a technology user's motivation can be explained from three aspects, namely 'perceived ease of use', 'perceived usefulness', and 'attitude toward using the system'. Davis (1986) considered that attitude is the major determinant for accepting or rejecting any new technological adaptation, and this attitude is formed on the basis of the convenience and the usefulness of using any technology.

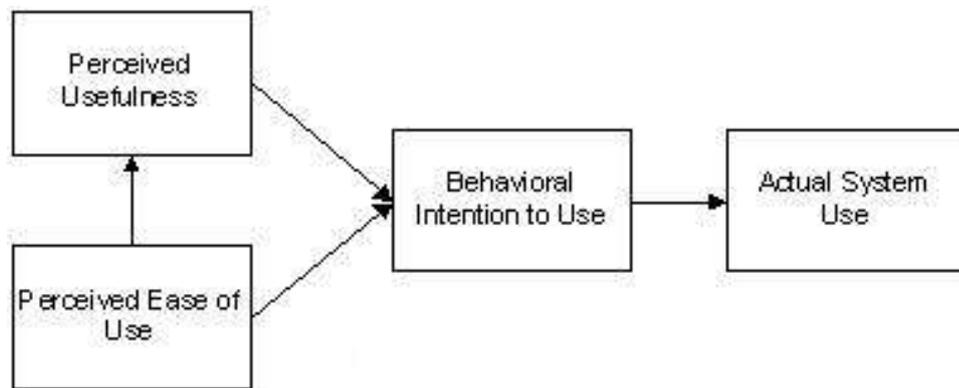


Figure 3-2: Technology Acceptance Model (Davis, 1989)

The TAM model, which has strong behavioural elements, claims that for using any technology the users need to form an intention to act without the hindrances of external limitations or practice constraints such as time, environmental or organisational limits, and lack of ability or skills.

Therefore, by analysing TRA theory it can be understood that professionals, including university lecturers, need to be reinforced by positive values, a vision of the usefulness of the technology being learned, the motivation of self-improvement and the prospect of performing well in a technology-supported learning environment. This attitude to change is considered critical in the effective delivery of instruction. Similarly, based on the principles of TAM theory, it is understood that university lecturers need to alter their educational objectives, attitudes and individual norms, as well as apparent behaviour management, to employ planned behaviours to become continual learners, that is, acting as role models for students.

In Arabic countries

In developing countries like the Arabic countries in the Middle East, the integration of ICT in teaching and learning is presently on the rise (Clemente, 2007; Gulbahar, 2008; Hayes, 2007; Ming et al., 2010; Shalaby, 2002). These countries have already recognised the importance and the benefits that these technologies play in the development of the field of education. For this reason, an increasing number of educational institutions, especially higher education institutions, have started integrating and implementing the use of ICT in their classroom. However, there are a concerns for teachers in Arabic countries over the use of ICT in teaching. This section therefore investigates the findings and scope of previous research on the use of ICT in Arabic countries' education systems.

Research was conducted by Albirini (2006) with the aim of exploring the missing components during implementing ICT in the class. The purpose of the study was to determine the teachers' overall perceptions of ICT, as influenced by their national culture and school culture(s) (Albirini, 2006). It investigated how teachers, specifically in Syria, perceive the use of such innovations in teaching, placing importance on the influence of one's cultural beliefs. This is an important perspective to consider here, because people in Arabic countries are very much influenced by their religion as well as their cultural beliefs. A recent study conducted by Ageel (2011) reveals that the low level of use of ICT in teaching by Saudi university teachers is because of their inadequate knowledge of using the tools, and also a lack of commitment by management. The research, however, reveals that most university teachers are willing to learn to use ICT tools in their teaching as they have a fairly positive attitude to technology-based teaching and learning. Other research by the same researcher with

138 secondary school teachers of Jazan in Saudi Arabia finds that the use of technology by these teachers is low because of their lack of training and relevant experience in using ICT tools, and the nature of the teachers' subject specialisation (Ageel, 2003). Realising the diversity and the uniqueness of the problems of adapting technology in teaching in Arab countries, Abd-El-Gawad and Woollard (2009) therefore recommend considering a redesign of e-learning systems to render them suitable for teachers in higher education, particularly in the Arab context.

In Saudi higher education institutions

In Saudi Arabia, the primary focus of education is on meeting the religious needs of the country, followed by economic and community requirements (Education, 2006). It is through education that the Saudi government hopes to eliminate ignorance (Education, 2006).

As a developing country, Saudi Arabia is establishing more and more colleges and universities. The primary goal of the government is to foster educational institutions all over the country and upgrade existing colleges and universities in order to ensure quality education amongst higher education institutions (Higher Education, 2006). The Ministry of Education lends considerable importance to developing higher education across the whole country, and has already recorded 22 government universities in the entire country (Saudi University Statistics, 2009). One of the Government's methods for upholding quality education among universities in Saudi Arabia has been providing various universities with access to information technologies.

Generally, educational institutions all over the world, especially those that cater for higher education students, have already implemented ICT in education. Most belong to developed countries with easy access to necessary ICT resources. Today, 'more and more developing countries worldwide are developing projects in order to integrate information and communication technology in their education systems' (Kanamugire, 1993: 58), and Saudi Arabia is one of these developing countries. However, only a few institutions in the country have so far been able to implement ICT, not only because of the lack of available resources but because of a lack of information about it (Kanamugire, 1993).

At this early stage in the development of the ICT, only limited forms and approaches are currently available for implementation in education. One of them is the CD-ROM, 'said to play an important part in the development of the integration of

various information and communication technology in developing countries worldwide' (Kanamugire, 1993: 60). In developing countries such as Saudi Arabia, attempts have been made to implement such forms of technology in the classroom, but have encountered many problems. However, studies (such as Kanamugire, 1993) discuss how CD-ROMs have been successfully used and been helpful in the development of existing information and communication technology services available online. It is a fact that the number of adult learners participating in ICT-based online learning has rapidly grown in the last two decades (Park and Hee, 2009), because of the advantages. Likewise, attributes of computer technology influence the uptake of technology-based learning in the workplace to a significant extent, in higher education in Saudi Arabia (Leidner and Jarvenpaa, 2008).

By analysing various sources of empirical evidence it can be seen that ICT is highly capable in leading users to increased motivation for higher learning. The process of upgrading systems seems part of a university's journey to become more relevant to the global economy, and can be achieved through an ICT-based infrastructure. However, it is acknowledged that the effective adoption of ICT-based teaching and learning demands appropriate enhancement of users' knowledge, attitudes and skills, both students and teachers. Moreover, in the process of incorporating technology in higher education a number of factors seem influential. Aside from accessibility and lack of knowledge about ICT in Saudi Arabia, there are issues concerning the society's culture. These social and cultural aspects are challenges for the integration of ICT into the education systems in common to developing countries (Albirini, 2006). According to Albirini's study, most teachers generally avoid making use of the internet for various cultural reasons (Albirini, 2006) and may be considered a key reason why teachers in Saudi Arabia are internet averse. A further study by Al-Kahtani et al. (2006) identifies that Saudi Arabian female faculty members' perceptions of the use of information and communication technology in the classroom varies among individuals, depending on their teaching role, age and field.

3.3.8 Conclusion

Collating information and concepts from previous research is one way to provide evidence to support one's own research. Throughout this section, various literatures (including journal articles, books, and government documents) have been reviewed in order to comprehend the multifaceted features of ICT and its practical approaches of

integration in the field of education. It is expected that the information gathered and discussed here may provide adequate guidelines to formulate a conceptual framework for further investigation, and also for drawing relevant conclusions from this study.

The key factor emerging in this literature review indicates the need for CPD for teachers through the use of ICT as a pedagogical tool. According to the review, many teachers are sceptical about using ICT tools because of their lack of required technological skills. Therefore, CPD can be considered as an effective way to address this problem, and also for the effective teaching of these teachers.

3.4 Continuing Professional Development (CPD)

This research aims to provide information on the use of ICT amongst university teachers in Saudi Arabia. It therefore sets out to understand its usage by the teachers of Jazan University, and investigates the viability of using a VLE in a CPD programme with a focus on ICT knowledge and skill acquisition. For this reason, this section contains discussions on the available literature pertaining to CPD in general, and specifically to Saudi universities.

CPD in general is said to deal with the development of skills and knowledge of a particular workforce. Such a programme is seen to be an effective way of enhancing the skills and knowledge of professionals. The fundamental principles of CPD are in fact an extension of life-long learning concept that is, according to Smethurst (1995), an ongoing process that helps people not only shape academic knowledge and skills but build autonomy, personality, and independence of mind. Different types of CPD are appropriate in various professions, such as for medical practitioners and defence personnel, and most especially in the field of education (Brigley et al., 2006; Cordingley et al., 2004).

The primary aim of education is to provide quality education for learners. Various researchers have found that to attain this, educational reforms should not only focus on reforming the curriculum itself but try to improve the active agents such as teachers. CPD plays an important role in the development of a teacher as a whole. According to Guskey (2002: 31) professional development aims to provide 'programmes that are systematic efforts to bring about change in the classroom practice of teachers, in their attitudes and beliefs, and in the learning outcomes of students'. This means that continuing professional development is a necessity among teachers

because it can provide them with programmes to further enhance and improve not only instruction but their students' learning.

3.4.1 What is CPD?

CPD is generally referred to a scheme that tries to enhance the knowledge and skills of various professions. One definition of CPD is that it 'is not concerned with the uniformity of learning outcomes as training is but concentrates on enhancing jobs by focusing on employees' (Darus et al., 2009: 287). From this definition we can see that the primary focus of CPD is on the enhancement of the individual employee and not necessarily on consistency of achievement by those who undergo training.

In order to understand thoroughly what CPD is, we will review a number of accepted definitions. Cordingley et al. (2004: 3) state that CPD 'is the process by which, alone and with others, teachers review, renew and extend their commitment as change agents to the moral purposes of teaching'. From this definition alone we can see how such a programme allows teachers to enhance and develop their profession, not only by means of learning inside the classroom but by interacting with their peers. It is also understood that teachers can be considered as instruments of change, since they develop the future generation by educating it.

On the other hand, Gray (2005) provides a definition of CPD focusing on the nature of the programme itself. The article states that CPD 'embraces the idea that individuals aim for continuous improvement in their professional skills and knowledge, beyond the basic training initially required to carry out the job' (Gray, 2005: 6). From this definition we can see that it aims to provide additional training in order to improve the knowledge and skills needed in their corresponding profession.

By combining the definitions from the various authors, it is apparent that CPD is a programme that provides further training for professionals with the goal of improving and enhancing their professional knowledge and skills through activities that promote interaction among other professionals.

3.4.2 The Importance of CPD for Teachers

The goal of CPD is to enhance and improve the knowledge, attitudes and the necessary skills for professionals' chosen professions. In the field of education, CPD yields various benefits for teachers.

In one study, the effects of the implementation of CPD on teachers are examined. According to the research of Desimone et al (2002), a key observable benefit that CPD offers to teachers is ‘an essential mechanism for deepening teachers’ content knowledge and developing their teaching practices’ (Desimone et al., 2002: 81). Thus, we can understand that teachers undergoing a CPD can gain an in-depth knowledge and skills about teaching, and therefore pass on an improved quality of education.

Furthermore, Lessing and de Witt (2007: 59) examine the value of CPD in their article, with results obtained specifically from teachers who underwent a series of professional workshops. The open-ended questionnaires that served to gather data reveal that teachers consider CPD as beneficial in the following ways:

- Personal development
- Support
- Provision of information
- Teaching confidence
- Skills development
- Teaching habits.

3.4.3 CPD in Teaching

Research (such as Bennett et al., 2010; Butcher and Stoncel, 2012) has provided evidence that the role of CPD in the development of teacher’s teaching in higher educational institutions is essential and beneficial.

In his article, King (2004: 26) mentions that CPD, one of the programmes that the United Kingdom has implemented for educational reform, ‘is considered an important factor for higher education institutions because of the way such training enhances the skills of different professionals’. King’s (ibid) small-scale study reveals that a majority of the respondents have undergone CPD for teaching in higher education institutions, and the results show that the teachers recognise its importance in enhancing their teaching skills. This information is beneficial for this thesis as it provides a supportive background to the role of CPD in the enhancement of teaching in higher education.

In most cases, CPD is seen as advantageous not only in the development of teachers’ skills in teaching areas but in students’ achievements. Various literature (for example, Littlejohn, 2002; Kirkwood et al., 2011) cites the need for CPD in various fields, including ICT.

It cannot be denied that modern day technology encourages educational institutions to integrate innovations. The huge advancement of technology and its continuous development further incentivises the need for teachers to undergo CPD. In their study, Ming et al. (2010) cite that the aim of the integration ICT in education is to enhance not only students' learning but teaching. However, barriers have been identified such as the reluctance of teachers: the study holds that one of the reasons is their lack of skills and training in using ICT in teaching. The results also indicate that teachers who participate in CPD not only gain deeper understanding on the use of ICT, but feel motivated to use such tools in their teaching.

In other examples, integration of ICT in CPD has been recognised as a way to use ICT in teaching successfully. Pervaiz and Spielvogel (2006) argue that teachers, as stakeholders in education, should undergo CPD and that, above all, this should be the main concern of education reform. They note that 'both technical knowledge and the ability to integrate ICT into the curriculum are important' (Pervaiz and Spielvogel 2006: 10). This reveals that teachers undergoing a CPD benefit especially in the development of skills necessary for the integration of ICT in classrooms, because such programmes provide them with technical aspects as well as integration and adaptation of ICT to the education curriculum. This literature specifically supports the suggestion that ICT demands CPD for teachers to ensure classroom usage.

3.4.4 CPD in Higher Education Institutions

Currently, lecturers working in higher education are driven by the intensity of CPD, owing to the importance of ensuring that they are effective at relaying the latest developments in their areas of expertise (Brigley et al., 2006). Professional development helps make certain that the entire lecturing staff is fully aware of developments in their discipline and provides them with multiple dimensions from which to view and comprehend technical issues. It is noticeable that the use of ICT-based teaching and learning has been 'tied to a continuing professional development' in many ways (Loveless and Ellis, 2001: 13).

Professional development can provide an avenue through which lecturers in higher education can interact with professionals in education and practical fields. Poor course design and presentation can be avoided or minimised by offering CPD opportunities that may also enable staff to acquire the skills and knowledge required to incorporate new teaching methods within their course design (Littlejohn, 2002). Such

interaction is important as it can form the basis for research and adoption of new and effective approaches to lecturing (Booth et al., 2003). The experience that a lecturer has as a continuing learner in ICT plays a vital role in developing effective lecturing strategies (Al-Gahtani, 2005). Moreover, CPD at university level, using available ICT facilities, can be seen as a key driver for success, especially when directly focused on the resources and skills relevant to teachers' everyday needs and practices (Trucano, 2005).

3.4.5 CPD in Teaching in Saudi Arabia

CPD has been shown to have benefited a considerable number of teachers worldwide. In countries such as the United Kingdom, CPD has been a priority on the agenda towards higher educational reform (King, 2004). Developing countries including Malaysia and Pakistan have also seen the associated benefits of CPD within educational reform (Darus et al., 2009; Pervaiz and Spielvogel, 2006). Like them, Saudi Arabia has considered CPD as a means of improving both the quality of education and its teachers.

CPD in Saudi schools

A number of developing countries have attempted to provide quality education by undertaking different educational reforms to keep up with the growing need for globally competitive graduates. Saudi Arabia is one of the developing countries to have benefited most from such educational reforms. Maroun et al. (2008) highlight in their article that an important factor in educational reform is considered by Arab countries, specifically Saudi Arabia, to be the quality of its teachers. Teachers play a vital role in the development of students' learning, and they are therefore considered to 'represent an important link between the students, the schools, and the parents' (Maroun et al., 2008: 11). Although a CPD scheme may directly benefit university teachers by improving their teaching qualities, it is to be expected that students of these teachers will also enjoy enhanced learning. Additionally, the students will be able to carry these valuable skills and knowledge of technology into their future workplaces (Maroun et al., 2008). Therefore, CPD can deliver extended impact by improving teachers' skills and teaching and so enhancing students' learning.

From the above discussion it is apparent that educational reform within higher educational institutions in developing countries such as Saudi Arabia is focused on the

importance of the professional development of the teachers and the subsequent quality of education for students. This literature might be beneficial to include for the purposes of this research as it provides evidence to support the important role of CPD in the improvement in higher education in Saudi Arabia.

CPD in the universities of Saudi Arabia

Saudi Arabia has been identified as a country rich in industrial professionals. This has enabled a great number of Saudi Arabian universities to offer industrial courses, of which engineering has been commonly available. A useful article for this study discusses how engineering, as a popular course, places importance on the role of professionals in developing the necessary skills for personal development (Abuelma'atti, 2002). It suggests that 'continuous professional development [is] viewed as an important aspect in the development of skills and knowledge by graduates of Engineering' (Abuelma'atti, 2002: 216). It also states that 'personal aspirations and changes in technology and company structures require CPD to be high on everyone's agenda' (Abuelma'atti, 2002: 216), showing that it is considered important in Saudi Arabian universities.

Need for CPD in Saudi Arabian universities

As in most developing countries, the focus on future development in Saudi Arabia emphasises the educational system. Education has consequently undergone various reforms in pursuit of this aim to provide students with up-to-date knowledge for the improvement of learning and teaching.

In Saudi Arabia, the development of the economy has been a major focus but, over time, emphasis has been placed on the improvement of the quality of the human resources produced by the university sector as a means of economic advancement. In relation to this, Abuelma'atti (2002) discusses the need for continuing professional development in higher educational institutions by mentioning that 'with the increasingly demanding jobs it is critically important to be able to demonstrate continuing professional competence' (Abuelma'atti, 2002: 216). For professionals to be trained and qualified by such universities, students should be well equipped with the necessary skills in order to succeed in a competitive society.

Need for CPD in ICT to support teaching in Saudi Arabian universities

Higher learning has been widely defined by the use of ICT as it can develop lecturers as continuing learners with the skills and expertise required for their professional development (Lloyd et al., 2009). CPD also provides an avenue by which lecturers and teachers can develop an appreciation of developments made in instructional methods; and the benefits associated with the use of ICT in modern lecture rooms (Robinson, 2009). Additionally, for understanding the overall impact of a particular ICT tool on teaching there is a great necessity for initial technology-related education and training for the teachers (Kennewell and Morgan, 2003).

Another important role played by CPD regarding increasing ICT usage within higher educational institutions of learning can be related to the dynamic characteristic of ICT (Stuckey et al., 2003). ICT is considered one of the most dynamic facets of human development, however the usability of ICT facilities is dependent on the user's knowledge of technical specifications and operations; their ability to relate current to past technologies; and the nature of the user interface (Stuckey et al., 2003).

Moreover, CPD may provide a platform for tutors, teachers and lecturers of higher education institutions to interact via new educational technologies, and this may 'develop appreciation of their impact with regard to the attainment of learning goals' (Carbonaro et al., 2008: 39). Interaction through ICT can also provide an effective technological interface that might facilitate both CPD and the attainment of ordinary learning goals.

For ICT to benefit higher education students, instructors have carefully to observe their ability to interact with technology. Usability, and therefore the benefits gained by students from employment of ICT, is dependent on the types of strategies used in the training of students (de Leng et al., 2006). The training, the support systems used by a university and the interface developed for interacting with the ICT systems are all vital to the usability of ICT-based learning utilities and tools. Through CPD, higher education teaching staff can interact with professionals in business and similar fields, and ultimately lead to an exchange of ideas about how students could be empowered with skills and be trained to use ICT effectively both in universities and in their various professions. Moreover, such interaction can lead to an appreciation of the importance of considerations with regard to the professional settings being referenced in deciding the appropriate ICT systems to be deployed (De Lange et al., 2003). For this reason, in establishing and operating ICT systems it is vital to address students'

needs, and consider the relevance of the technologies to their learning goals and educational activities. Furthermore, appreciation of the role played by the teaching staff in aiding effective implementation of ICT in higher learning should be emphasised in charting their involvement in the formulation and running of ICT systems (Park and Hee, 2009).

In Saudi Arabia the number of internet users has been shown to have risen to nearly five million (Al-Gahtani, 2005). It is nevertheless important to note that only a small number of people around the world, and likewise within Saudi Arabia, are deemed ICT-literate. This is largely responsible for the low adoption of ICT in higher educational institutions, although the trend is slowly reversing (Al-Gahtani, 2005). Recent studies reveal that institutions play a vital role in highlighting the importance of internet technology within Saudi Arabia (Al-Almaie and Al-Baghli, 2004). Moreover, interaction with neighbouring nations and an increased interest in the opportunities available beyond Saudi Arabia also heighten awareness of its potential. Saudi Arabia now realises the importance of awareness of the use of technology in the development and enhancement of its people. The exploitation of the new technology, especially the facilities of the ICT tools, provide much scope for developing the professional qualities of the teaching staff of the country's higher educational institutions. However, to equip these teachers for successful technology-supported teaching, continuous and comprehensive ICT training is required, and an ICT enabled CPD will be helpful.

It should be acknowledged that globalisation has increased the need for ICT knowledge and skills, so the majority of Saudi Arabian institutions have adopted ICT as part of their effort to improve the quality of the educational provision to bring education into line with global standards. Other factors that play a vital role in promoting the use of ICT within learning institutions are collaborations and increased international study. Most Saudi Arabian academics and lecturers have experienced study abroad, mainly in the universities of developed nations with a strong ICT presence (Al-Almaie and Al-Baghli, 2004). Such experiences, cited in this literature, are thus used widely in Saudi Arabia and have been central to the promotion, development and use of ICT in its institutions of higher education.

Although these developments have been notable, rates of ICT usage are still far removed from Western levels (Al-Gahtani, 2005); Clegg (2003: 43) notes 'the level of development of ICT in Saudi Arabia to be relatively low when compared with Western universities'. Factors such as the gender divide within education and the

disproportionately low use of ICT technology by women could imply that the use of ICT may in fact widen the gender gap, particularly given the cultural and social factors that hinder women and girls from engaging in technological activity.

Furthermore, the few studies that have analysed the impact of ICT adoption on learning and the attainment of learning goals in Saudi Arabia criticise and query its contribution (Park and Hee, 2009). The findings disclose that only a few teachers in the country have the necessary skills to deal with ICT-based instructional systems. This establishes the reason why, rather than a platform for learning and an example of VLE usage, most universities in Saudi Arabia deploy ICT merely to facilitate traditional learning.

However, the review of existing literature on ICT usage in Saudi higher educational institutions reveals great scope for the contributions of an ICT-enabled CPD programme. ICT-enabled educational technologies can provide an effective learning experience to teaching staff (Newland et al., 2006: 44) as they can continually develop their professional skills and knowledge. This type of professional development initiative can improve existing training approaches and the capacity of CPD programmes within Saudi Arabia (Hove and Corcoran, 2008). Moreover, it can develop ICT-based learning interfaces and VLEs that Saudi Arabian universities can employ to create trained teachers able to contribute to the nation's workforce and permit their institution to compete globally (McHarg et al., 2006).

Although the use of CPD to boost ICT utilisation at Saudi educational institutions may be a viable measure, the development of the programmes plays a complex role in determining its efficiency. The use of mixed approaches, whereby ICT can facilitate traditional learning in CPD, may have to be included in the initial efforts aimed at improving ICT utilisation (Al-Almaie and Al-Baghli, 2004). In time, Saudi Arabian institutions of higher learning may have the capacity fully to support VLEs and the effective use of ICT. It is to be anticipated that CPD becomes a medium for Saudi higher educational systems to formulate a continuous process of change through increasing ICT adoption. It can also support the Government's efforts to improve the ICT knowledge and skills of university teachers, which can be passed onto students (De Lange et al., 2003). The process will also help trigger collaboration with international business, education and communities (Hove and Corcoran, 2008).

Owing to globalisation, the majority of the Saudi Arabian university teachers face multiple professional obligations that limit the time available for developing their

professional profiles (Al-Gahtani, 2005). From another standpoint, the job market has become increasingly competitive, resulting in increased need for professional development. In such an environment, ICT and virtual learning-based environments can provide a robust framework for ensuring professional development whilst meeting other professional responsibilities (Love and Fry, 2006). It is expected that teachers in the higher educational institutions of Saudi Arabia, experiencing rapid globalisation and exposed to various ICT systems, can improve their professional qualities through this type of ICT-enabled CPD in a convenient and rewarding fashion.

Again, in an era when joint programmes between universities are playing a vital role in research, the development of ICT-based CPD programmes can make it possible for Saudi Arabian higher institutions to export their systems to other institutions. Such collaborations are considered important because they can facilitate research and highlight issues affecting the educational systems, society and adoption of technology (Love and Fry, 2006; Al-Gahtani, 2005).

Moreover, the exchange of technology and experiences among professionals, facilitated by joint collaboration and CPD programmes, is deemed crucial in improving the use of ICT within professional and educational circles. It is important to mention here that the relevance of this literature to the current study relies on the dissemination of knowledge on the benefits of ICT in the professional development of teachers.

Furthermore, according to the study by Al-Rabaani (2008), CPD involving ICT instruction can be considered significant not only in shaping the knowledge and skills of teachers but their attitudes. Al-Rabaani found that teachers in Saudi Arabia are not provided with CPD instruction in the use of ICT (Al-Rabaani, 2008). Although the results of this study show that teachers often lack the specific skills and knowledge for integrating ICT in teaching, they feel positive towards using such technology in teaching (Al-Rabaani, 2008). This finding is important for this thesis as it aims to investigate whether the teachers' attitude is enhanced further when they attend an ICT-enabled CPD programme.

3.4.6 Online CPD: Nature of Learning and Requirements

The general concept of CPD is comparable to the ideas of 'communities of practice' (Wenger, 2006; Preston et al., 2009), an on-going collaborative and interactive effort, where groups of professionals get chances to share their experiences and concerns, and also can learn and improve professional qualities (Kimble et al., 2008). To ensure the

shared and flexible nature of CPD, the socio-constructivist principles of teaching and learning seem highly compatible (Walmsley, 2012). Brookfield's (1986: 9-11) guidelines on the application of social constructivist principles for the learning of adults are relevant:

[In CPD]... participation in learning is voluntary; effective practice is characterised by a respect among participants for each other's' self-worth: facilitation is collaborative; action and reflection are placed at the heart of effective facilitation... facilitation aims to foster in adults a spirit of critical reflection; the aim of the facilitation is the nurturing of self-directed, empowered adults.

Social constructivists believe that learning is context-bound and active, and therefore can be best achieved through group learning and collaboration (Tinio, 2002). Cordingley et al. (2004: 65–66) provided a list of benefits of collaborative learning:

- Explicit use of specialist expertise
- Scope for applying and refining new knowledge and skills and experimenting with ways of integrating them in day-to-day practice
- Opportunity for teachers to observe one another
- Scope of consultation with teachers either about their own starting points, focus of CPD, or the pace and scope of CPD
- Opportunity to involve specialists in observation and reflection.

Focusing on the collaborative aspects, Tynjala's (1999) describes that the social constructivist approach acknowledges the learners' knowledge, beliefs and conceptions; encourages discussions and cooperation with others, and considers learning as a situated experience. Bondarouk (2006) found that technology adoption can facilitate high rates of social constructivist features as it involves learners' knowledge, preferences and habits for producing learning. Besides, this approach allows participants to take more strategic responsibility (Claxton, 2002). Interestingly, the development of social constructivist theories started to become influential in the 1990s when computer-based information systems began to flourish (Bondarouk, 2006).

Impact of ICT-enabled CPD: The use of ICT can facilitate individual learning and development of teachers, which can play a direct impact on the achievements of their

students (Saunders et al., 2009). Similarly, it can generate interaction among users that may help gain various professional needs (Kurtz and Snowden, 2007). Grierson (2000) provided a comprehensive list of the benefits of online or network-based CPD, including various options to disseminate and exchange a wider range of material in different formats:

- Higher accessibility and flexibility of learning in terms of time and place
- Option for 'Just-in-Time' interaction
- Cost effectiveness
- Scope for networking and knowledge sharing
- Dynamic learning experiences, individually and collaboratively
- Option for informal learning
- Scope to reflect.

However, challenges have also been cited by many researchers. Rovai (2000) considered a number of factors such as social presence, transactional distance and lack of collaboration as barriers for the interaction and engagement in an online CPD. Caspi et al. (2003) mention the role of group size, which may influence the outcomes of group learning. Convery (2009) warned that if the participants are not properly oriented to the use of technology, this type of professional development may make them the 'victims of technological vision'.

Online CPD models: A number of traditional CPD models have been proposed, and many of their advantages and limitations are discussed by researchers. For example, 'the training model', a commonly applied CPD approach (Kelly and McDiarmid, 2002) has been considered effective in disseminating new knowledge to participants. The main difficulty of this approach is its inability to connect the moral purpose of the professionalism (Day, 1999). Another CPD model is the 'cascade' model that offers teachers some pre-designed training that they try to transfer to colleagues. The major drawback of this model is that it does not evaluate the needs of the learning context (Eraut, 1994). Moreover, the approach only prioritises the acquisition of knowledge and skills by teachers (Solomon and Tresman, 1999), and does not allow them to justify their reasons for doing so (Nieto, 2003). The 'deficit' model is designed to strengthen teachers' capacity through addressing their professional needs and drawbacks (Rhodes and Beneicke, 2003). This CPD approach is highly criticised as it only considers

teachers' weaknesses as the cause for poor educational performances, and does not address the collective responsibility, particularly in a school context (Boreham, 2004).

Although various models of CPD such as those above are discussed in the literature, no comprehensive ICT-enabled or online CPD model has yet been suggested (Kao and Tsai, 2009). However, guidelines for an online CPD model can be derived from the following contemporary CPD models and the findings compared to the features of the VLE discussed in a later section of this chapter.

Action research model: This model advocates for collaborative actions for professional change through transferring autonomy to the teachers (Burbank and Kauchack, 2003; Weiner, 2002). Although the approach seems capable of empowering the teachers by enhancing their self-initiative and cooperation, it might be found to be weak when the same teachers fail to think, observe and work critically (Sachs, 2003).

Critical reflection model: The value of reflection in a CPD is vital (Levy, 2006). Acknowledging this importance, the 'critical reflection model' has been developed mainly by Hutching and Shulman (1999) and Daly et al. (2004). In the ICT supported critical reflection model of CPD, teachers are expected to try to evaluate and share their professional learning and actions in a critical manner. Additionally, they try to find and share the solutions of any arisen professional problems. Various research (such as Almas and Krumsvik, 2007; Schibeci et al., 2008) has proved that reflective practice not only improves the teachers' teaching qualities, but can engage their ICT usage capabilities. The limitation of the critical reflection model is that it does not encourage self-reflection or emphasise group conversations (Watkins et al., 2002).

Communities of practice (COP): The model was proposed by Wenger (1998) and seems the most viable approach for online professional development (Rae and O'Brien, 2007). Two technology-supported CPD models named 'braided learning' (Preston, 2008) and 'model of voluntary collaborative online CPD' (Cuthell, 2008) have been developed from features of this approach. COP in fact advocates enquiries and critical reflections by teachers, and encourages them to explore suitable ways to interact and learn through collaborating within a professional community (Wenger, 1998). However, learning in a COP may create peer pressure among individuals, and communication with multiple contacts may not be convenient for some participants.

Role of participants and workplaces in online CPD

Although online CPD is expected to be collaborative and informal in nature, the participants may not always interact and communicate extensively because of certain barriers related to their use of technology (McGuigan and Golden, 2012), or lack of sufficient ICT-related knowledge (Angeli and Valanides, 2008). However, to generate an effective learning environment, teachers should be ready to participate in various serendipitous discussions, and their interactions should be frequent (Cornelius and MacDonald, 2008). Russell and McGuigan (2008) suggested a consistent engagement of the participants with the learning process. Relationship building is as seen as vital in this type of professional development programme (Fullan, 2001). Moreover, the participating teachers need to develop leadership qualities to enhance their morale and motivation to learn and use technologies for professional development (Cogill, 2008).

In order to ensure effective collaboration and rich learning inputs, the need for e-moderation or online tutoring in CPD has been proposed by many researchers (such as Salmon, 2004). It has been suggested that an online tutor can help participants overcome the sense of isolation and provide subject-specific learning support (Zembylas 2008). According to McLoughlin and Lee (2010), the role of online tutors is vital in CPD as they design, communicate and implement learning plans, and perform as facilitators, motivators and supporters of participants.

At the same time, in a collaborative online CPD scheme various parts of academic institutions such as heads, teaching assistants, and even mid-day supervisors may also play important roles (Lingard, 2003). Although the administrative and infrastructural supports are crucial in online CPD, achieving these facilities and transforming the educational institution is often difficult due to resistance from the different groups of staff and existing systems (Pearson and Naylor, 2006). Devereux (2009) suggested that, within an education institution, CPD can work better and can deliver a better impact than any large-scale scheme.

3.4.7 Conclusion

This literature review of this section has focused on the importance of CPD in the enhancement and improvement of knowledge and skills in the professions in the context of Saudi Arabia's higher educational institutions. According to research evidence, CPD has been shown to offer significant benefits for teachers, especially

within the global sphere where continuous training is deemed essential. It is also found that CPD can be executed through various technology-supported models such as by using ICT or online. These approaches may contain collaborative and interactive learning activities able to maintain social constructivist learning theories. However, in ICT-enabled or online CPD, participants and their workplaces have to meet some essential requirements for effective outcomes. Additionally, the review has explored that within the universities of Saudi Arabia, CPD amongst teachers can be the answer to providing the necessary knowledge and skills required for the integration of ICT in their teaching.

In the next part of this literature review, the focus will be placed on the VLE as a method of delivery or a form of training in CPD within ICT.

3.5 Virtual Learning Environment (VLE)

This research aims to provide knowledge and a better understanding about the extent of ICT use, and the efficacy of using the VLE for CPD in supporting ICT in teaching amongst higher education institutions in Saudi Arabia. In the previous section of the literature review, the subject of ICT in education is discussed along with the importance of CPD in the integration of ICT in teaching in higher education. This section, forming the third part of the literature review, emphasises the role of the VLE. Currently, educational institutions make use of VLEs to provide students, as well as teachers, with state-of-the-art pedagogical tools to develop teaching and learning processes.

3.5.1 What is a Virtual Learning Environment (VLE)?

The Virtual Learning Environment (VLE) is an innovation in education. In order fully to understand its nature and to formulate a direction for this research, various literatures have been consulted.

The University of Warwick (2006) provides a general view of the VLE, defining it as a collection of integrated tools enabling the management of online learning, providing a delivery mechanism, student tracking, assessment and access to resources. According to this definition, a VLE comprises various modes, making use of technology to give students and teachers the opportunity for support in the classroom.

The objectives of a VLE may help us understand more about this kind of learning. According to Kumar et al. (1998), a VLE aims to make education available to a vast population (Kumar et al., 1998), which means it can be used to develop a learning system to cater for a wide array of global learners. As the VLE can involve the internet, it is able to permit a range of learners, unconstrained by time and geographical location.

In order to grasp fully the concept of the VLE, its associated features need to be examined. According to Dillenbourg et al. (2002), a VLE is a social space whereby educational interactions occur in the environment, turning spaces into places. They also explain that:

1. The virtual space is explicitly represented, and the representation of this information/social space can vary from text to 3D immersive worlds.
2. Students are not only active, but also actors. They in fact co-construct the virtual space.
3. Virtual learning environments are not restricted to distance education; they can also enrich classroom activities.
4. Virtual learning environments integrate heterogeneous technologies and multiple pedagogical approaches.

These features explain how such environments play an important part in the learning processes and, more importantly, enable students and teachers to experience and make use of various pedagogical tools that can enrich their learning and teaching skills.

The definition of a VLE, from the perspective of the researcher, suggests it to be a collection of technology-based learning techniques aimed at providing a virtual learning experience to a wide array of students. It thereby allows learners to be active participants in both the learning and teaching processes through the promotion and use of various innovative pedagogical uses.

3.5.2 Examples of Types of Virtual Learning Environment

As VLEs are defined as a collection of technology-based learning tools, examples include various types of technologies for imparting knowledge. There are three well-known and well used types of VLE amongst Saudi Arabian schools: Blackboard, Web

CT and Moodle. In order to understand the functions of these VLEs, each is discussed individually below.

Blackboard

The Blackboard VLE is ‘a web-based system that supports and manages various aspects of learning and teaching’ (Hiary and Abu-Shawar, 2009: 330). It is also deemed a course management system, and said to be ‘often internet-based, software allowing instructors to manage materials distribution, assignments, communication and other aspects of instruction for their courses’ (Hiary and Abu-Shawar, 2009: 330). The Blackboard VLE has also been discussed as providing a means through which learning can be transferred.

There are various identifiable advantages and disadvantages associated with the ‘Blackboard’ VLE (Hiary and Abu-Shawar, 2009). The advantages are:

- a) Reduces the cost in terms of money and time with regard to organisation and learners.
- b) Facilitates the access of the required material from anywhere, and can allow communication between them, offering better services to students and tutors,.
- c) Offers learners many learning tools and activities such as course announcements, course documents, self-assessment quizzes and online testing, discussion forums, surveys, electronic assignment submissions, and can link to external Web pages.
- d) Uses different languages. The Blackboard VLE is a multi-language platform. This has been enabled in many countries, each with a different language. This specific advantage has raised popularity above other types of VLE.

The identifiable disadvantages mentioned by Kipar (2003) and Gatton et al. (2006) associated with the Blackboard VLE are also outlined below:

- a) Using Blackboard might not be adequate as the sole tool to deliver course-supporting documents, communication and general information.
- b) Use of appropriate computer equipment off campus might prove a problem for students who do not own their own PC with internet access.

- c) Assignments cannot be searched, because students need to undergo various searches before even finding the appropriate assignment.
- d) This programme does not provide e-mail within courses. The means through which communication takes place between student and teacher is predominantly message boards. This demands a variety of navigational strategies and thus can make it complicated for students to follow.

Web CT

Another type of VLE is Web CT, which has been hailed as to as ‘the best course management system’ (Lu, Yu and Liu, 2002: 498). This VLE provides learners with various types of learning tools, such as ‘Discussion Boards, course content searches, a course calendar, electronic mail, auto-marked quizzes, navigation tools, access control, grade maintenance and distribution, student progress tracking’ (Lu, Yu and Liu, 2002: 498). It has stated that it is ‘designed to support collaborative learning, knowledge building and multiple representations of ideas and knowledge structure’ (ibid).

Robertson (2004) identifies some advantages and disadvantages associated with the Web C’ VLE. The identifiable advantages are:

- a) Provides students with a context for the learning process to take place within.
- b) Provides capability for students to control the learning process.
- c) Can solve high-level problems.
- d) Can facilitate learning as a personal experience to the students.
- e) Is modelled with the complexity and uncertainty of working in the real world;
- f) Accommodates a wide range of students’ learning styles.

The perceived disadvantages of Web CT are that it is:

- a) Difficult to contact an instructor during examinations, despite contact information being available.
- b) Unable to jot calculations in the margin area (unlike a paper-based examination).

- c) Problematic with home internet access.

Moodle

The Modular Object Oriented Distance Learning (Franciscato, 2007: 1271) or Moodle is the final type of VLE, also described as an Open Source platform (Franciscato, 2007: 1271). This programme permits its users to be ‘installed, used, modified and even distributed’ (Franciscato, 2007: 1271). It also allows its learners to experience a learning environment through ‘cooperative work’ (Franciscato: 2007).

There are a number of advantages and disadvantages associated with ‘Moodle’ (Brandl, 2005). The advantages are:

- a) Entirely supported by a team of programmers and the user community.
- b) Available free of charge under the terms of the General Public License with no cost attached.
- c) Has an interface that is intuitive and follows easy navigation.
- d) Proven beneficial to teachers because it can keep automatic log reports of each student’s work.
- e) Permits the integration of a wide range of resources.

The disadvantages associated with Moodle (O’Rourke, 2010) are:

- a) A minority of learners are not comfortable with using a computer for testing purposes, especially from the non-technical disciplines; they prefer written examinations.
- b) Learners may feel disadvantaged because of their lack of keyboard skills, particularly if much typing is required, for example with essay questions.
- c) There is a lack of subjectivity in the marking system; that is, it is rigid.
- d) Currently, it is not possible to draw and insert diagrams as part of a solution to a question.

Comparing these three types of VLEs, the Moodle VLE is found to be the most suitable to apply for it is free to use, has specialised support, and its features are easy to

use. Additionally, this VLE is appropriate for teachers for its unique student record-keeping facilities, which provides the chance to use this in their own teaching. However, the Moodle requires a satisfactory level of typewriting skill from its user, and its inconvenient assessment systems may put teachers off.

3.5.3 The Efficacy of the VLE

The VLE has been seen to offer various benefits in the field of education. In this part of the discussion the three essential factors in relation to the efficacy of VLEs will be discussed. These include: efficacy in learning, teaching, and training.

The efficacy of the VLE in learning

There are many technological innovations evident in the field of education that offer their users modern and interactive means by which to learn, particularly in class.

Stonebreaker and Hazeltine (2004) conducted a study to examine the VLE and determine the extent to which it can be deemed learner-centred and effective for the learning process. They judged the VLE to be unique in that students were the primary focus and their needs became the centre of the learning process (Stonebreaker and Hazeltine, 2004). The findings of this study reveal that, through VLEs, 'knowledge transfer' might be carried out effectively (Stonebreaker and Hazeltine, 2004).

Furthermore, the pursuit of VLEs in the learning process is also seen as a more effective means of learning compared to traditional processes. The study conducted by Chou and Liu (2005) compares the performance of learners exposed to a VLE with those who received traditional methods of learning. The research finds that the primary aim of integrating VLEs as a means of improving students' learning is to allow them to develop 'self-control, diffuse thinking models, diverse viewpoints and independent thinking' (Chou and Liu, 2005: 40). Providing learners with flexibility and convenience is therefore why the VLE enhances learning effectiveness (Chou and Liu, 2005). The results of the study also reveal that those students who underwent education within the VLE achieved more than those taught in traditionally (Chou and Liu, 2005). The study conducted by Stiles (2000) discusses various factors influential in the academic performance of students in a VLE environment. Stiles (2000) addressed a number of issues on the use of a VLE in higher education institutions. The article explains that certain key factors were evident as beneficial effects on the academic development of students in higher education. These included the design quality of the curriculum; the

use of appropriate VLE tools; and the application of various educational principles in which learning occurs (Stiles, 2000).

The efficacy of VLE in teaching

Modern day technology has produced a number of innovations, especially in the field of education. The VLE has been one of these innovations in the technological arena and play an important role in the development of the teaching processes.

An article by Prospero and Gioia (2007) suggests why there is a need to make use of the VLE as a pedagogical tool. They argue that teachers deal with people who are considered ‘virtual generation students’ (Prospero and Gioia, 2007: 73) and therefore they need to adopt a teaching style to match the learning style of their students (Prospero and Gioia, 2007). If the learners are identified as virtual learners, then the educator should also provide a virtual approach in order for learning and understanding to take place (Prospero and Gioia, 2007). The study concludes that teachers see an ‘improvement in the understanding of the concepts taught because of the use of the virtual learning environment’ (Prospero and Gioia, 2007: 79). The results suggest that teachers should adopt the VLE as a medium of learning if their students are exposed to various technologies. Additionally, it claims that the teachers can learn from their teaching if it matches their learning style and also that of the students.

Moreover, adaptations to virtual teaching methodology are also considered important. Vasileiou and Paraskeva (2010) propose a specific VLE method; role-playing techniques. The study focuses on the role of VLEs on the teaching process, ‘because of the vast innovation in technology; as well as personal development of teachers’ (Vasileiou and Paraskeva, 2010: 25). The strategy of role playing as an effective VLE method is the focus of this paper. Innovative teachers can thus incorporate such a method into their pedagogy (Vasileiou and Paraskeva, 2010). The article also mentions that role playing can promote active participation of students, and is felt to ‘foster autonomy, responsibility, and solidarity’ (Vasileiou and Paraskeva, 2010: 29). The study concludes that ‘the innovative, pleasant, comfortable, impressive, challenging, and liberating virtual learning environment of Second Life can be attractive for the teacher community’ (Vasileiou and Paraskeva, 2010: 43).

The efficacy of VLEs in training

The VLE has been seen to be used in various forms of training and development. In one article the VLE (Sahin et al., 2007) is discussed, aimed at providing teachers with the necessary training required for the utilisation of VLEs as a pedagogical tool (ibid). The primary aim of the programme was not only to impart knowledge about a VLE but the skills needed for its deployment in the classroom (Sahin et al., 2007). The programme not only made use of the VLE; it provided professional skills and content development. This literature therefore provides information about how the VLE is used as a means for training teachers on VLEs.

Another study, by Tweddel (2006), suggests that teachers who make use of VLEs should be furnished with the corresponding skills to use the tools in teaching. Tweddel mainly focuses on the importance of communication in the development of VLEs. The findings of his research reveal that, although there is a need for the development of the educators' knowledge and skills, communication is also considered an important factor in the enhancement of the quality of virtual education.

Furthermore, Morell (2006) provides evidence for the use of VLEs as a means of professional development. In his research he identified the benefits associated with VLEs when used as tool for training educators. He in fact focused on teachers' observations in lessons, lesson planning, and evaluation procedures, as well as the use of various other resources. The study by Morell is important for this thesis, as it focuses on the training of teachers through the use of VLEs. This research indicates that a VLE approach can be embedded with a CPD scheme to enhance the participating teachers' professional (including ICT) knowledge and skills, along with improving their teaching practices.

3.5.4 The Use of the VLE in Saudi Arabian Education

The need for improvement in the current Saudi Arabian educational system has helped to facilitate the integration of various teaching and learning development strategies and VLEs.

Although VLEs are available amongst six higher educational institutes in Saudi Arabia (Al Jarf, 2007), no enhancement programme exists for CPD for teachers to improve education. The various uses of VLEs in Saudi Arabia's learning, teaching, and training will be discussed in order to determine its current status.

Uses of VLEs in learning

The use of VLEs in Saudi Arabia has been seen to have a various applications in the learning process of students in the classroom. To provide information on the success of the VLE and improvement in student learning, Daghestani et al. (2005) conducted research on the topic of mathematics. One group of participants was exposed to web-based virtual manipulative (Daghestani et al., 2005). The results of the study reveal that ‘web-based ‘VM exercises’ play a statistically significant positive effect on student learning outcome’ (Daghestani et al., 2005: 51). As the results of this research are based on the comparison of the pre- and post-test of this specific group of students, whose pre-test results were considered relatively low, it could be suggested that students’ performance following exposure to a VLE was positive and influenced their performance in the post-test.

The use of VLE in teaching

The use of VLEs at Saudi education institutions has been seen to offer many associated benefits. Al Ajlan (2008) maintains that VLEs are beneficial for educators. His study suggests that teachers who make use of them can provide ‘state-of-the-art pedagogical and didactic methods and content matters in the light of future teaching’ (Al Ajlan, 2008: 64). From this point, Al-Ajlan (2008) views VLEs as teaching tools to provide teachers with the opportunity to make use of modern technology as a pedagogical tool and as a means of enriching their knowledge and overall development. This literature has thus provided information on the use of VLEs as a pedagogical tool in terms of teaching methodology and content knowledge; both of which are considered beneficial to the teaching process.

The use of VLE in training

Saudi Arabia has often been viewed purely with regard to its vast oil resources; however such a country has also greatly enhanced the field of education, which has not often been taken into consideration. (Al-Khalifa, 2010: 659)

Al-Khalifa (2010) investigated the development of the educational system, especially higher education, during a process of reform. His article discusses how the educational system of the country has developed over the years, plus the adoption of a VLE, especially within higher education. According to him, because of the availability and

the advancement of technology, higher education institutions' learners gain many benefits from VLEs. Although Saudi Arabia has adopted VLEs, there are no programmes that develop the teachers who use them. According to Al-Khalifa (2010: 666), 'no progresses of the project have been reported since its launch'. However, Shalaby (2002) had earlier identified the change in Saudi educational system through the use of information and communication technology.

Although VLEs are known to have a function in the training or professional development of educators, research has also revealed that they can play a positive part in teachers' teaching and students' learning, too. Kutubkhanah Alsaeid (2011) presents a positive aspect of Saudi Arabia, a country that possesses a significant number of online learners since its implementation of VLEs in the curriculum: there is a requirement for teachers to have ICT knowledge and the skill to use technology effectively in their teaching, and for personal professional development with a VLE. It is, in fact, unavoidable that Saudi Arabia has trained and ICT-literate teachers to provide its students with quality education and learning.

3.5.5 The Impact of the VLE in Teaching and Training to Adults

Education has gained popularity in the adult population because of increased emphasis on professional development and the advent of the information age. This has led to an environment where people who may have not had the educational opportunity to attain higher educational qualifications now seek further educational development. ICT enables groups that work on common issues to benefit from each other's experiences and share best practice (Shalaby, 2002). Availability can be considered a key factor in determining the propensity of people to engage in adult education and training (Clegg, 2003).

Among adult learners, differences in age may often result in stigma and impact on individual performance and subsequent academic gains, thus lead to high dropout levels (Clegg, 2003).

VLEs, unlike traditional learning environments such as lecture rooms, can help minimise the risk of stigma felt by individual learners (Clegg, 2003). VLEs' use of internet and computer technology means that adult students, who do not feel comfortable in face-to-face interaction and conversation, may find various ICT tools convenient for their learning. These tools may also improve their critical thinking skills, reasoning abilities, and other professional qualities.

Another aspect of a VLE is its facility for easy access by students to different resources for use as reference material. In most cases, adult learners may be challenged by their numerous responsibilities and can ultimately lead to a reduced concentration span and diminished ability to benefit directly from the learning resources provided by a tutor (Clegg, 2003). The use of multiple resources has been made possible by VLEs, and can play an important role in ensuring that these learning challenges can be mitigated, and specific help from the tutor incorporated into the software (Standen et al., 2002).

Browne et al. (2006) presented a longitudinal study regarding the issues that impact on the acquisition, level of usage, and organisation of VLEs by the institutions of higher education in the United Kingdom. Results reveal that there is an increasing use of VLE in the higher education sector, and there is a clear need to develop further use in the improvement of student learning and integration in other information systems.

In many learning environments, individualised learning goals have been stressed within adult education and training perspectives. According to Standen et al. (2002: 572), ‘support helps to maintain high levels of motivation and objectivity amongst mature students’. A VLE can provide a vast platform for information such as blogs and professional sites through which mature students can find people with similar experiences, professional guidance on how to engage in adult education and training, and share their personal experiences with other mature students and tutors. This can also create a robust avenue for developing and maintaining high levels of motivation amongst mature students, aiding the attainment of learning and teaching.

3.5.6 The Use of the VLE in Training (CPD) to Support ICT

The relevance of VLE has been interpreted mainly in parallel to increased emphasis on academic performances and achievements (Littlejohn, 2002). Also, it is held to enhance professional skills and knowledge compatible with the complex demands of professions in the present age of globalisation (Littlejohn, 2002). Professionals often wish to develop their academic skills and professional ability, although being in touch with the actual profession is also considered vital. This is a key factor that has led to increased popularity for open and long-distance learning programmes and highlights the potential of VLEs. Higher education institutions can now offer their courses and seek professional expertise in a global context. This has ensured availability of educational

opportunities for professionals, irrespective of their professional orientation and obligations.

The use of multiple information sources has been an important way to maximise retention and attainment of learning goals within any setting. However, the majority of higher education institutions have used VLEs to facilitate other traditional learning and transmission strategies (Matheis et al., 2007). The reason for this might be the lack of proper ICT knowledge and skills of the users; these deficiencies can be overcome through continuing professional training within a VLE setting with relevant ICT tools.

However, because of the differences of administrative procedures, locations, financial circumstances and attitudes of the teachers and administrators, the nature of VLE-based CPD might vary between different educational institutions. Nonetheless, the major aim of a VLE should be to provide a platform that can be utilised by learners with different levels of expertise and different racial and socioeconomic backgrounds, and varied IT skills. This should also be able to capture diversity within learning by ensuring that the varied learning approaches and impediments that affect individual students are dealt with under a single VLE platform (Hove and Corcoran, 2008). This has therefore been an important aspect considering the high level of emphasis placed on diversity of institutions of higher learning.

In addition to guiding students and ensuring access to multiple educational resources, a VLE can play an important role in ensuring that tutors in higher learning institutions develop an appreciation of ICT. Standen et al. (2002) have noted that 'interaction devices would free both tutor and learner to concentrate on achieving goals in the environments'. In addition, 'increased use of ICT in education results in a better platform for interaction between tutors and students' (McComas et al., 2002: 187).

Creativity has also been an important consideration in the adoption of effective learning and instructional strategies. It is significant that the development of effective instructional strategies has been deemed vital to the attainment of learning goals, and dependent on the level of interaction between students and tutors. The use of multiple platforms for interaction between students and tutors has been made possible by the use of VLE aids and the development of effective learning strategies (Clegg, 2003). The use of ICT and multiple communication avenues for instant Chat and instant Messaging have ensured continued interaction considered the key to developing an understanding of learners' instructional and communication needs.

Since ICT has to be adopted in the development and running of a VLE, interaction between tutors and ICT is inevitable, and requires sufficient ICT-related knowledge and skills from the users' part. However, the concern is that, at both the learning and implementing phases, during the ICT adaptation process some negative attitudes toward technology and its application in education might arise in teachers' minds (Clarke et al., 2005; Littleton and Whitelock, 2004). One of the reasons is the age gap between lecturers and their students, which may create a discrepancy in their thoughts and practices regarding learning. Besides, to cope with the rapid changes of ICT tools and facilities both students and teachers will have to be up to date with the needed knowledge and skills. According to the literature review, the use of a VLE in a CPD programme seems to be a solution for these problems as it may offer an open and long distance learning opportunity for university teachers to improve their teaching (Al-Almaie and Al-Baghli, 2004), and also to increase their use of ICT. However, these assumptions need to be investigated in a reliable way.

Therefore, an investigation is required into whether VLE-based CPD can enhance the use of ICT in teaching by teachers, particularly in Saudi Arabian higher education context. It is also important to find out whether the ICT-related knowledge, attitudes, and skills of the teachers are affected by this type of professional development scheme.

3.5.7 Conclusion

The literature has shown that VLEs can provide teachers and learners with various ways of using technology to enhance the quality of education. VLEs have been found effective in creating open and flexible learning environments, which also indicates their possible role as a vehicle for continuing professional development. As well as young people, it has been shown that the mature population considers a VLE an effective medium for learning and development. However, according to the review, in order to match with this technology-supported teaching and learning method, users need to gain both ICT-related knowledge and skills. In addition, this type of new learning environment may represent risks for teachers. Moreover, in a traditional educational culture, the new role of teachers and the task of ensuring proper infrastructural and administrative support might pose further challenges.

Although Saudi Arabia has seen various benefits from VLEs within its educational system, there has been a lack of CPD to enhance the use of ICT in

teaching. Therefore, using VLE as a medium for CPD represents an appropriate means to increase ICT usage in the country's universities.

3.6 Literature Review Summary

This literature review provides useful research and information on three salient elements of this thesis.

Firstly, by investigating ICT and its importance, benefits and information in teaching and learning, in general as well as in Saudi Arabia, the potential advantages of using this kind of technology in the development of learning and teaching are revealed. One factor that arises in this review is the need for CPD amongst university teachers to equip them with the necessary knowledge and skills successfully to apply technology in their teaching. The use of ICT in teaching has been seen as vital, especially in the Saudi Arabian context, as higher educational institutions have aimed to enhance teaching and learning by applying various ICT tools to educational activities. However, the literature mentions a number of requirements and preparatory stages that seem challenging to the implementation of any ICT-based CPD programmes in the country.

Secondly, the literature explores the role of CPD in teaching. In this regard it clarifies the relevant expectations and processes, particularly for the development of university teachers' professionalism, by improving their teaching in general, with specific reference to Saudi Arabia. It is found that CPD is regarded as beneficial among various types of professionals, not only in the development of skills but in the enhancement of knowledge and attitudes towards the use of ICT. In Saudi Arabia, the integration of ICT and the need to further develop university teachers' knowledge, attitudes, skills and usage of ICT seem to be potentially attainable via CPD. However, according to the literature, CPD's success is dependent on the administrative policy, infrastructural support, availability of teaching and learning tools, and active collaboration among academic staff and learners

The third principal area of the literature review is the VLE, an ICT-based learning environment. In the review its definition, comprehensive usage, and efficacy in teaching and learning as well as in training in general, has been discussed with a focus on Saudi Arabia. The literature reveals that a VLE seems beneficial to students' learning as well as university teachers' teaching and, according to recent research findings, the use of VLEs in the educational system in Saudi Arabia has begun, although there is still a lack of proper training or CPD for teachers.

To conclude this literature review, it can be understood that the effective integration of ICT, CPD, and VLE can play a positive part in the teaching and learning scenario of Saudi Arabia, particularly in its higher educational institutions. Based on contextual evidence it can be claimed that the integration of modern day technology in education is beneficial, and for a sustainable educational system there is a need for CPD. In this regard a VLE can be seen to be one of the solutions to the issue of the efficacy of university teachers using ICT in Saudi Arabia. However, it is still not clear how ICT, CPD, and VLE should interplay as a mechanism for the professional development and enhanced use of technology in teaching by the university teachers, and what relevant factors should be considered and dealt with.

The following chapter will focus on the conceptual research framework, where the role and the relationship among the three elements, namely ICT, VLE and CPD in teacher teaching, will be discussed and incorporated.

Chapter 4 Study Framework

4.1 Introduction

The dynamic advancement of technology and the need for educational reform are the two primary reasons for this study. In Saudi Arabia, the improvement of education, especially higher education, is becoming a priority. In order to adapt to modern technological advancements within society, teachers and students are attempting to reap their benefits for educational purposes.

Prior studies by this researcher have revealed that university teachers in Saudi Arabia face challenges but also derive inspiration while using ICT for teaching purposes (Ageel, 2011). It has also been shown that VLEs can play an active role in enhancing the adaptation and practice of ICT in teaching (Ageel and Woollard, 2012). In this educational context, the current study is designed to investigate the level of ICT usage amongst the teachers of Jazan University. It also intends to test the effect of a VLE in a CPD programme to find whether it increases teachers' use of ICT in teaching. The literature review explored how employing ICT can influence attitudes towards it; by following Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA), it can be seen that people's behaviour is guided by various aspects of attitude and ability such as their beliefs, motivations and skills. Davis (1986, 1989), in his Technology Acceptance Model (TAM), established Ajzen and Fishbein's claim in a technology-related environment and showed its relevance with technological usage. Davis considered that attitude is the major determinant for accepting or rejecting any new technological adaptation and that this psychological state is formed and influenced by the convenience and usefulness of using any technology. According to TAM, users' perceptions of or attitudes towards the usefulness of a particular set of technological tools and their 'behavioural intention' (which can be achieved through gaining technology-relevant knowledge and skills) can represent actual use of ICT.

For constructing a theoretical framework Davis' (1989) TAM can be interpreted in the following manner:

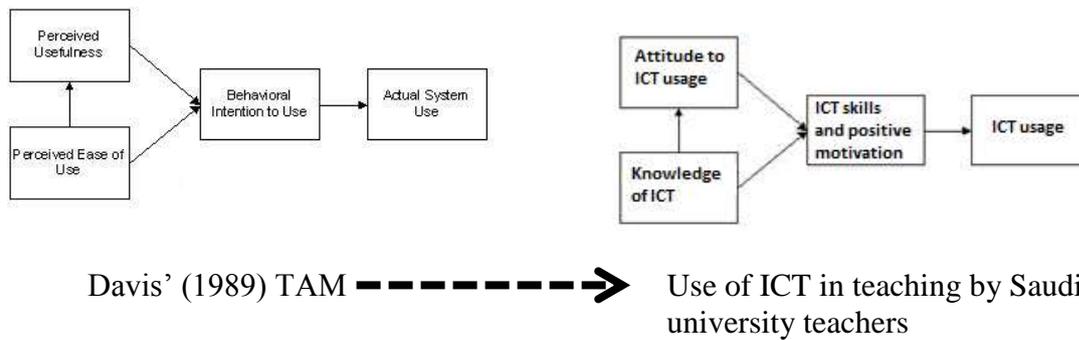


Figure 4-1: TRA and TAM based Theoretical Framework

In this framework, issues concerning the use of VLE in CPD for ICT are investigated through measuring the change in a group of Saudi university teachers' ICT-related attitudes, knowledge and skills.

Based on the above theoretical foundation of this research, this chapter attempts to build a conceptual framework to provide an explanation of the important elements of ICT, VLE and CPD for the case of university teachers in the Saudi Arabian educational context. The relationship among the elements is also considered.

4.2 The Conceptual Framework

In previous sections of the literature review three required salient elements including ICT, CPD and VLE have been discussed. These elements, as seen in **Figure 4-1**, are the focal aspects in this thesis in constructing a conceptual framework on the development of ICT usage by university teachers in their teaching practices.

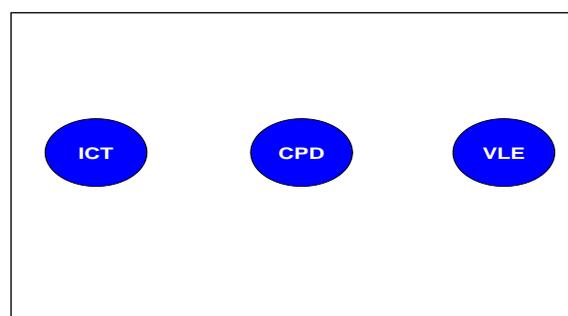


Figure 4-2: The three important elements in Developing ICT use in teaching

In this chapter, individual sections on the above elements are included. Each section includes the various types of literature that facilitated the development of that particular area of study. Following a review of the various sources of literature in each section, the salient points are gathered together.

The literature in the ICT section reveals that there is a lack of ICT use in the teaching process, particularly in Saudi Arabian higher education. In the section relating to CPD, the literature shows that there is a great need for ICT as a means for ICT training. Finally, in the section related to VLEs, the literature emphasises their importance and associated benefits for learning and training.

This study framework therefore endeavours to discuss the three important elements, namely ICT, CPD and VLE, to understand their role and wider educational impact. For convenience in reading and understanding, each topic has been discussed separately. Later, the relationship among these three elements is presented within a framework that leads this study to an empirical investigation.

4.3 Information and Communications Technology (ICT)

Arising from the literature review, six major functions of ICT have been found with a significant role in supporting teaching.

These functions are identified as: presentation of information; on-line communication; use of multimedia; use of the e-assessment; use of on-line resources; and use of Excel databases, as illustrated in **Figure 4-2**.



Figure 4-3: Important ICT Teaching Functions

In order to understand the identified teaching functions of ICT more effectively, each role is now discussed individually. The following table summarises these functions in the context of teaching and learning:

Table 4-1: ICT Functions

Functions	How they help teaching and learning
Presentation of information	Provides graphical information (Khan, 2001) and enhanced materials to support the presentation of various lessons (Cox et al., 2000) through various types of presentation software such as PowerPoint (Xu and Meyer, 2007).
Use of on-line communication	Allows teachers to maintain regular contact with their students (Tinio, 2002) as consultations can take place before or after any discussions (Trucano, 2005) by using various media such as Chat, bulletin boards and e-mail (Srikanthan and Dalrymple, 2002).
Use of multimedia	<ul style="list-style-type: none"> - Helps teachers in delivering instructions and promoting learning (Bailey et al., 2004). - Facilitates skills in using various easily accessible pedagogical tools (Barajas, 2002).
The use of e-assessment	<ul style="list-style-type: none"> - Provides students with feedback concerning their academic performance - Offers opportunities to organise and provide quicker assessment through real time assessment (Cox et al., 2000; Wiggins, 1997). - Assists teachers by providing on-line assessment opportunities; this aids accurate assessment of students (De Lange et al., 2003).
Use of on-line resources	<ul style="list-style-type: none"> - Supplies teachers with opportunities to access and utilise on-line resources for their lessons - Provides latest information to improve their overall knowledge base (Littlejohn, 2002). The 'World Wide Web' has been a vast provider of up-to-date information relating to innumerable topics and areas of interest (Katz, 2005).
Use of Excel databases	<ul style="list-style-type: none"> - Provides a number of various library databases relating to a number of study areas that can be accessed online (Al-Khanjari et al., 2006; Yusuf and Onasanya, 2004). - Enables access to various types of empirical studies and information to aid teaching (Yusuf and Onasanya, 2004).

4.4 The Virtual Learning Environment (VLE)

One of the objectives of the literature review is to explore the importance and relevance of VLEs for the purpose of training teachers. The information gleaned suggests how they can provide benefits for professional teacher training . This specific discussion indicates six courses on VLE, reflecting the six important ICT functions mentioned above to support teaching, as illustrated in **Figure 4-3**.

4.4.1 Training in Presentation

One of the functions of a VLE is its ability to provide training in the presentation or utilisation of education material. The VLE can enable teachers to access state-of-the-art technologies, and so gain useful training or experience (Al-Ajlan, 2008). The presentation of learning is therefore one of the most important functions of a VLE as an environment that promotes the use of such tools in imparting knowledge.

4.4.2 Electronic Mail (e-mail), Chat Rooms and Blogs

Other functions of the VLE are the use of e-mail, Chat rooms and Blogs. Modern day technology has provided users with a wide variety of functions through various communication tools. The advancement of web-based Chat rooms, instant Messaging tools and current mobile phone technologies have all facilitated the creation of a well-developed VLE able to act as a viable platform for interaction between teachers and students (Waring and Boardman, 2004).

Such means of communication are viewed as an important part of the VLE because media such as ‘instant Chat’ and ‘Messaging’ provide interaction essential to understanding learners’ instructional and communication needs (Clegg, 2003). These can therefore be considered as an identifiable function of the VLE, and lines of communication between students and their teachers can be opened and developed further.

4.4.3 Video-Audio-Image

Another function of the VLE is the transmission of video-audio-image, which can provide users with the opportunity to learn through 3D imagery (Dillenbourg et al., 2002). Moreover, the VLE gives students a wide array of learning tools in the form of

videos, images and audio that can enhance their learning and their presentation of information (Hiary and Abu-Shawar, 2009). For the use of the visual and auditory function, the VLE is therefore considered beneficial to both teachers and students.

4.4.4 The Provision of the 'E-test', 'quiz' and 'survey'

An additional function of a VLE is the ability to provide tests, quizzes and surveys via technological media and with the help of the internet. Various articles have identified how a VLE can provide students and teachers with opportunities for assessment using such technology. One aspect is the use of technology for the delivery of quizzes or tests; another associated benefit is immediate assessment (Lu, Yu and Liu, 2002).

Moreover, the VLE can promote various learning activities; programmes can provide students with self-assessment quizzes and online testing; discussion forums; electronic assignment submissions; surveys and similar learning tools (Hiary and Abu-Shawar, 2009). The 'e-test', 'quiz' and survey, as functions of the VLE, give teachers and students the chance to practice different assessment procedures.

4.4.5 Management

Management can refer to how any teaching or learning course should be carried out, and this aspect therefore needs to be considered as another function of the VLE (Lu, Yu and Liu, 2002). A VLE can provide students with their own management of the learning processes through the use of modern day technology that can enable processes such as the delivery and student tracking (University of Warwick, 2006).

A VLE can also provide structure to training and learning processes through student management, which is an essential factor in attaining learning goals (Waring and Boardman, 2004). The VLE can thus function as a management tool with regard to the instruction, learning processes, and assessment of student learning.

4.4.6 Spreadsheet Training

The final function of a VLE is to allow training for assessment procedures through the use of spreadsheets. Spreadsheets are commonly used by teachers as a means of collating information and data required for the assessment of students. A VLE can enable teachers to keep an automatic log for each student with necessary data on

assessments (Brandl, 2005). Thus, a VLE and its use in the training of teachers in the various assessment tools can promote quality learning and teaching through quality assessment.

4.5 Continuing Professional Development (CPD)

In this section of the study, the need for CPD on ICT for the support of the teaching processes is discussed. The literature review reveals six important CPD outcomes that should be implemented amongst teachers. These include: greater confidence in the use of ICT; increased staff communication; improved competence, more efficient administration; more cost effective assessment procedures; and better understanding of ICT, as illustrated in Figure 4-4.



Figure 4-4: Continuing Professional Development Outcomes

In order to gain a thorough understanding with regard to the CPD outcomes, each aspect is discussed below:

4.5.1 Greater Confidence in the Use of ICT

In the literature review, CPD was a major focus. One of the associated outcomes was the confidence in the use of ICT. Most of the relevant literature shows that individuals who have undergone CPD are provided with the knowledge and motivation relating to information to make use of such technology in their teaching (Ming et al., 2010). Moreover, it is also found that there is a need to developing the essential skills for the

use of ICT, and the provision of CPD can promote this along with supplying confidence through the acquisition of training and knowledge (Al-Rabaani, 2008).

4.5.2 Increased Staff Communication

Another positive outcome of CPD is the fostering of staff communication. CPD may enhance the skills, knowledge and opportunities of staff and can interact amongst themselves and with their students. This is considered important because it is deemed beneficial for trainers to be able to interact with each other through the sharing of knowledge and ideas during the training programme (Booth et al., 2003). CPD, through such interaction, could also provide a means through which decision-making is able to take place within the professional setting, with regard to areas such as the ICT system (De Lange et al., 2003). Interaction at this level can therefore be considered essential to the overall professional development of academic staff.

4.5.3 Improved Competence

In the literature review, CPD was felt effective in promoting the competence in participants. The demand for highly skilled individuals is significant and so CPD is deemed an important factor for professionals (Abuelma'atti, 2002). It is found that CPD can provide professionals with the training in skills and knowledge associated with their area of expertise necessary to compete in the workplace.

Moreover, CPD can provide opportunities for empowering teachers with the essential skills and knowledge for their personal and professional growth (De Lange et al., 2003). Professional development can therefore be related to both the individual and the overall profession.

4.5.4 More Efficient Administration

Within education, CPD is deemed beneficial for those employed in educational administration. CPD in education has therefore been 'tied to a continuing professional development' (Loveless and Ellis, 2001: 13). In education, CPD is considered valuable as it can enhance the managerial skills of those professionals involved in upholding quality within education. It can therefore play an important role in the production of well-rounded and competent educational leaders.

4.5.5 More Cost Effective Assessment Procedures

CPD may provide an alternative method of assessment in a cost effective manner, particularly within the area associated with assessment procedures. Such a programme can provide economical assessment of the performance of teachers as training and assessment often take place at the same time (Al-Rabaani, 2008). In fact, the monitoring of the performance of teachers is essential to ensure quality education for students.

However, as assessment takes time and considerable expense, it may be deemed necessary for teachers to be first assessed to determine their need for training and only to proceed with a programme of combined assessment and training where necessary. This may be the reason for CPD's facilitation of a more cost-effective combined assessment programme.

4.5.6 Better Understanding of ICT

Finally, the most important outcome of CPD relates to how such a programme is able to promote a better understanding of ICT. This is considered particularly important at the present time, when emphasis is placed on the need for competence in ICT. As a result, there is a need for individuals to undergo a process of CPD (McHarg et al., 2006).

It is evident that those who have undertaken such programme in ICT have gained confidence, increased their skill and gained a better understanding of the use of technology (Newland et al., 2006). This is an important factor in the personal and professional development of those involved in the process.

4.6 The Use of ICT

In the conceptual framework, a relationship between ICT and VLE is first established. The framework then shows how the two impact on ICT usage and teaching practices through curriculum content, which is transferred from the six identified teaching functions of the ICT into the VLE-based programme, as illustrated in **Figure 4-5**.

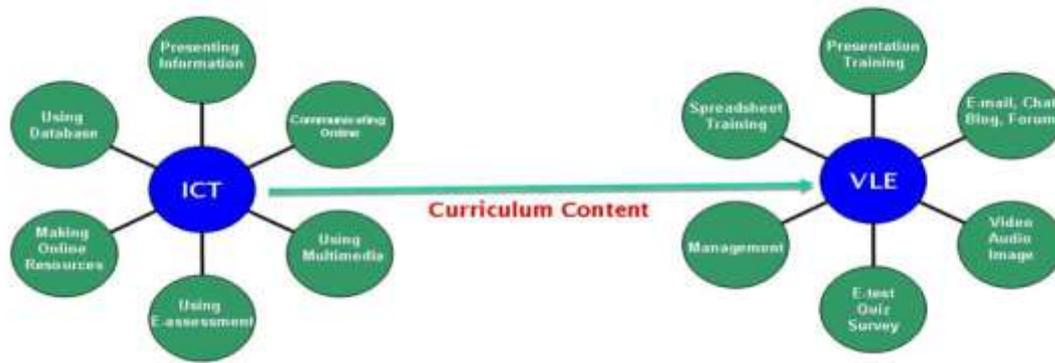


Figure 4-5: Curriculum Content of ICT Functions Transferred into a VLE

Following this process, a relationship between VLE and CPD is assumed: it is anticipated that VLE-based CPD can enable the transfer of the ICT curriculum to participants for enhanced use of a number of ICT tools. Based on this assumption, a VLE is planned for use on a CPD programme to enable the university teachers to acquire the aforementioned outcomes. **Figure 4-6** illustrates this relationship: for the desired CPD outcomes to be achieved, a VLE can be used as a facilitation tool.

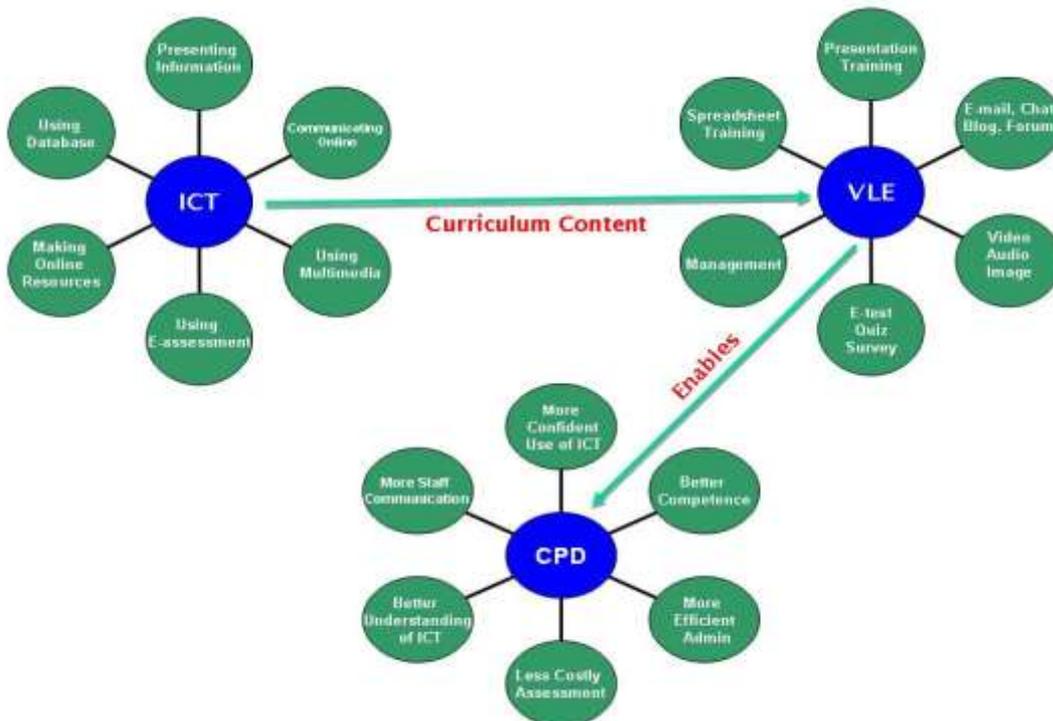


Figure 4-6: A VLE within CPD to Enable University Teachers to Achieve Associated Outcomes

4.7 The Study Framework

Based on the above discussion on ICT, VLE and CPD, a structural assumption regarding the relationship between CPD and ICT can be made by means of a VLE. It may be expected that there is a need for the enhancement of ICT skills for the effective delivery of an ICT training course based in a VLE through CPD. However, it is important to identify whether there is any relationship between CPD and ICT in influencing the knowledge, attitudes, skills and use of ICT amongst university teachers. **Figure 4-7** provides a study framework for these assumptions and queries.

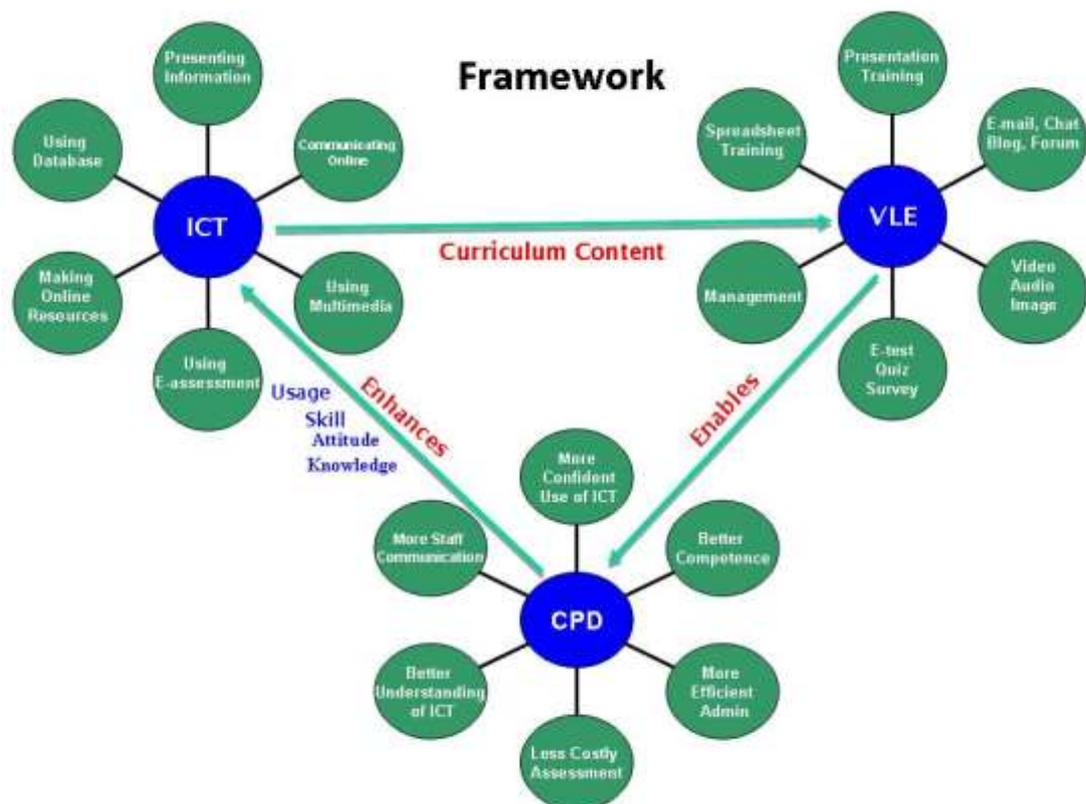


Figure 4-7: The Study Framework

The above structure illustrates the possible relationship between ICT, CPD and VLE, and provides a conceptual framework summarising the ideas associated with the study. The framework is based on a number of assumptions.

Firstly, it anticipates that university teachers' use of technology and academic and professional knowledge may improve in a VLE, which is an ICT-enabled and enhanced environment that can provide almost unlimited ICT-related knowledge and skills, ultimately leading to both personal and professional development.

Secondly, besides the knowledge and skills gained by university teachers through the VLE, there might be positive changes in their attitudes towards ICT. From this it can be seen that a VLE might offer a number of valuable outcomes for university teachers. As a result, their usage of ICT may be enhanced, and they may realise the benefits of employing ICT in their teaching.

Thirdly, it is expected that a VLE can help share university teachers' information through cross-cultural and international domain-building activities. This kind of achievement is assumed to be mainly associated with individual skill and knowledge of ICT.

Besides the above assumptions the framework also expects that, in order to instruct students, teachers need to be trained to a level of proficiency where they can facilitate effective learning in any given learning environment. In this context, it can be assumed that the use of a VLE in higher learning depends on the ability adequately to train university teachers in the use of ICT. To acquire this ability to learn in a VLE, it may be necessary to upload teacher training materials onto a VLE for use in a CPD programme to ensure that training skills are up-to-date in education and learning. Such training programmes would appear to be essential, not only for participating in a CPD, but for the continual updating of knowledge and skills demanded by the constantly changing ICT technologies used within educational systems.

Chapter 5 Research Design

5.1 Introduction

This chapter provides a thorough discussion of the approaches taken in the research methodology for this specific study. It discusses mixed-method practitioner research in general and provides evidence to support its use as the primary research strategy in this study. Additionally, it provides information regarding the use of interviews and questionnaires as appropriate data collection methods, and about the sample group, the teachers of Jazan University, on which this research is focused. Lastly, as this research uses human resources, it discusses the ethics involved to ensure that the study has been conducted without violating any ethical considerations (Silverman, 2000).

The term methodology 'is first and foremost associated with conducting a research' (Jonker and Pennink, 2010: 31) that provides the researcher with 'the path to finding the answers to the research questions' (Kumar, 2005: 16) which in this study are:

1. Can a VLE affect the use of ICT in teaching by university teachers in Jazan University to support their teaching?
2. What is the effect of the VLE-based programme on university teachers' knowledge of ICT at Jazan University?
3. What is the effect of the VLE-based programme on university teachers' attitudes toward ICT usage at Jazan University?
4. What is the effect of the VLE-based programme on university teachers' ICT skill at Jazan University?

The major objective of this study is to investigate ICT usage by the teachers of Jazan University in Saudi Arabia. It sets out to examine the validity of using a VLE in CPD by using ICT as a pedagogical tool in teaching, exploring changed attitudes and perceptions of participants on this technology driven learning environment. Additionally, the study seeks to provide a better understanding of the use of VLE in

CPD to increase the use of ICT in supporting teaching throughout higher educational institutions in Saudi Arabia.

5.2 Research Methodology

The research methodology is a critical component of any research, and therefore the methodological approach needs to be selected with care. In this regard, the following sections critically analyse the appropriateness of three methodologies: qualitative, quantitative and mixed methods, with regard to their relevance and potential for obtaining credible results (Appiah-Yeboah et al., 2007). In doing this, methodologies are assessed on their pros and cons, thereby identifying the most relevant and appropriate. Of the three options, the mixed methods approach has been deemed to be most appropriate for this research. Additionally, to ensure the reliability and validity of this study with teachers in a higher educational institution, the practitioner research approach has been chosen.

Why this research did not consider using pure case study or action research approaches may be queried. The main argument for not conducting a pure case study was because the research subjects, the teachers of Jazan University, were known to the researcher as colleagues. It was considered that this kind of involvement with the research subjects might cause bias in the investigation processes. In addition, the sample of this research was diverse and there was concern over the generalisation of the findings. For greater understanding of the ICT usage for teaching practices, 40 university teachers were taken as a representative sample for the mixed method study. Clearly the sample size is too large to conduct multiple case studies; besides, case studies may 'provide little basis for scientific generalization' (Yin, 2003: 15). The approach was not selected because of this concern over transferability; moreover, the focus of the research was more on the exploration of the relationships of events through unearthing the cause and effect dynamics of their phenomena (Simons, 2009). The researcher was also interested to understand a number of well-known facts (Colorado State University, 2010). At the same time, the action research approach was not considered for the study as the approach is time consuming for little gain; it requires several cycles of intervention, which was not feasible because of the lengthy VLE training plan.

Therefore, in this research a mixed-method practitioner-research methodology has been used that engages both qualitative and quantitative research approaches involving in addition a number of case study and action research features.

5.2.1 *Qualitative Research*

According to Creswell (2003: 181), ‘qualitative research seeks to understand research issues from the individual perspectives of the involved parties. As such, they occur in natural environments where the researcher acquires information directly from the source’. This research technique additionally employs various interactive methods of data collection, allowing the researcher to engage actively with the participants and develop rapport. These methods include observation, regarded as significant in qualitative research due to its capacity to unravel difficult interactions encountered in natural environments (Marshall and Rossman, 2010; Willis, 2008) , interviews, evaluations, focus groups and surveys, generating transcripts, notes and recordings.

Advantages and disadvantages of qualitative research

Appiah-Yeboah et al. (2007) believe that a major strength of the qualitative research technique is that it can provide intricate descriptions of how individuals interact and respond to various research topics. In addition, it is able to extract information on the humanistic part of interactions such as people’s attitudes, emotions and relationships (Willis, 2008). This characteristic also allows researchers to acquire knowledge of intangible elements if appropriate, such as religion or ethnicity, that may not otherwise be apparent. The interactive and informal nature of qualitative research generally allows for spontaneity and flexibility, encouraging participants to be responsive, thus generating richer research results.

On the other hand, Appiah Yeboah et al. (2007) caution that qualitative research is limited by the fact that at times, researchers may be viewed as intrusive by participants due to the flexibility of the technique. Furthermore, the presence of the researcher may elicit bias in the participants’ responses, an issue that needs to be addressed by the researcher. Also, not all participants are perceptive or articulate and this may hinder the collection of data or even lower the credibility of the research. Finally, Willis (2008: 148) states that ‘it is difficult to derive precise data from this research technique as no numerical data forms are used in the analysis’.

5.2.2 Quantitative Research

Quantitative research is aimed at investigating and confirming hypotheses about various aspects and topics under study. Techniques are rigid and similar instruments to qualitative research may be used to gather data (Duffy, 1985). Quantitative study designs are generally stable and participants do not influence the process and nature of the research. In fact, according to Cohen et al. (2007), questions are usually closed-ended making unscheduled responses impossible. However, the design is subject to various statistical assumptions and regulations. Standard formats are applied and all hypotheses expected to generate statistically provable elements. In doing so, variables are regarded as central to quantitative research, as explored by Punch and Punch (2009). Independent, dependent and control variables are described and it is attempted to establish significant relationships among them. As such, quantitative research has analytical objectives of quantifying variations, predicting underlying relationships, and describing population characteristics. Research methods used with this technique may include questionnaires, survey reports and other document forms from which numerical values are derived.

Advantages and disadvantages of quantitative research

Quantitative research has a standard structure that has endured for many years, and this makes a research approach reliable in confirming hypotheses and deriving final results (Punch and Punch, 2009). Moreover, Creswell (2003:78) asserts that 'this design allows for concrete results which can be discussed and published with the support of concrete evidence'. Proper quantitative research design eliminates external factors that may influence research outcomes negatively. This can provide genuine and unbiased results. However, statistical analyses may prove difficult for researchers not especially trained to conduct them, which may consequently influence the validity of results. Furthermore, this design may be used in quantifying qualitative research results that may mislead and misinterpret the gained study findings, and thus provide some misleading conclusions for further investigation (Creswell, 2003).

Conversely, the quantitative research approach has various limitations, one being its rigid nature (Appiah-Yeboah et al., 2007). As it often generates absolute results, it sometimes fails to accommodate other aspects of uncertainty associated with describing human nature. This approach therefore may make the research design inefficient in

social and humanistic fields of study. In addition, ‘this design is quite complex, expensive, time consuming and unless well planned with exclusive randomization and clearly designated control variables, it may fail’ (Cohen et al., 2007: 195).

5.2.3 *Mixed-method Research*

Mixed-method research incorporates both quantitative and qualitative research methods and is often applied to research to offset the limitations exhibited by either if used independently, as indicated by Appiah-Yeboah et al. (2007). Researchers can make different choices on how to integrate the two designs, thus deriving various mixed-method forms of research. Creswell (2003) describes explanatory and exploratory forms of mixed-method design. Explanatory design involves the collection of data using the two designs, with priority to quantitative research. The two are integrated in the interpretation of the findings. The main objective of such a design is to utilise qualitative findings in interpreting quantitative results. By contrast, exploratory mixed-method design prioritises qualitative research and seeks to use quantitative results in interpreting qualitative research findings.

Another mixed-method design is transformative research design, which utilises both research methods during data interpretation. It is guided by theoretical viewpoints and aims to use the method that will best serve this theoretical perspective. Appiah-Yeboah et al. (2007) also describe concurrent design, where there is a single data collection session and both research designs are used. Using both methods, the researcher is able to derive a wider perspective of the research issue as opposed to independent use of either qualitative or quantitative research designs. Generally, the characteristics of the mixed-methods include a justification for the use of both research designs and the collection of data using quantitative and qualitative methods, priority given to either of the methods, the sequencing of the designs and analysis of the research results within the frameworks of both qualitative and quantitative designs.

Advantages and disadvantages of the mixed-method research approach

The chief advantage of using the mixed-method approach is that the researcher can develop a study founded on the strengths of both qualitative and quantitative research design as recommended by Creswell (2003). The mixed-method approach is applied to the current research to avoid limitations imposed by either qualitative or quantitative research designs. That is, qualitative data collected from university teachers in Jazan

University will be complemented by statistical data about the impact of the VLE training on the teachers. Therefore, the triangulation of these two types of data will ensure that the results are unbiased and an even wider perspective of ICT usage in the university is achieved (Appiah-Yeboah et al., 2007). Furthermore, well-planned mixed-methods can be systematic, as there are clear stages to implement. In addition, the data collection methods engaged in this type of approach may allow participants to be intuitive and engaged at all stages of the study through both open-ended and closed questioning. Statistics collected about the usage of ICT may also be more easily explained using interview responses from the university teachers, addressing attitudes, emotions and individual perceptions on the results.

On the other hand, the mixed-method approach has limitations as it is time-consuming to carry out the research and may require more than one researcher, which may not be the initial expectation. A further issue may be that ‘The approach has to apply both designs which have their individual complexities while collecting data which may prove redundant’ (Appiah-Yeboah et al., 2007: 28). In addition, it may be necessary for the researcher to train in the use of both designs so as to apply them appropriately.

In conclusion, the above discussion has evaluated qualitative, quantitative and mixed-method research approaches used in educational research. They all have their merits and limitations, but the use of mixed-method research results is a better option as it capitalises on the strengths and avoids the limitations of both qualitative and quantitative designs.

5.2.4 Practitioner Research

Practitioner research, an umbrella term denoting practice-based approaches where the researcher is usually also the practitioner, tries to involve all research processes in practice (Campbell, 2007). The approach has been defined differently in different literatures. Many researchers have termed this case study or action research (Buysse et al., 2003), alternatively community action research, participatory action research or practitioner led inquiry. However, McLeod’s (1999: 8) rather simplistic definition describes it as ‘research carried out by practitioners for the purpose of advancing their own practice’. Based on this definition, it can be seen that practitioner research may be effectively applied in education-related studies by involving systematic and reflective investigation processes. While discussing research into teaching in higher education,

Tight (2003: 64) mentioned the need for ‘explicitly research-based studies of the teaching role’ that can be accomplished by maintaining a practitioner research approach.

Advantages of Practitioner Research

The main aspect of practitioner research is its involvement of practitioners to minimise the gap between any research and relevant practice (Tight, 2003). Buysse et al. (2003: 65) maintain that this approach may provide ‘new ways of connecting what we know through research with what we do in... education [and practice]’. Involving practitioners in research is also seen as advantageous by McIvor (1995: 210), who state that

practitioners should be encouraged to engage in the evaluation of their own practice and that they possess many of the skills which are necessary to undertake the evaluative task.

Similarly, it may be logically assumed that participants in practitioner research might benefit as they actively participate in the research, not only as information disseminators but as those who think about their profession and its problems. In general, practitioner research approach can be beneficial as both the research subjects and the researcher can negotiate the findings, and consequently can achieve a shared understanding that might possess a greater degree of research validity.

Challenges of Practitioner Research

Despite the advantages of practitioner research, a number of challenges also need to be counted. It is indisputable that the inclusion of academic practitioners as research subjects, more specifically as co-researchers, demands smooth and comprehensible communication with the lead researcher. Gadamer (1981: 404) explains the necessity of higher level communication and collaboration among the research participants and the researcher in the following way:

The process of communication is not a mere action, a purposeful activity, a setting-up of signs through which I transmit my will to others..... It is a living process in which a community of life is lived out.... Human language must be thought of as a special and unique living process in that, in linguistic communication ‘world’ is disclosed.

5.3 Justification for Mixed-Method Practitioner Research

According to Stenhouse (1975), professional knowledge should be tested through in-depth interrogation and be validated by the relevant professional community.

Therefore, to ensure systematic research on teacher and teaching development, the teachers need to be involved in the research process for validity purposes (Rudduck and Hopkins, 1985). Moreover, Fishman and McCarthy (2000: 13) suggest that research on and with teachers should be ‘both systematic and self-critical... [involving] established methods of data collection and analysis, peer review and publication’.

Considering the above requirements for research with teachers at a higher educational institution in Saudi Arabia, a mixed-method practitioner research approach has been selected for this study. It was expected that by adapting this research approach a set of acceptable research findings related to the impact VLE-based CPD on the ICT usage in teaching by these teachers could be achieved. Additionally, an applied research mixed-method practitioner research study is also expected to be ‘situated between academia-led theoretical pursuits and research-informed practice’ (Furlong and Oancea, 2005: 1), which might be able to minimise the gap between traditional research practices and the practical situations of the educational environment. In this research the teachers’ role was mainly as research subjects and they were not involved in the design of the methodology and data analysis. The researcher designed the methodology according to the findings and guidelines gained from an extensive literature review. Data analysis was performed by the sophisticated software programme, SPSS, and by systematic qualitative data analysis procedures.

However, it needs to be acknowledged that the mixed-method practitioner research approach has a number of prerequisites. Firstly, recruiting teachers of a Saudi university as practitioner-researchers might face initial difficulties with ensuring enthusiasm, full participation, and the collection of usable research data. In fact, negotiating with institutional cultures, both academic and cognitive (Becher, 1989), has been found difficult in this particular type of research approach. On the other hand, various ethical issues such as researching with, rather than on, practitioners, managing their tensions in collaborative work, developing new learning cultures, and meeting dilemmas in professional and research values might be challenging (Campbell and Groundwater-Smith, 2007). Moreover, cross-checking or triangulating the gained data might be a complex and problematic process in this type of research.

5.3.1 *Triangulation*

Triangulation is said to be a technique commonly used in educational research (Cohen et al., 2007). This section provides an in-depth discussion of the triangulation technique and its various contributions to educational research.

Triangulation is defined as ‘the use of two or more methods of data collection in the study of some aspects of human behaviour’ (Cohen et al., 2007: 141). Moreover, Mathison (1988) observes that triangulation ‘is typically perceived to be a strategy for improving the validity of research or evaluation of findings’ (Mathison, 1988: 13). Vidovich (2003: 78) further states that ‘the purpose of triangulation is to develop the validity and the reliability of the findings of a research’. As Webb et al. (2000) put it, ‘Once a proposition has been confirmed by two or more independent measurement process, the uncertainty of its interpretation is greatly reduced’ (Webb et al., 2000: 3).

There are various types of triangulation. One of the most commonly used, especially in educational research, is methodological triangulation (Miles and Huberman, 1994), which ‘uses either the same method on different occasions, or different methods on the same object of study’ (Cohen et al., 2007: 142). Mathison (1988) mentions that ‘the flaws of one method are often the strengths of another: and by combining methods, observers can achieve the best of each while overcoming their unique difference’ (Mathison, 1988: 14). From this it can be seen how a methodological triangulation strategy allows opportunities for research not only with one means of validation of findings but avoiding bias by using different methods of collecting data. By evaluating the various benefits and strengths that methodological triangulation offers to education research, this current research makes use of methodological triangulation using interviews and questionnaires. It is in this way that bias may be eliminated and validation and reliability of results are ensured.

5.4 **Research Methods**

For research to yield quality results, the researcher has to make use of data. There are two types of data: primary, obtained as a result of the research activities; and secondary, data which already exists (Cohen and Manion, 2009).

As a disclaimer before introducing the types of methods to be incorporated in this educational research, it needs to be noted that no single collection method can guarantee wholly accurate data (Cohen and Manion, 2009). This is because in any

situation a number of external factors are beyond the researcher's control. All the researcher can do is to ensure the data collected is as accurate as possible, and is not biased by any external factors. Several methods can be employed in research to gather primary data. For this study, by considering the resources available, and acknowledging the possible limitations, the interviews and questionnaires methods are accepted. Using both these methods enables the researcher to triangulate the data sources.

Table 5-1: Methods Used to Collect the Data for Each Research Question

	Interview	Questionnaire
Question 1	X	X
Question 2	X	X
Question 3	X	X
Question 4	X	X

5.4.1 Interview

A key method of data collection is the interview, widely used to gather data from primary sources. An interview can be defined as personal interaction with a specific agenda between two or more people (Kvale, 1996). An interview gives the interviewer a great range of flexibility. The researcher can keep to the rigorous questions decided beforehand, making the process inflexible (Cohen and Manion, 2009), but flexibility can be enhanced by asking questions that come to mind as the researcher conducts the interview. Interviews can be classified as:

- Structured interviews which are inflexible and have a rigid structure and contents
- Unstructured interviews which are flexible in nature as well as in content and questions being asked during the interview
- Semi-structured interviews are considered as a hybrid of both the structured and unstructured interviews. The interview is structured but the interviewer introduces new questions depending on what the interviewee says.

(Cohen and Manion, 2009)

For the purpose of this study, semi-structured interviews were used as a data gathering instrument as they allowed flexibility, whilst not compromising the formal nature of interview (refer to Appendices 10 and 11). The uniformity of the questions allowed the researcher to gather data with a similar basis across the whole sample. Using semi-structured interviews further allows the researcher to assess the data against that gathered by other means. It will allow the researcher to test the validity of data from first-hand sources as well as permit proper insight (Miles and Huberman, 1994).

Designing the interview schedule

The interview schedule was divided into four sections:

- Interviewees' usage of the ICT
- Attitudes towards ICT usage in teaching
- Level of knowledge
- Skills of ICT, their use of these skills and proficiency with these skills.

All four sections covered the six ICT functions identified by Ageel (2011):

1. Presenting information
2. Online communication
3. Using multimedia
4. Using e-assessment
5. Making online resources
6. Using Excel databases.

5.4.2 Questionnaire

An interview generally contains a written complement to an audio recorded question and answer session where interviewees are often questioned verbally and respond in similar fashion. Questionnaires are slightly different, as a set of questions is formulated and then distributed to the respondents. Each respondent reads the questions, interprets them as best as they can and then writes the answers (Gillham, 2008). The visible difference between an interview and a questionnaire for gathering data, apart from the medium being used, is the manner in which the data is recorded. In the former, data is recorded by the interviewer, and in the latter it is the respondent who records the information. Questionnaires are used also for their economy; they can be administered

to a large number of respondents in a relatively short time (Gillham, 2008). They are direct and simple and this also allows better analysis of the data generated. They are used to tackle subjects to which respondents have difficulty responding in interview.

Questionnaires can be generally divided into two categories, depending upon the person who is administering the questionnaire. A questionnaire being conducted in the presence of an administrator is called an interviewer-administered questionnaire. It can be classified further into telephonic and structured interview (Miles and Huberman, 1994). A questionnaire not administered by a researcher is known as self-administered and also has two sub-types, the postal questionnaire, and the delivery and collection questionnaire.

While designing a questionnaire, the researcher has to take note of the quality of questions. This is important in that interpretation of the questions is not incorrectly made, compromising the quality of the information (Oppenheim, 2000). The flexibility of the interview process is lost, as there is no interviewer present to explain what questions mean. The layout and the sequence of a questionnaire should accommodate respondents; it should be pleasing to the eye and the sequence of the questions easy to follow, providing no hindrance as record their answers. In addition, the questionnaire should be interactive so the attention of respondents is not lost and that they feel they are talking to someone (Cohen and Manion, 2009).

For the purpose of this study, a hybrid of structured questionnaire technique, and delivery and collection questionnaire was employed. In this technique the researcher remains present when the questionnaire is given to the respondents, but only intervenes when asked (Miles and Huberman, 1994). The researcher used the questionnaire data collection method to complement the data being collected by the interview sessions, and to generate qualitative and quantitative data for the purpose of the research. It gave a greater freedom to the respondents to answer, as they could take their time to respond. Furthermore, their anonymity could be preserved by using numerical codes to represent respondents.

Building the questionnaire

The TRA theory of Ajzen and Fishbein's (1980) played a motivating role in constructing the questionnaire of this research. Four sections of the questionnaire were developed to investigate elements of human perceptions and behaviour on the use of a number of ICT tools in teaching practices. For systematic design of the questionnaire, a

clear formulation of items to be measure was listed, and required time and measurement scales were employed carefully.

The building of the questionnaire went through six major steps:

1. Identifying the themes related to the research questions. This required considering the research questions many times and brainstorming to identify all the possible items.
2. Reviewing the literature to compare the items that had been developed with other questionnaires.
3. Presenting these factors to some of the experts in the field for their review.
4. Modifying the factors and forming the sentences and statements.
5. Presenting the questionnaire to specialists in the field after making some corrections and changes.
6. Distributing the questionnaire to a limited number of university teachers.

The four sections of the questionnaire were designed to be used at both the Before and After stage of the VLE-based CPD training. The questions were set under four themes, namely Usage, Attitude, Knowledge and Skills; and consisted only of closed questions. Closed questions were included for the collection of quality data and the ease of analysis and interpretation:

- **Usage** or the first section of the questionnaire (16 statements) asked questions to obtain data about the respondent's use of the ICT. The respondents were given three options: Never, Often and Always.
- **Attitudes** or the second section (18 statements) gave the respondents a scale of four levels, 'Totally agree', 'Agree', 'Disagree' and 'Totally disagree', to obtain data about their attitudes towards ICT.
- **Knowledge** or the third section (24 statements) asked the respondents for their level of knowledge about the use of ICT in teaching. Each of the questions in this section started with 'I know how to...' which meant to understand the knowing or the knowledge of the respondents about the use of the mentioned technological tools. The respondents had to tick the most appropriate on a scale of four: 'Totally agree', 'Agree', 'Disagree' and 'Totally disagree'.

- **Skills** or the fourth section (20 statements) asked the respondents about the use of ICT for particular skills. Each of the questions in this section started with ‘I can...’ or ‘I am able to...’, to obtain information to understand the ability of the respondents to use the stated technological tools. This section asked the respondents to give details about their levels of skills on a scale of four: ‘Totally agree’, ‘Agree’, ‘Disagree’ and ‘Totally disagree’.

Together, the four sections mentioned above covered the six ICT functions identified by this researcher in his earlier research findings (Ageel, 2011), also supported by other research claims in the literature review (shown in Figure 4–2):

1. Presenting information
2. Online communication
3. Using multimedia
4. Using e-assessment
5. Making online resources
6. Using Excel database.

The main reason to include the above six ICT functions in the questionnaire was to understand the participating teachers’ perceptions about the use of ICT tools in their teaching practice. However, the overall usage of ICT in teaching was planned to be gauged by measuring the teachers’ ICT-related attitudes, knowledge and skills, both before and after receiving a VLE-based CPD training.

5.4.3 The Virtual Learning Environment (VLE) and Moodle

In this study a VLE is used to provide a CPD training scheme for participants. A Modular Object Oriented Dynamic Learning Environment, or Moodle, was applied. This is a course management system built on a platform of free-source learning software to create a learning management system in a VLE. The system was earlier created by Dougiamas (1992) with the aim of enabling educators to create online courses focused on interaction and collaborative content construction.

As the study aimed to measure the potential impact of a VLE in CPD on the university teachers' knowledge, attitude, skills as well as their use of ICT in their teaching, the implemented Moodle for this study was designed and divided into six sessions to be completed in six weeks, based on the six important ICT functions for teaching (namely, presenting information, online communication, using multimedia, using e-assessment, making online resources, using database) identified by Ageel (2011). Each session's curriculum had files and content for the following particular topics (please refer to the Appendix 19 which contains a user manual for the beginner level Moodle participants):

1. Information presentation methods such as PowerPoint, Word files, PDF files, videos and websites.
2. Online communication systems such as e-mails, Chat, Blogs, Forums, some Word files, PDF files, videos and websites.
3. Use of multimedia such as videos, audio, images, some Word files, video and PDF files.
4. A-assessment such as e-mail, quizzes, survey, some Word files and PDF files.
5. Making and designing online resources such as management and control.
6. Database use such as database, spreadsheets.

Implementation of the Moodle took place between 31/7/2010 and 10/9/2010. In order to implement the Moodle, the researcher called all participants to various meetings before its actual date. Each participant was required to attend a meeting to understand what everyone was supposed to do. The meetings were arranged at three different times to allow participants to attend at their convenience. If a participant was not able to attend the first meeting, he or she was able to attend the next meeting. In the first meeting, only 11 participants attended. In the second meeting, 16 participants attended while in the third meeting, only 9 participants came. However, 4 participants were not able to attend the first three meetings so the researcher arranged another meeting for them. During these meetings, the researcher provided basic training and oral presentations to the participants, plus a Moodle beginner's user manual to help them solve any problems they might face. In addition, the participants were provided with the researcher's phone number and email if they needed any further help using the Moodle.

Both existing online CPD models (such as Weiner, 2002; Daly et al., 2004; and Preston, 2008) and the contemporary social constructivist theories of learning (for example, Laurillard, 2002; Wenger et al., 2002; Trucano, 2005; Bondarouk, 2006; and Walmsley, 2012) recommend amongst other approaches: group learning, reflections and collaboration among learners and the online tutor or moderator (please refer to Sections 3.3.3 and 3.4.6 of the literature review chapter for a detailed discussion). Accordingly, this Moodle-based VLE was carefully designed so that the participating university teachers had adequate opportunity to share, collaborate, reflect and interact between themselves and also with their training facilitator (in this VLE programme, the researcher performed this function).

During VLE sessions the above six sets of contents (information presentation methods, online communication systems, use of multimedia, e-assessment, online teaching resources preparation, and the use of databases) were delivered via Moodle by the researcher. The participants had to register to participate in the programme and were provided with free access to the learning materials, both on campus and beyond. They were encouraged to study to gain personal knowledge of a number of ICT tools and procedures and then to apply them in their teaching. As the teachers had been taught the use of e-mail and online chat, they were guided to use these tools to communicate between themselves and with the researcher to share their learning, their queries related to the use of the ICT tools in teaching, their affordances or any difficulties in using them, and any reflections and opinions relevant to their learning and teaching experiences. Additionally, the participants had been taught the use of blogs and online forums for teaching purposes, and they were given the opportunity to share their reflections and queries through a dedicated blog and an online Moodle forum. Moreover, the participants had been provided with the researcher's telephone number so that they could seek help if they failed to access the Moodle, or faced sudden difficulty requiring immediate help. The researcher performed the role of an online tutor whose main tasks were to create and supply study materials, monitor the university teachers' quality and quantity of participation, receive their queries and reflections, and provide essential feedback and opinions when necessary via email, the blog and the online forum (as suggested by Collison et al. 2000; and Salmon, 2003).

To maintain a safe and congenial learning environment, the researcher encouraged the teachers to work collaboratively to overcome their learning difficulties with ICT tools and their application in teaching. The teachers had been assured that

their performance in training would be monitored for research purposes only and therefore they did not need to worry about making mistakes during training. Strict ethical guidelines were adhered to, based upon a comprehensive ethical protocol and clearance through the University of Southampton. The participants were advised and, from time to time, guided to avoid hurting anyone's feelings or dignity by any reflections, comments or recommendations in the blog, online forum, emails or while chatting. This was important because all the teachers had been requested to communicate with each other regularly in order that an interactive and cooperative learning environment was created.

5.5 Pilot Study

According to Lancaster et al. (2004), a pilot or feasibility study is a small experiment designed to test logistics and gather information prior to a larger study in order to improve the latter's validity, quality and efficiency. A pilot study reveals deficiencies in the design of the proposed instruments so these can be addressed before expending time and resources on the main study research. Furthermore, piloting gives the researcher confidence that the main study will yield good results due to the fact that any errors in the instruments of data collection will be subjected to scrutiny and rectified prior to the commencement of the main study research. The main goal for conducting the pilot study was to ensure the validity of the instruments and to obtain broad judgments of the suitability of both the questionnaire and the interview.

5.5.1 Piloting the Questionnaire

During the design of the questionnaire, questions were arranged in a logical pattern to ensure that the four themes of the research questions, ICT usage, knowledge, attitudes, and skills, were fully covered. A pilot of the questionnaire was conducted at the University of Southampton. A finalised questionnaire was tested by five education experts, all Arabic and English speakers, whose names are kept anonymous to ensure confidentiality (see Table 5-2).

Table 5-2: Experts Participating in the Pilot Study

Name	Qualification	Job Title
A (not the real name)	PhD in Linguistics	Assistant Professor, Saudi University
B (not the real name)	PhD in Education	Assistant Professor, Egyptian University
C (not the real name)	PhD in Education	Assistant Professor, Saudi University
D (not the real name)	Master in Education	Lecturer, Saudi University
E (not the real name)	Master in Education	Lecturer, Egyptian University

In addition, piloting aimed to identify any ambiguous questions and ensure these could be reviewed. Comments and suggestions made by the experts during the pre-pilot testing were also considered. Deficiencies in the questionnaire were reviewed and some ideas such as placing the questions in a table for better research organisation, and dividing long questions into shorter portions. Furthermore, piloting was conducted to ensure that the instructions given by the researcher to the respondents in the main study would be comprehensible, checked for reliability and validity of results and detect a floor or ceiling effect (e.g. if a task is too difficult or too easy there will be skewed results). A final benefit of piloting was to ensure that the questions would be fully understood by the participants in the study.

Outcomes from the pilot study of the questionnaire

1. Some of the participants in the pilot study had some enquiries because they did not understand certain sentences and statements (Section 2: 3, 11, 16, Section 3: 9, 11, 13, 18, 21, and Section 4: 1, 8, 10, 15, 19). Therefore, the researcher had to rewrite the sentences to make them clearer.
2. There were some written notes about the language and the translation of the questionnaire, as well as other oral comments from some of the participants.
3. One of the participants raised concerns about statement No. 5 in Section 2, 'I am willing to use email and Chatting programmes to contact my students', because it is not possible to measure two factors in one statement. Also, the same in Section 1 No. 9. So, the researcher divided it into two statements, Nos. 9 and 10.

4. Two of the participants requested that the main question in Sections 2 and 4 be rewritten. So, the researcher rewrote them appropriately.
5. Minor changes were made to the Arabic questionnaire on the basis of the pilot study. The reason for revising these sentences is to simplify them so that they would be understood by the university teachers and to correct some grammatical mistakes. The most important of these were changes to Section 2: 4, 6, 10, 18, Section 3: 4, 6, 16, 19, 23, and Section 4: 2, 7, 11, 17.

The final version of the questionnaire was constructed on the four themes of the four research questions: ICT usage, knowledge of ICT, attitudes toward ICT, and ICT skills. This questionnaire was initially designed in English and later translated into Arabic. The questionnaire was distributed to participants in person by the researcher.

5.5.2 Piloting the Interview

Piloting of the interview was conducted at the University of Southampton with two participants. The interview was designed to ensure that all questions captured rich, quality data focused on the four themes of the research questions: ICT usage, knowledge, attitudes and skills. The goal of the pilot interviews was to ensure the questions were appropriate to obtain rich and deep data from the interviewees. In addition, it gave the researcher a sense of the answers and reactions by participants, which could help the researcher to rephrase or modify the questions to obtain richer data during the fieldwork.

Initially the interview was designed in English and next translated into Arabic. While both the interview schedule and questionnaire were translated, several issues were considered: first it was essential to ensure that the use of Arabic did not change the meaning and that the words or concepts were understood by participants. Also it ensured clear, unambiguous language and lastly matched the meanings of each statement to both language versions. A group of Arabic and English speakers read and commented on the interview schedule and thus the researcher was able to check the translation of the questions from English to Arabic. The researcher administered the interview to all the participants on the pilot study himself, to increase the acquisition of data.

Outcomes from the pilot study of the interview schedule

In the pilot study, one participant made a clear statement showing confusion of the meaning of VLE and CPD. Another participant suggested that we should help university teachers to understand the meaning of a VLE by giving examples. The final version of the interview seemed to be appropriate and relevant to the criteria of the research.

5.6 Sample Group

Duff (2002) holds that the community represents the entire case study, while the population is the sample in any other study. The community is the population from which the case is drawn and is thus the population from which the respondents in the case study are derived (Silverman, 2000). In this study, the community refers to all the teachers at Jazan University in Saudi Arabia who are the population from which respondents were drawn. Sivan et al. (2000) assert that it is impossible to include each and every member in the case. This being true, it became of paramount importance for the researcher to use insight to select representatives from the community as the study sample and certain criteria were established.

5.6.1 Criteria for Sample Selection

The criteria for selection were as follows:

- Only university teachers from Jazan University (one of the new universities in the Saudi Arabia).
- Both male and female teachers, therefore there was no gender discrimination when selecting the study sample
- All university teachers, regardless of their level of academic qualification (whether Doctoral, Master's degree or newly started instructors)
- Only teaching personnel to be included in the study – no members of support or administration staff were included.

For the purpose of this study, 40 participants were selected. After being granted permission, the researcher asked each schools for five participants. To avoid the risk of potential bias and to ensure a fair sample, the researcher used a list of the telephone numbers of teaching staff in each school to invite them systematically and repetitively until five agreed to participate. It is noteworthy that many asked to be excused, yet all

who participated in the training agreed voluntarily. The quota selection of the five volunteers from each school is shown in Table 5-3.

Table 5-3: Number of Participants from Each School

	School	Number of Members
1	Education	5
2	Engineering	5
3	Medical science	5
4	Humanities	5
5	Computer science	5
6	Medicine	5
7	Science	5
8	Management	5

5.7 Organisation of Data Collection

Data collection by interviews and questionnaires was conducted in two stages. The first stage was before the VLE training and the second stage was after the VLE training. In the first stage, an interview session was arranged at the interviewee's convenience. Each interview session lasted for not more than thirty minutes and the interviewees had not yet undergone VLE training. After the interview, each was given a questionnaire to complete and be collected the following day. However, questionnaires filled out on the same day were in fact collected. This stage took place in the three weeks from 10/7/2010 to 30/7/2010.

During the second stage, the respondents were the interviewees from the first stage who had now undergone VLE training. Each was informed of the interview schedule, but the appointment was subject to adjustment to suit their preference. Again, each interview took not more than thirty minutes. After the interview, the interviewees were provided with questionnaires. Each was asked to complete the questionnaire and return it the following day. Respondents who completed their questionnaire the same day were allowed to submit it. This stage took place in the three weeks from 11/9/2010 to 6/10/2010.

5.8 Procedures of Data Analysis

This study has incorporated two stages of data analyses: one with the interview data, and the other with the inputs received through questionnaires. The methods of analyses are described below in brief.

5.8.1 *Interview Data from the University Teachers*

Forty individual interviews at the Before (pre-) VLE training stage, and the same number at the After (post-) stage, were conducted by the researcher. All interviews were recorded using a digital recorder, then downloaded into a computer and transcribed in Arabic, later translated into English. The transcriptions were made and stored in Microsoft Word. Next, the data was divided into the four themes of usage, attitudes, knowledge, and skills in ICT. It is important to mention that these themes were generally based on the concentrations of the research questions. Each theme had both pre- and post-interview stages.

The analysis started with the first level coding process using the Arabic transcriptions, largely based on the identification of broad themes, sub-themes, and patterns of issues and concepts. For instance, the broad classification included all the data related to Before VLE theme. These classifications were then highlighted and categorised (using cards and different colours) under free codes that enabled the researcher to identify useful remarks and quotations.

Following this, a second and more detailed process of classification and coding and sub-coding was devised. For example, with respect to the Before Usage Theme, new classifications were generated, and these included Lack of Usage, Lack of Infrastructure and Lack of Confidence. In the next step of the process, the generated themes and free codes were refined, enabling the researcher to make relationships between the generated themes clearer, besides helping construct the analysis framework.

Because the interviews were conducted in Arabic, the analysis and coding were in Arabic. All the quotations from the interviews have thus been translated into English and subsequently transcribed with Microsoft Word.

5.8.2 Data from Questionnaires

The quantitative data from the questionnaires were entered and analysed using the computer-based statistical programme SPSS version 17. The questionnaires included four main sections that measured the effects of the VLE on the university teachers' ICT usage, attitudes towards ICT, knowledge of ICT, and skills of ICT (see Appendix 12). To analyse change in these particular areas in the participants' responses, both the descriptive and comparative discussions were examined. While discussing the areas, both the number and percentages of the responses, and the respondents were carefully considered.

In addition to the interview and questionnaire data, the participants were closely observed during the six-week VLE training to collect their reflections, opinions and statements. The participants' contributions to an online Forum, Blog and Chat were noted as valuable data to triangulate the findings of the interviews and questionnaires.

5.9 Reliability and Validity

Validity and reliability are two immensely important concepts in authentication of any research and understanding. Applying these concepts is essential in a successful research project. Reliability means consistency and refers to the fact that the results of a research instrument stay consistent over time and between different respondents. It is important for a research instrument to be reliable for it to be as accurate as possible (Cohen et al., 2007). Validity is another basic concept that applies to the fulfilment of the purpose of the research and that the research instruments are designed for the purpose. For example, if a researcher aims to measure the effectiveness of teaching strategies of a teacher, then it would be invalid if they ask about students' favourite hobbies or family structure (Coleman, 2007).

It is important to note that a reliable instrument is not always valid, that is, an instrument might give consistent results but might not be valid, as it may not fulfil the purpose of the research. An example would be the IQ test, widely considered valid for measuring intelligence in that gives the same results for test-takers over a period of time (Coleman, 2007).

5.9.1 Reliability and Validity of Questionnaires

Questionnaires are an unmatched source of quantitative information from a target group. The test-retest method is widely used in order to check the reliability of a questionnaire. This can be achieved by asking the target group or a part of that group to answer the questionnaire and sometime later calling on them again to fill out the same questionnaire (Coleman, 2007).

Other methods of ensuring reliability in any research include checking the results of the questionnaire in a pilot study, comparing the results of the questionnaire with other measurable records such as employees' records, or randomly checking the answers of the questionnaires by contacting the respondents to see if their answers match the ones provided earlier. In the third method, respondents who completed the questionnaire are selected randomly for interview to verify their responses and views (Cohen et al., 2007).

Another good means of measuring reliability of the questionnaire is Cronbach's alpha, a tool to measure the consistency of all items in the questionnaire containing Likert-type questions. Cronbach's alpha reliability coefficient may be any value between 0 and 1. If the value of the coefficient is between 0.80 and 0.90, then the questionnaire is regarded as 'highly reliable'. Similarly, if the value of alpha is more than 0.90, then the questionnaire is regarded as 'very highly reliable' (Santos, 1999). **Table 5-4** explains the reliability of the questionnaire used in this research. According to Cronbach's alpha the results of the ICT usage and ICT skills parts of the questionnaire are 'highly reliable' as the alpha is between 0.80 and 0.90. Similarly, knowledge of ICT and attitudes towards the ICT parts of the questionnaire are 'very highly reliable' as they are more than 0.90. In short, the results of this instrument are highly reliable: see **Table 5-4**.

Table 5-4: Reliability (Cronbach's Alpha)

Factor	Number of Items	Alpha
ICT Usage	16	0.85
Attitude towards ICT	18	0.95
Knowledge of ICT	24	0.91
ICT skills	20	0.88

Cohen et al. (2007) point out two causes of invalidity in questionnaires. One is that the respondents do not answer the questions accurately. This invalidity can be reduced or removed by interviewing the candidates again in order to verify the answers. Another cause of invalidity is due to non-responses, which can be avoided by tracing those people and by conducting interviews. It is, however, an expensive strategy. This cause of invalidity can be removed if the response rate is high (Coleman, 2007).

5.9.2 Reliability and Validity of Interviews

Interviews can either be structured or unstructured. If they are structured then the approach to reliability is similar to that of questionnaires. However, if they are unstructured then the researcher needs to evaluate whether taking an unstructured interview enhances the validity or not. This is important because, if it enhances the validity, the researcher should not worry about the reduced reliability. This is significant because reliability of an instrument is important as long as it facilitates achieving validity, but if achieving reliability makes the researcher compromise validity then it is better to compromise on reliability (Powney and Watts, 1987).

Invalidity in interviews is caused by biases, that is, interviewer bias, characteristics of the respondent, nature of questions, and so on. This cannot be completely removed as bias is bound to be present. However, this cause of invalidity can be reduced by validation. In this approach, the researcher transcribes interviews and has the transcripts checked by the interviewees to ensure accuracy of the contents (Cohen et al., 2007).

5.10 Ethical Considerations

Silverman (2011) takes the view that every social researcher who uses humans as subjects must take into consideration ethical concerns. The ethical implications that apply to case study are also significant as university teachers are the participants and the research subject may be considered sensitive. Basically, the goal of ethics in research is to ensure that the participants will not be harmed at any stage of the research process (Flick, 2006). Thus, in conducting this study, the researcher avoided any unethical behaviour.

In addition, the researcher gave attention to some issues that could arise from the research problem itself: the setting in which the research took place, the method of data collection, the research participants, and the type of data collected – sensitive personal information (Frankfort-Nachmias and Nachmias, 1996).

The researcher submitted the proposal for the project to the ethical committee of the University of Southampton. After the committee was assured that the study would meet all the ethical provisions as laid down in the University's research charter and in other legal provisions, the researcher was allowed to continue.

The participants made a voluntary and informed decision to take part in the study. They were assured that they were free to withdraw at any point during the study if the need arose. In addition, the purpose and intentions of the study were made clear to them to ensure that their participation was voluntary.

The terms of privacy and confidentiality were made clear to all the participants prior to their enrolment for the study and before the interviews and questionnaires were administered. They were also assured, both in writing and orally, that their responses would be used solely for the study, and that the researcher would not disclose their identity to third parties without their consent.

The need to keep track of the individual responses from the interviews and questionnaires created a challenge for the researcher. This was addressed by giving each respondent a numerical code. Only the researcher knew the numerical code and the corresponding respondent. The responses would make no sense in the event of their accidentally falling into the wrong hands.

5.11 Summary

This chapter has explained the research design, methodology and research methods, including methods of analysis, sample, validity and reliability. It discussed how the study was piloted. Some important changes were made as a result of the pilot of the instruments. This chapter has also clarified how the participants were obtained, the design of the questionnaire, implementation of the VLE, collection of data, analysis of data, and ethical issues. The findings of the study are revealed in the next chapter.

Chapter 6 Results

6.1 Introduction

Information and Communication Technology (ICT) is widely recognised by researchers, educationists and teachers as an advantageous tool which can enhance the speed and quality of educational activities. The United Nations Educational, Scientific and Cultural Organization (UNESCO) states that,

Information and Communication Technology (ICT) can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers' professional development and more efficient education management, governance and administration (UNESCO, 2009).

Rodrigo (2001) points out the importance of ICT, particularly in developing countries, as she reiterates the benefits of this in education and its capability in providing updated information to students. On the other hand, according to Watson (2001: 251),

research indicates that teachers are both threatened by change, and conversely not impressed by change that appears to focus on what the technology can do rather than on learning.

As this research investigates the impact of using a VLE upon use of ICT by Jazan University teachers, it focuses on the effects of the VLE - a form of ICT - on the usage, attitude, knowledge and skills of these teachers. To achieve this objective, the study reviews current ICT usage to determine possible steps that may improve their performance through engaging in ICT in their professional practice. Additionally, the researcher has used both qualitative and quantitative research methods where the research participants have been interviewed, and questionnaires have been used to gather data from the Before and After stages of the VLE training programme. Besides, the developments and changes of teachers' usage, attitudes, knowledge and skills on ICT have been closely observed during the VLE training sessions by following their reflections, statements and feedback in the online Forum, Blog and Chat.

In the following sections of this chapter, mainly two types of data are presented. Firstly, the interview findings are reported with explanations and examples. Later, the results of using ICT by the teachers of Jazan University at their pre- and post-tests are provided. Additionally, some statements of the teachers during participation in the VLE training programme have been provided so the changes in these teachers' ICT-related perspectives are understood.

The overall data can be presented according to the following theme-based chart:

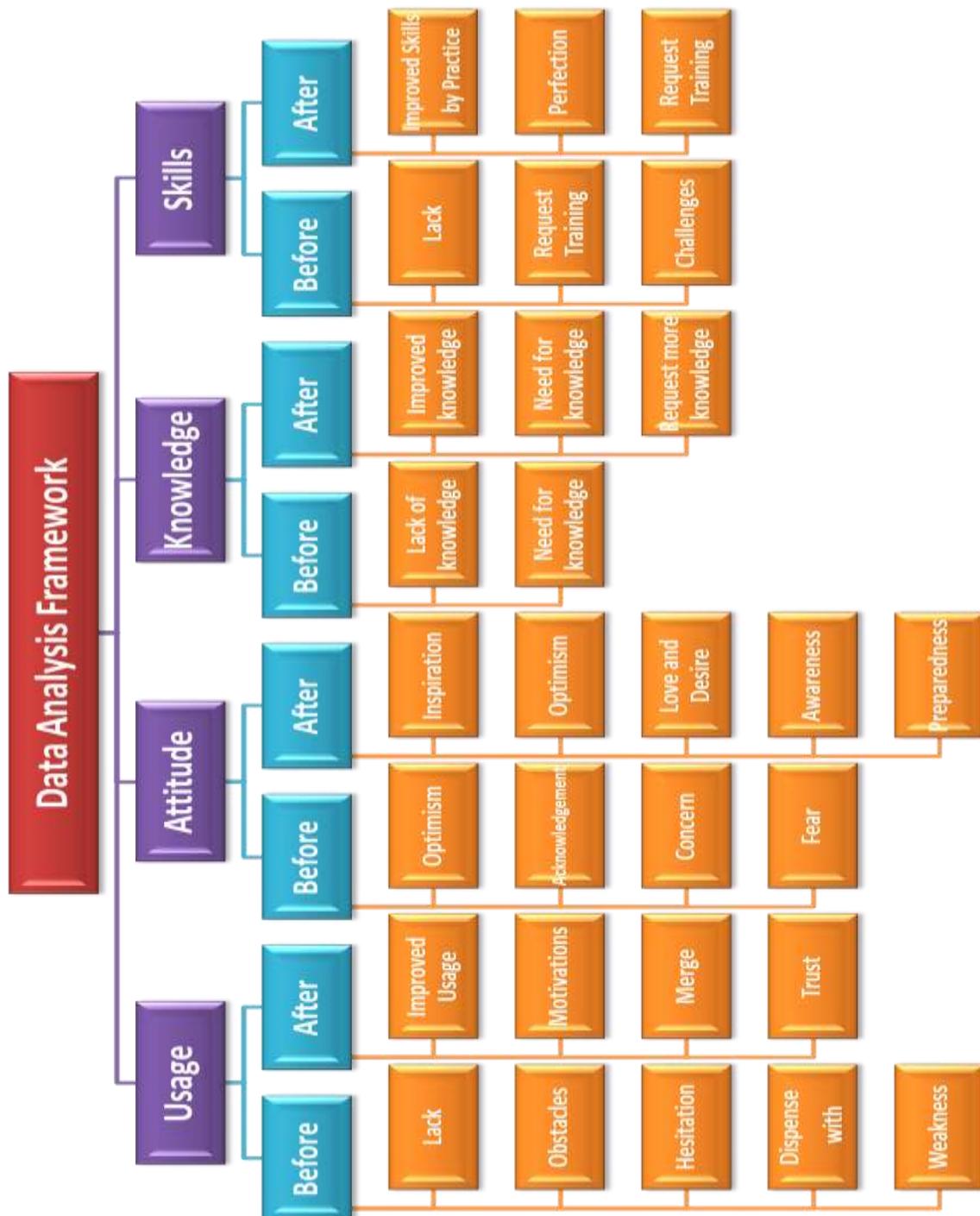


Figure 6-1: Theme-based Data Presentation Chart

Figure 6–1 represents an overview of the outcomes of the teachers’ usage, attitude, knowledge, and skills concerning implementation of ICT in their professional practice. To observe the changes in their perceptions and their use of ICT in teaching, the findings of interviews and tests are separated into Before and After VLE training stages. Additionally, each area of interview findings from 40 teachers at the pre- and post VLE training stages is segmented into a number of themes. The aim of classifying the opinions of the respondents under these separated themes is to help the reader understand and compare participants’ perceptions and stance (during the Before and After VLE training stages) on individual behavioural and practice-related aspects. A number of reflections and comments of the participants participating the VLE training are also mentioned in context to show their change of attitudes, knowledge, skills and the usage of ICT in teaching. While presenting the findings, alphabetical and numeral codes are used instead of interviewees’ names to ensure anonymity. For example, in the case of Interviewee UT6B and Interviewee UT6A, UT stands for University Teacher, 6 refers to the interviewee number, and B and A indicates whether the respondent is interviewed Before (B) or After (A) the VLE training programme. Similarly, when Interviewee UT6W is used; UT refers to university teacher, 6 as the interviewee number, and W as While or at the time of the VLE training situation. It is important to mention here that, in the descriptions, the words ‘*a few*’, ‘*some*’, ‘*many*’ and ‘*most*’ are used in a regular manner to give the number of respondents. Each indicates a specific range of participants listed below:

<i>a few</i>	:	less than 5 participants
<i>some</i>	:	6 to 15 participants
<i>many</i>	:	16 to 25 participants
<i>most</i>	:	26 and above participants
<i>all</i>	:	40 (the total number of participants)

Similarly, at the While stage the participants used some expressions that can be considered as positive (such as ‘it is interesting’, ‘really a good tool’, and ‘it is working well’), and negative or the expressions of difficulties (such as ‘it will not work’, ‘it is very difficult’, and ‘I cannot do it’), perceptions and experiences. The findings of this stage are included in the beginning of the discussions of the After training stage.

In addition to the interview findings, the pre- and post-VLE training questionnaire results have been analysed using SPSS and MS Excel, and the findings

are provided for each of the four sections so that readers can triangulate and compare them for better understanding. The overall impact of the VLE has also been analysed in terms of gender, and the academic schools in which the participating teachers teach at the university.

The focus of the analysis with SPSS was mainly restricted to the four research questions of this thesis that were set to investigate the change of usage, attitude, knowledge and skills of ICT in the teaching of Jazan University teachers. It is imperative to note that a repeated measures t-test has been conducted for analysing the data which subscribes the following assumptions (Field, 2009):

- a) Similar variances in each experimental condition
- b) Independent observations
- c) Random allocation subject to groups
- d) Dependent variables should be continuous
- e) Normal distribution of the dependent variable.

6.2 Usage: Findings by Interviews

Usage, the first area, contains the perceptions and recommendations of the interview participants about their personal experiences concerning the use of ICT in their professional practice. The information collected through interviews before the training is categorised under five themes, namely Lack, Obstacles, Hesitation, Dispense with, and Weakness regarding the use of ICT. Opinions collected after the VLE training is characterised in four areas: Better Usage, Motivations, Merge, and Trust.



Figure 6-2: Usage of Information and Communication Technology

6.2.1 Interviews: The Before Stage

- Lack



Figure 6-3: Main Areas of Lack of ICT Usage

The interviews held before the VLE training reveal that the use of ICT in teaching by the university teachers is not high. Most of the participants admitted that they did not use ICT, and even consciously avoided such materials in their professional practice. The comment of UT3B ‘I use PowerPoint or the projector only...’ may give an idea about the

degree of ICT usage by these teachers. However, some interviewees showed their confidence in the effectiveness and efficiency of the technology to some extent, but they also mentioned its rare use in their professional activities. Interviewee UT37B's remark 'it is difficult to say that I'm a good user of technology in [the] teaching process because, in fact, I rarely use it...', and Interviewee UT38B's comment 'in fact I want to use it effectively' may show a positive response and eagerness for using technology in teaching.

Through interviews, a number of reasons for not using ICT in teaching were identified. Some respondents mentioned 'less frequent use' (UT18B), 'lack of confidence' (UT5B), 'personal weakness' in application (UT29B), and 'unavailability and lack of infrastructure' (UT6B). UT12B mentioned that 'only a few teachers use technology in teaching and this discourages [him] using it for teaching', which means that there is neither peer influence nor support for using ICT at the university. In this connection, a few interviewees considered that making the students and the teachers aware of using technology in teaching and learning is important. Here, UT16B's statement can be considered very significant. He asked:

How can I implement using computer [or technology] if they [the students] do not use it for their studies? My colleagues are very reluctant to use it. I cannot think of any way for using this for better education if we all do not start using it regularly, and the use should be for both teaching and learning. (Interviewee UT16B)

Additionally, some respondents felt the need to establish the essential technical infrastructures and facilities so that they could use technology in their 'actual life' (Interviewee UT10B) and thus obtain the full benefit. Interviewee UT10B urged the university to help to enhance the use of ICT in the following way:

Our university should provide us all necessary ICT equipment so that we can use them outside the university campus. If they give us the tools we can use them at home at our free time and can take more advantages from them. (Interviewee UT10B)

It was found that at this stage only a few teachers used ICT, and they made very limited use of it. According to the interview findings, the reasons behind this are mainly the lack of confidence, lack of practice and lack of technological facilities. However, the teachers indicated their eagerness to use ICT tools in their teaching.

- **Obstacles**



Figure 6-4: Main Obstacles in ICT Usage

In addition to the lack of usage of certain technologies in the field of education, a number of inevitable obstacles that hinder university teachers from using ICT sources were found in the interviewees' comments. These included lack of time and fear of anticipated technical problems. Some respondents told about their busy academic schedule and how they 'have no time to either use technology or prepare the lessons by technology', as commented by Interviewee UT19B. Additionally, according to Interviewee UT1B 'it needs much time in preparation and designing an educational programme for a lesson or Chat with students for an example'. Interviewee UT29B drew the following detailed picture of the obstacles the teachers face:

I count many problems and obstacles that hinder my effectiveness while using technology in colleges. There is unavailability of infrastructure such as computers and internet connections, unavailability of training to the teaching staff. Besides, there is the problem of the acceptance of the students to the new technology, and the fear of some of the teaching staff, the acceptance of some of the old colleagues to this technology, and also the high cost and the lack of awareness of the society about the benefits of it. (Interviewee UT29B)

However, most of the teachers showed interest in using technology in teaching if they had enough time to do so. Another factor that found hindering these university teachers from using technology was an anxiety and fear about the complex applications of modern technology. Interviewee UT5B mentioned that he does not use technology in teaching 'because of the fear of technical problems' that he may experience during presentation of his lesson and 'the embarrassment' that he may face. He asks,

Can you imagine a situation where I am trying to fix a problem with my computer? Is not it embarrassing? I am really worried to think of this situation. (Interviewee UT5B)

Students and teachers themselves are also regarded as obstacles to using technology by a number of respondents. This was indicated by Interviewee UT10B, 'technology is very fast in presenting lessons' and 'students do not like the speed'. On the other hand, some teachers believed that they are too old and are not 'suitable for using modern technology', as indicated by Interviewee UT12B. As a result, many of the teachers expressed a preference for traditional approaches. For example, Interviewee UT10B said that '[he]... likes to explain in a traditional way and slowly to make [the students] understand the lesson'.

Similarly, some teachers raised the issue of the lack of awareness by students of the benefits of teaching and learning through the use of technology, and the resistance from their colleagues who considered this as a threat to the country's culture and tradition. Interviewee UT18B said,

Internet is dangerous for students. It kills their (the students') study time and spoils them. Students watch many movies which can destroy their culture, and even their life.... (Interviewee UT18B)

Many teachers were also unsure how the students would respond to a technology-supported teaching and learning environment. Interviewee UT13B registered his concern about how they would 'argue in an educational forum' which is technology-based. Some teachers also thought that there might be resistance to new technology. A comment by Interviewee UT18B supports this view: 'resistance against everything new and for sticking to the old and as a result, there is a resistance to using technology and keeping only the traditional ways...'. Some interviewees also mentioned that many of their colleagues think that the use of technology is harmful for Saudi Arabia and the culture of the country. This view is illustrated by Interviewee UT33B:

[ICT] classifies teachers in a higher class than the students which prohibits the teachers, for example, to Chat with their students or share in any activity in a Forum. This culture ties the relationship between the teachers and the students only in class.

Moreover, one interviewee believed that the teachers do not ‘use technology in Saudi Arabia and other Arab countries [because of] the fear of anything which comes from the western countries, and there are deliberations before using it until there is assurance that it is fit for the local environment and the culture’ (Interviewee UT33B).

- **Hesitation**



Figure 6-5: Main Areas of Hesitation in Using ICT

Hesitation was also considered by the interviewees as a chief factor for their very limited use of technology. Although a few interviewees believed that they ‘do not know the real causes’ behind their hesitation (for example Interviewee UT9B), others mentioned difficulties in ensuring a suitable technological set-up in the classroom and problems with some of students using fake identities.

Interviewee UT12B commented that ‘it isn’t easy to use technology in the class directly’, and before using it in a class the teachers have to ‘think a lot and then can start the new mission’ which might contribute to their hesitation in using the technology. By recognising the importance of this problem, one teacher urged that ‘the university should try to eliminate such hesitation of the teachers in using technology and encourage them to be more confident in using them’ (Interviewee UT27B).

Again, some interviewees shared their hesitation regarding possible fake identities of students in technology-enabled forums; they think that ‘some students registered with different names may insult [them] in such forums’, a view typified by Interviewee UT20B, and ‘may make [the teacher] fall in trouble with the students, or the topics of the discussion may not be related to the educational subjects which may cause problems’ (Interviewee UT31B). Moreover, some teachers were not interested in competing with the young, considering them to be ‘the generation of technology’ who are ‘better users’ than themselves (Interviewee UT2B). These teachers are often afraid

of making ‘a mistake which can be embarrassing’, according to Interviewee UT2B. His comment establishes that these difficulties were the prime reasons to become hesitant to use ICT in teaching:

I really do not want to compete with my students as I know they can work faster with computers and the Internet than me.... I will be in a bad situation when I cannot do a simple thing with computers, but my students can do. (Interviewee UT2B)

- **Dispense With**

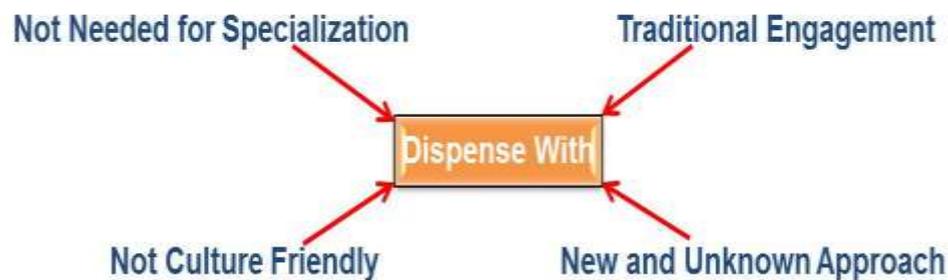


Figure 6-6: Main Areas of ‘Dispense with’ in ICT Usage

The use of technology was mentioned by many interviewees as a non-essential attribute for effective teaching or gaining professional expertise. In this regard, some of them mentioned issues such as dispense with, tradition, and specialisation, which they regarded as conflicting with the use of ICT in the classroom. According to one interviewee,

Why should I change my method which I have been using for more than 20 years? I'm happy with my traditional way which I know, and my children like it. So, I don't have to take a new method. Maybe I won't apply it correctly. (Interviewee UT12B)

Some teachers referred to their vast experience and expertise in the traditional approaches. For example, the comment of Interviewee UT15B that ‘I have learnt by experts and outstanding teachers’ may explain why these university teachers do not feel it is important to accept any new methods or approaches with which they are not confident or convinced about. Another factor is the field of specialisation, where teachers do not feel the need to apply technology. Most of the interviewees, exemplified by Interviewee UT31B, felt that their teaching specialisation ‘depends

basically on reading from the book, and the rules of recitation required to read with own voice by the students' and they are not certain how technology may serve this kind of specialisation. In relation to this, the issue of Holy Qur'an studies was raised by an interviewee who thought that the teaching of the Holy Qur'an depends only 'on indoctrination through the normal method', and this 'does not need a projector or a computer in the classroom' (Interviewee UT6B). Moreover, it was also found in the interviews that the present nature of specialisation in Saudi Arabia is 'mainly theoretical [and] doesn't need photos, videos or educational programmes', and 'doesn't oblige the teachers to use technology', as Interviewee UT30B explained.

- **Weakness**

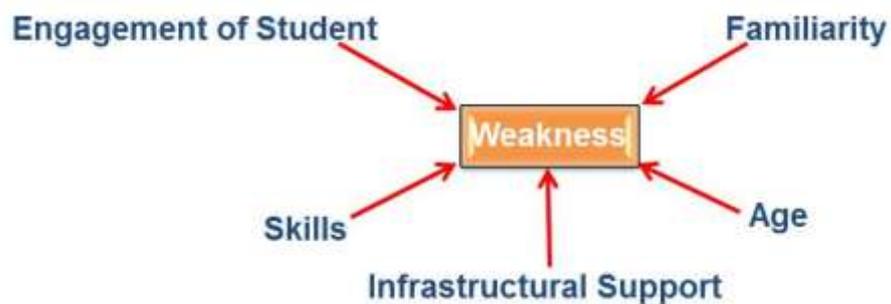


Figure 6-7: Main Areas of Weakness in Using ICT

Interviews have shown that some respondents considered themselves to be weak users of the new technology. They also considered this as one of the major barriers to the effective implementation of ICT in the Saudi Arabian educational setting. According to them, the main reasons for the weakness were their unfamiliarity with varied technological applications in teaching and learning, and the inadequate relevant infrastructural facilities at university. Interviewee UT19B described this matter elaborately:

Every day we hear about new technology... they are very complicated to understand and use... I think, the university does not try to use them as it does not have the facilities to use them. (Interviewee UT19B)

As a result, Interviewee UT2B suggested that there is 'a general weakness in using technology in education' as the teachers do not explore other applications beyond using 'internet for references' for research work, and Power Point for preparing lessons' for teaching in the class.

According to the interview findings, some interviewees thought that the main reason for the limited use of technology is because they are ‘too old for activating the technology’ (Interviewee UT12B) for teaching purposes. Mentioning that some teachers do not use technology in teaching, Interviewee UT1B stated that they ‘have no experience... not only in teaching, but also personally’. Interviewee UT9B suggested that there is a severe ‘lack of availability of infrastructure and the awareness of the students about the benefits of the information and communication technology’, which in fact works as a barrier to building confidence among the teachers. Furthermore, the lack of skills of both the teachers and students are ‘also considered influential in this regard’ (Interviewee UT19B). It was also found that the interviewees used technology only in research work, and not for teaching. For example, Interviewee UT15B mentioned that he uses electronic references frequently for his private research, but he is not interested in letting his students use it, ‘although it may be an important source of knowledge’ for them. However, from the opinions of the interview participants it was clearly reflected that the availability of suitable infrastructure can be helpful in eradicating the limitations of skills for the enhanced use of ICT and to ‘raise the rate of technology usage in the educational process’ (Interviewee UT39B). Interviewee UT36B provided the following concrete statement on this:

I do not think there will be any problem using ICT in teaching if we get some training on it. However, we will need the necessary equipment along with a regular maintenance support. (Interviewee UT36B)

6.2.2 Interviews: The After Stage

While attending VLE training, most of the teachers started showing an interest in learning about them. It was found that some had fears and lacked confidence using some ICT tools such as Smartboards (Participant UT29W), Blogs (Interviewee UT11W) and video-conferencing (Participant UT 14W). Participant UT14W wrote in the Blog that he was practising to ‘keep a good flow of talking in a video conference’. Again, Participant UT25W found that using Excel is ‘complicated and very difficult to use efficiently’. Again, while chatting, Participant UT20W mentioned that he uses some PowerPoint slides, but they are not attractive to the students. However, while receiving VLE training some teachers showed an eagerness to use some ICT tools in future teaching. Participant UT20W’s request, ‘Sir, please help as I am going to prepare

an e-quiz', written in the Blog, can be an example of this. Moreover, it was observed that many teachers asked various types of questions regarding the use of a number of ICT tools such as Smart board, Blogs and PowerPoint presentation slides.

After receiving the VLE training and a regular practice of using various ICT tools, the teachers expressed their changed views regarding the use of ICT in their teaching.

Research findings of the After VLE training stage showed contrasting views on the use of ICT in teaching. In interview, the teachers told of their increasing technological usage in professional practice. The findings in this stage can be separated under four themes: Improved Usage, Motivations and Features, Merge, and Trust.

- **Improved Usage**



Figure 6-8: Main Areas of Improved Usage of ICT

In fact, my use of modern technology has increased... specially Microsoft Office programmes such as Word, Excel and PowerPoint, which I use in teaching all my subjects. (Interviewee UT18A)

The interviews held with the university teachers at the After VLE training stage revealed that the interviewees were using ICT more in teaching as they believed they received much benefit. Additionally, they were convinced about the positive results of using ICT, and were also motivated to increase its application in their professional use. Some participants, for example Interviewee UT5A, acknowledged that they 'didn't expect that technology could be used in so many ways'. ICT has opened many new doors to them and they are now using email, database, Chat and PowerPoint variously for teaching and learning purposes. Some interviewees mentioned that they are now using MS Excel and consider it to be convenient for getting statistical data 'to register the students' attendance and their marks after tests' (Interviewee UT6A). Some

interviewees now believed that the VLE training had helped them considerably. A positive view was shown by Interviewee UT36A, who said that he had begun ‘to realize the benefits that [he] can get from technology’. Interviewee UT40A accepted that the benefits of ‘the Microsoft Office programmes and internet are very useful...’.

It was also evident that the university teachers had different reasons to use ICT. While sharing personal experience about how the students are involved in the ICT-based activities, Interviewee UT10A stated that he had recently started using technology with his students. Now, he sends them homework by email, and has ‘formed a group of students to make all the lessons in PowerPoint’ (Interviewee UT10A). In this way, the use of technology is now being extended to new academic activities. Another example was given by Interviewee UT25A, who said that he had opened a Forum on the subject he teaches where the students ‘store all the files and the material which enrich the discussion and communication together.’

Most of the interviewees also expressed satisfaction in using technology in teaching. A positive response to ICT was reflected by Interviewee UT28A, who said that if he did not start right now, ‘it will be too late to enjoy all the benefits’. Similarly, Interviewee UT4A identified many positive effects of the training programme that had made him ‘aware about the importance of technology’ and supplied ‘all available methods that can achieve a better response from the students’. Interviewee UT36A expressed his satisfaction on the training and showed gratitude to the researcher, who conducted the training. Being motivated, some interviewees were enthusiastic to employ ICT in teaching their subjects. Interviewee UT3A was ‘convinced with the benefits [of technology], especially after learning new methods which has made him curious about what it will do if he uses it in his subjects’.

- **Motivation**



Figure 6-9: Main Areas for Motivation for Using ICT

Interviews received at After VLE training stage reveal a change in the interviewees' motivational aspects. Various responses disclose a number of motivational features such as practical benefits of technology, students' positive responses and cost effectiveness while using technology for teaching.

The interviews showed that at After VLE stage the teachers were more motivated to use technology as they realised that they could obtain a vast amount of information speedily and that technological applications, such as Excel, can help them to be 'more accurate' (Interviewee UT18A). With the example of using presentation of the educational material by PowerPoint, some interviewees also found ICT in the teaching and learning processes 'attractive as the students are attracted to it' (Interviewee UT25A), as they can escape monotonous learning processes. Additionally, it was understood from their remarks that maintaining students' attention on the lesson is a major challenge for teachers, yet is easily tackled by using technology such as PowerPoint. Interviewee UT40A considered that 'simplicity and fluency are the characteristics of technology' as they help a teacher control the presentation and also the content. Besides, it saves labour and money, and can 'take the students back to the slides which they want' (Interviewee UT12A). 'Both the students and the teachers don't comply with certain place or time' (Interviewee UT8A). In this connection, the use of the internet was particularly mentioned as helpful by the interviewees, who considered it a 'fast and safe' (Interviewee UT10A) medium by which to communicate with students. The positive feedback from the students was reflected by Interviewee UT38A, who thought that 'technology presents fast communication in different ways, in many styles of presentations through saving and evaluation facilities', which also showed learners' motivation as a result of teachers' ICT use in teaching. Similarly, this was inspirational for the university teachers when they 'see the good results and the benefits' (Interviewee UT38A) from their students.

Although the interviewees did not claim that their use of technology had increased dramatically, descriptions of their recent experiences and opinions showed a heightened motivation towards its use in teaching, both within and beyond their workplace. This fact is well described by Interviewee UT3A's following response:

Although I don't use it too much now, it is however better than the past. It doesn't oblige me to do at a certain time and I can do it in the evening at my residence (Interviewee UT3A).

- **Merge**

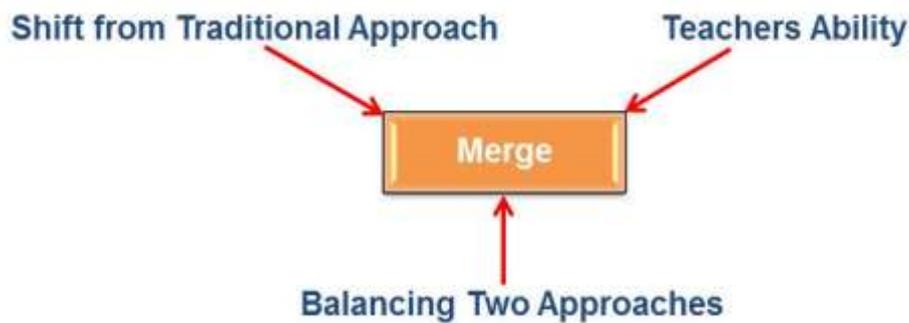


Figure 6-10: Main Areas for the Merge of Using ICT

While the interview findings showed an increasing rate of ICT usage by the university teachers, some of the interviewees identified that they are merging traditional and new (the technology-supported) methods in their teaching. Some interviewees mentioned that the major benefit of using ICT in teaching is that it provides an opportunity to include new methods of obtaining knowledge and information. According to them, many university teachers have the capability to update both.

In interview, some respondents such as Interviewee UT36A agreed that they previously relied wholly on traditional ways of teaching, and now have more flexibility and convenience by using technology. Some interviewees, such as Interviewee UT18A, believed that combining the two methods is important to achieve the desired benefits. In this regard, most of the interviewees identified the need to incorporate the traditional approach and argued that there is ‘much significance for traditional methods in teaching’ (Interviewee UT23A). Some interviewees, for example, Interviewee UT11A, mentioned that they had not given up their traditional ways, but were trying to merge their approaches. Interviewee UT40A thought that the presence of both methods would make teaching and learning comfortable and allow the teachers to increase the use of modern technology in their profession.

- **Trust**

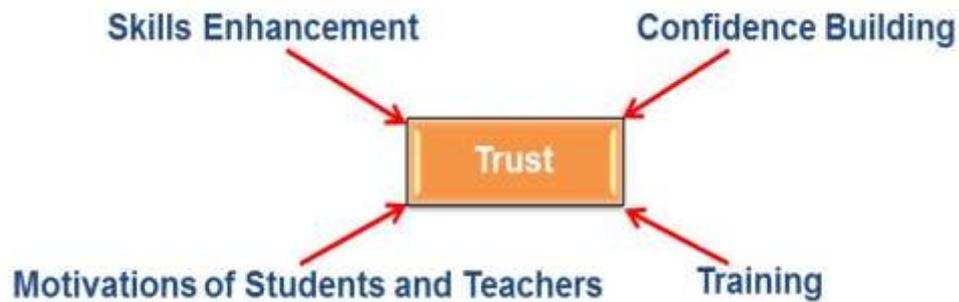


Figure 6-11: Main Areas for the Trust in Using ICT

Having trust in any teaching and learning approach is important for its continuous and effective application. In the interviews at the After VLE stage, a growing confidence in using technology-based teaching and learning material was reflected by many participants. According to a number of interviewees such as Interviewee UT17A, ‘it is not possible to be successful in using technology in teaching by teachers if they do not have any trust in it’. They also referred to building confidence through enhancing applied skills in technology, which ‘is really important for keeping trust in it (Interviewee UT4A).

Regarding confidence and trust building, some interviewees considered that proper training is vital as it ‘calls [a trainee] to use and depend on it’ (Interviewee UT26A). Some interviewees reflected on their increasing use of technology in teaching, claiming it as a sign of their ‘growing trust in it’ (Interviewee UT10A). It was also found that, because of confidence and trust in the benefits of technology, these university teachers were trying to motivate their colleagues and students to use different applications of ICT for different academic purposes.

6.2.3 Usage: Findings by Pre- and Post-tests

ICT usage rates before and after VLE training were found comparable through the Pre-test (Before training) and Post-test (After training) results. In the tests the participants (who were also interviewed later) were asked how frequently they used a number of ICT tools. There were 16 tools mentioned in the questionnaire to glean the frequency of information presentation (by using PowerPoint, word processing, Smartboard, overhead projector and slides), communication (by using email, video conference, synchronous

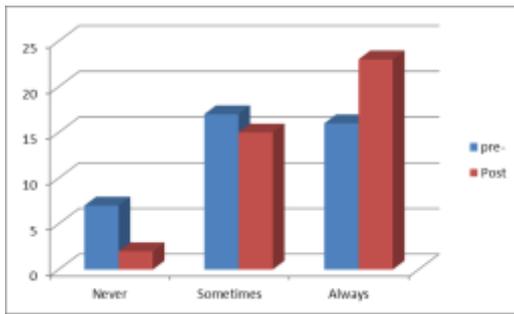
Chat, Forums and Blogs), multimedia applications (by using digital video camera and digital voice recorder), learning assessments (by using e-quiz and e-survey), online discussion (by using internet), and the use of database (such as Excel) by the teachers.

The use of the above tools was recorded at three levels of frequency, and teachers asked whether they 'Never', or 'Sometimes,' or 'Always' use a particular ICT tool, with a value of 1, 2 and 3 were given respectively. The outcomes were then tabulated, and SPSS software was used to analyse them.

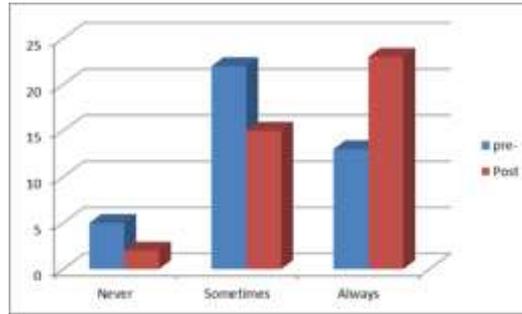
In the following table, the frequencies and percentages of the ICT usage by the Jazan University teachers during the pre- and post-training stages are listed. A comprehensive list of vertical bar charts also shows the change of ICT usage during the Before and After stages.

Table 6-1: Pre-test and Post-test for ICT Usage

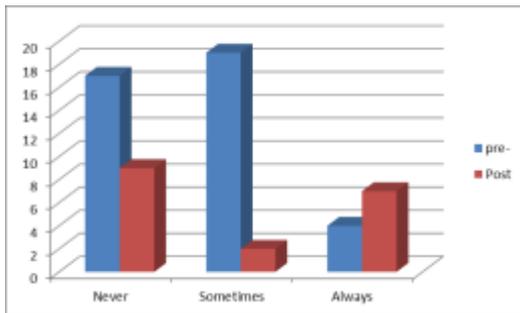
ICT Source		Frequency and Percentage		
		Never	Sometimes	Always
PowerPoint	Pre-test	7 (17.5%)	17 (42.5%)	16 (40.0%)
	Post-test	2 (5.0%)	15 (37.5%)	23 (57.5%)
Word processing	Pre-test	5 (12.5%)	22 (55.0%)	13 (32.5%)
	Post-test	2 (5.0%)	15 (37.5%)	23 (57.5%)
Smartboard	Pre-test	17 (42.5%)	19 (47.5%)	4 (10.0%)
	Post-test	9 (22.5%)	24 (60.0%)	7 (17.5%)
Overhead projector	Pre-test	5 (12.5%)	30 (75.0%)	5 (12.5%)
	Post-test	3 (7.5%)	30 (75.0%)	7 (17.5%)
Slides	Pre-test	6 (15.0%)	29 (72.5%)	5 (12.5%)
	Post-test	3 (7.5%)	30 (75.0%)	7 (17.5%)
E-mail	Pre-test	7 (17.5%)	12 (30.0%)	21 (52.5%)
	Post-test	2 (5.0%)	11 (27.5%)	27 (67.5%)
Video conference	Pre-test	23 (57.5%)	14 (35.0%)	3 (7.5%)
	Post-test	18 (45.0%)	18 (45.0%)	4 (10.0%)
Synchronous chat	Pre-test	11 (27.5%)	19 (47.5%)	10 (25.0%)
	Post-test	4 (10.0%)	22 (55.0%)	14 (35.0%)
Forums	Pre-test	29 (72.5%)	9 (22.5%)	2 (5.0%)
	Post-test	24 (60.0%)	13 (32.5%)	3 (7.5%)
Blogs	Pre-test	30 (75.0%)	8 (20.0%)	2 (5.0%)
	Post-test	23 (57.5%)	13 (32.5%)	4 (10.0%)
Digital video camera	Pre-test	11 (27.5%)	20 (50.0%)	9 (22.5%)
	Post-test	5 (12.5%)	21 (52.5%)	14 (35.0%)
Digital Voice Recorder	Pre-test	19 (47.6%)	16 (40.0%)	5 (12.5%)
	Post-test	15 (37.5%)	18 (45.0%)	7 (12.5%)
E-quiz	Pre-test	29 (72.5%)	10 (25.0%)	1 (2.5%)
	Post-test	26 (65.0%)	11 (27.5%)	3 (7.5%)
E-survey	Pre-test	26 (65.0%)	10 (25.0%)	4 (10.0%)
	Post-test	21 (52.5%)	14 (35.0%)	5 (12.5%)
Internet	Pre-test	2 (5.0%)	23 (57.5%)	15 (37.5%)
	Post-test	0 (0.0%)	20 (50.0%)	20 (50.0%)
Database programmes (Excel)	Pre-test	6 (15.0%)	14 (35.0%)	20 (50.0%)
	Post-test	2 (5.0%)	15 (37.5%)	23 (57.5%)



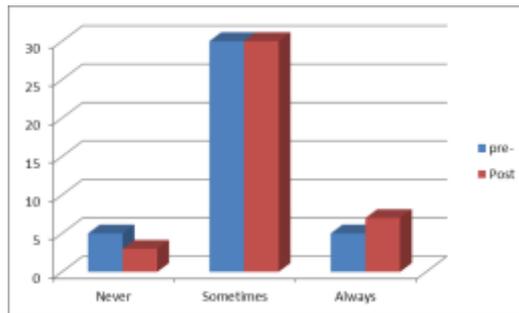
Use of PowerPoint



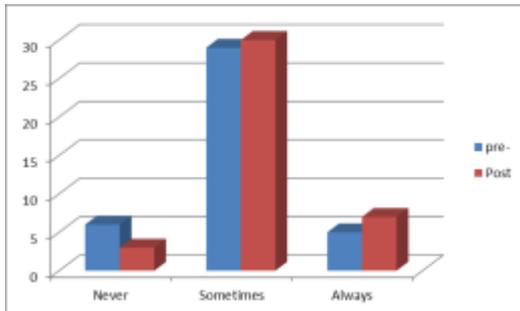
Use of Word Processing



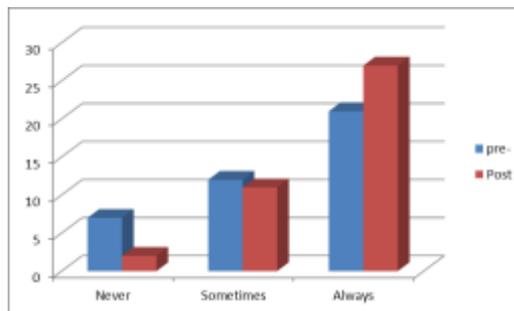
Use of Smartboard



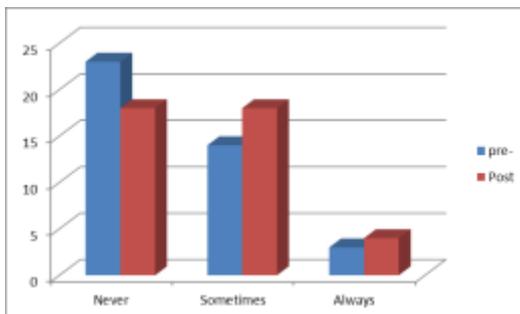
Use of Overhead Projector



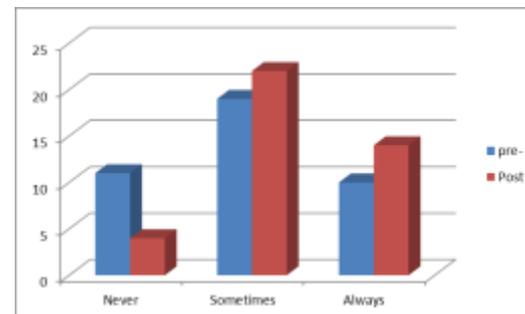
Use of Slides



Use of E-mail



Use of Video Conference



Use of Synchronous Chat

Figure 6-12: Comparative picture of the usage of various ICT tools (1st part)

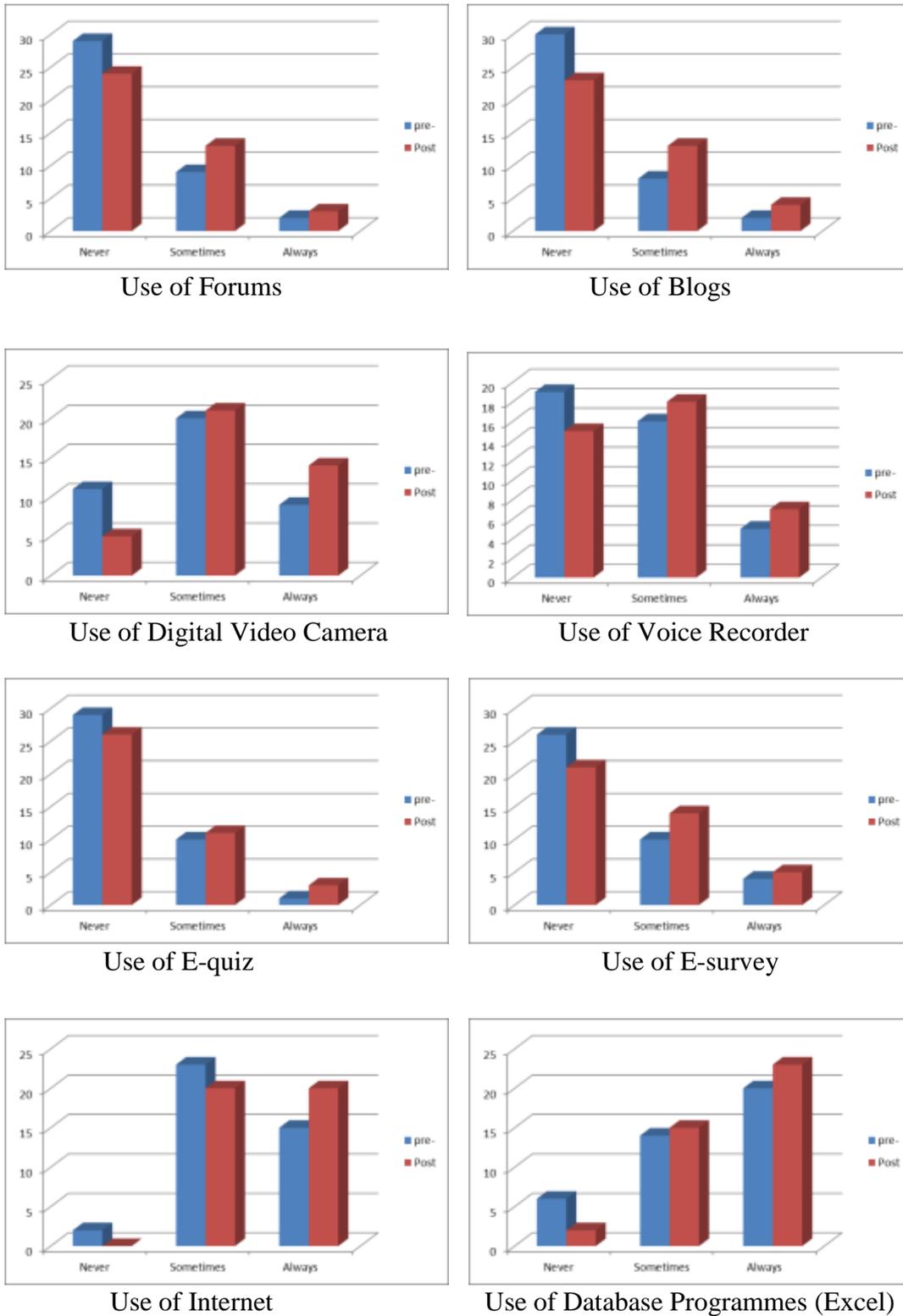


Figure 6-13: Comparative picture of the usage of various ICT tools (2nd part)

The findings are discussed separately below as pre- and post-training stages, and also in a comparative manner.

Pre-test stage

According to the table and the bar charts, before the test more than half of the teachers (ranging from 50% to 75%) made no use of video conference, Forums, Blogs, e-quiz or e-survey, as they responded that they had never used these tools in their teaching.

Around a quarter to a half (25% to 50%) had never used a Smartboard, digital video camera or digital voice recorder, either.

Again, there was moderate usage of word processing, overhead projector, slides, digital video camera and internet by the participants, as more than half of the participants (ranging from 50%–75%) said that they had sometimes used these tools. Around one quarter to a half (25%–50%) also used PowerPoint, a Smartboard, email, video conferencing, synchronous Chat, digital voice recorder, e-quiz, e-survey, database programmes (Excel) sometimes.

However, Table 6–1 illustrates that there was regular use of email and database programmes (Excel) by more than half the participants (ranging from 50%–75%), whereas a quarter to a half (25%–50%) used PowerPoint, word processing, synchronous Chat and internet on a regular basis.

Post-test stage

Based on the Post-test results it was found that there was a moderate usage of Smartboard, overhead projector, slides, synchronous Chat, digital video camera and internet by the participants, as a half to three-quarters (50%–75%) said that they sometimes used these tools. Around a quarter to a half (25%–50%) also used PowerPoint, word processing, email, video conference, Forums, Blogs, digital voice recorder, e-quiz, e-survey and database programmes (Excel) moderately.

Table 6-1 also illustrates that there was a regular use of PowerPoint, word processing, email, internet and database programmes (Excel) by more than half of the participants (50%–75%), whereas only a quarter (25%–50%) used synchronous Chat and digital video cameras on a regular basis in their teaching.

However, the results show that there are still a great many (50%–75%) non-users of Forums, Blogs, e-quizzes and e-surveys. Around a quarter of the total number (25%–50%) have still not used video conference and digital voice recorder even once.

6.2.4 Pre- and Post-test Stages: A Comparison

By comparing the usage of ICT tools by Jazan University teachers at the Before and After VLE training stages, an increase in the regular user of all ICT tools became evident. For example, there was a steep increase in regular users of word processing (25% increase), PowerPoint (17.50% increase), email (15% increase), digital video camera (12.50% increase), and internet (12.50% increase). Similarly, the percentage of moderate users increased in almost all areas such as Blogs (12.50% increase), Smartboard (12.50% increase) and video conference (10% increase). Although the percentage of the moderate users of overhead projector remained the same, and the users of PowerPoint, word processing, email and internet decreased by 5%, 17.50%, 2.50% and 7.50%, respectively, regular usage of all tools increased markedly.

At the same time, there was a significant decrease of the percentage of non-users of each and every ICT tool such as a Smartboard (20% decrease), synchronous Chat (17.50% decrease), Blogs (17.50% decrease), and digital video camera (15% decrease). Interestingly, after the VLE training there was no teacher who did not know the use of the internet.

According to the statistics, the overall use of most of the ICT tools by non-users (who never used those ICT tools) increased significantly. The number of participants who had never used a particular ICT tool diminished in every case. Similarly, usage of ICT tools in a very regular manner or 'Always' increased for each ICT tool. Although the percentages of moderate users (who used the ICT tools sometimes) decreased, this was only because the percentage of regular users, who now always use ICT tools, increased to such a remarkable level.

Data processed by SPSS

In order to understand the impact of VLE on the use of ICT in teaching by the Jazan University teachers, a repeated measures t-test (or Paired Samples Test) was taken. In this regard the following hypothesis was tested.

H_0 : There is no effect of VLE on the use of ICT in teaching

H_a : There is an effect of VLE in the use of ICT in teaching.

In this particular case, independence of the observations was assumed, given that the scores of the questionnaire after the intervention (After training stage) were not

influenced by the scores before the intervention (Before training stage). Further, the subjects were randomly allocated to the different treatment groups. Moreover, the dependent variable (which is the scale summation of the ICT Usage) was continuous.

Normal distribution was tested using histogram at both Before and After stages of VLE (please see Appendix 17) and has not suggested any significant deviation from normal distribution.

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Scale summation for ICT usage post intervention - The scale summation for ICT usage prior to intervention	3.20000	3.03146	.47932	2.23049	4.16951	6.676	39	.000

Table 6-2: t-test results for ICT usage

In conclusion, the t-test rejects the null hypothesis, as it indicates a significant difference of the ICT usage between the Before and After the VLE training [t (39) = 6.68, p < .01, h²= .53].

This therefore implies that the VLE intervention positively affected the ICT usage in teaching by the Jazan University teachers.

6.2.5 Summary of the Usage Results

By studying the interview and tests results it was observed that there was a lack of usage of ICT at the Before VLE training stage. Here, fewer teachers used ICT tools, and they used only a few options such as email, database programme (Excel) and PowerPoint. The reasons were mainly a lack of confidence, lack of familiarity with new technology, and the lack of technological infrastructure. At the After VLE training stage this lack diminished and it was found that the use of a number of ICT tools such as word processing, internet, Smartboard, overhead projector, slides, synchronous Chat and digital video camera increased significantly. Again, there were some obstacles to the use of ICT tools mentioned by the teachers before the VLE training. They said that the unavailability of technological infrastructure, a negative attitude to ICT by some teaching staff and students, fear of technical problems, consideration of ICT usage as a threat to Saudi culture, and the required time for ICT-supported lesson preparation were

the major obstacles to the use of ICT in teaching. However, after receiving the training they showed better motivation and trust in using a greater number of ICT tools.

According to the teachers, they were now aware of the various benefits of technology and how to use it to hold the attention of students and make lessons more interesting. They also acknowledged that they were very satisfied with the facilities they received using various ICT tools, particularly the training sessions and guidelines for implementing in teaching, and now have more trust in them while using them in their teaching. It was found that during the Before VLE training stage most of the teachers showed hesitation in using ICT for teaching as they anticipated unknown problems that they could not explain. Moreover, they were concerned about authenticity of students' online identities, and they did not wish to compete with their students since they thought the students were at a more advanced level. Some teachers also questioned why they should change their traditional teaching of many years' standing. A few of them also thought that it was not necessary at all to involve ICT to achieve professional expertise. Their hesitation and unwillingness to use ICT was reflected in the Before VLE training stage where their ICT usage was very limited. However, it was found that use increased during the After VLE training stage, as many of the teachers started merging technology with the traditional approaches, and found technology helpful.

Although it cannot be claimed from the analysis of the interview, questionnaire and interview data that the usage of all ICT tools has dramatically improved, it was found that the negative attitudes of the teachers diminished, and they had an increasing awareness and motivation toward the use of technology in teaching. Most importantly, for confidence building and for increasing the use of ICT in teaching, teachers appreciated the importance of training.

6.3 Attitudes: Findings by Interviews

The second area of the data collection was about the changes of attitudes of the university teachers to the use of ICT in teaching and learning purposes at the Before and After VLE training stages. The information collected through interviews at the Before VLE training stage was categorised under four themes namely, Optimism, Acknowledgement, Concern and Fear. Opinions collected at the After VLE training stage were characterised in five areas: Inspiration, Optimism, Love and Desire, Awareness, and Preparedness.

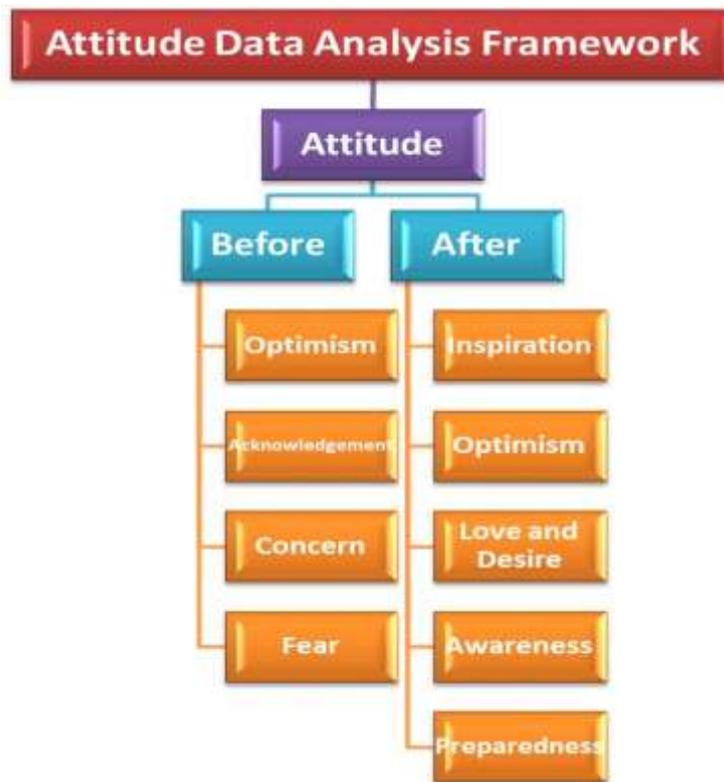


Figure 6-14: Attitudes towards ICT

6.3.1 Interviews: The Before Stage

- Optimism



Figure 6-15: Main Areas of Optimism for Using ICT

I have no a doubt that I have a desire to learn it because it is the future, and if I can't learn it, I will miss the civilization. (Interviewee UT20B)

Although the use of ICT by the teachers before the training was not high, neither was their attitude toward technology negative. Many teachers shared a belief that technology was invented by human beings for greater benefit, as typified by

Interviewee UT5B: 'its future is prosperous although [they cannot] activate it now'. According to Interviewee UT37B, although too old to be technology-friendly, he believed that keeping pace with the time in future, depends on the efficient use of technology. The interviewee stated,

I think, it is very difficult to keep pace with the modern technology by an aged man like me. I am not habituated with them, they are often unknown to me, but I can operate a few technological tools which I must admit. I believe, if I use them regularly, I can overcome all the problems of using them, for me or for my students. (Interviewee UT37B)

Interviewee UT13B predicted that technology will be the main tool of education after five to ten years in advanced countries like the United Kingdom and the USA. Besides acknowledging the rapid expansion of technology and its 'greater usage in the future in all aspects of life' (Interviewee UT2B), some teachers emphasised the 'need of training and continuous practice for becoming technology-literate', as indicated by Interviewee UT29B.

- **Acknowledgement**



Figure 6-16: Main areas of acknowledgement about using ICT

In interviews it was widely found that, although many university teachers did not use technology for their teaching purposes before receiving the VLE training, they still believed that it has potential for teaching and learning activities. Therefore, they felt that the educational activities could be made more convenient by using it. Interviewees such as UT8B were 'amazed by the wonders of technology'. He exclaimed that if he could have had such facilities when he was a student, he would 'have done better in his studies'.

It also emerged in the interviews that some teachers, such as Interviewee UT40, were aware that many of technology-based educational tools have proved useful for

‘successful teaching by teachers and learning by students’ (Interviewee UT40). They also thought that the benefits can now be discussed by referring specifically to various ‘educational processes, members, teachers, students, university and the educational systems’, as identified by Interviewee UT34B. Some teachers also acknowledged that they possessed very limited knowledge and skills about ‘the educational functions of technology’ (Interviewee UT26B). However, others showed trust in technological usage in education. For example, Interviewee UT33B identified that ‘the effectiveness of educational technology is obvious to the students and it can't be hidden’.

Many of the participating teachers, for example Interviewee UT15B, endorsed the benefits of technology in teaching and learning, and also felt the need to gain the required skills to use it effectively in their professional life. Interviewee UT23B explained,

We need continuous training to upgrade our knowledge and skills for better teaching. If we do not know the modern methods of teaching, we will not be able to maintain the standard of present day teaching. I believe, by using technology, specially the Internet, we can learn about modern and effective ways of teaching.

However, some interviewees acknowledged that they did not have enough time to learn it (e.g. Interviewee UT19B), and sometimes they considered themselves as slow learners for that new teaching approach (e.g. Interviewee UT10B).

- **Concern**

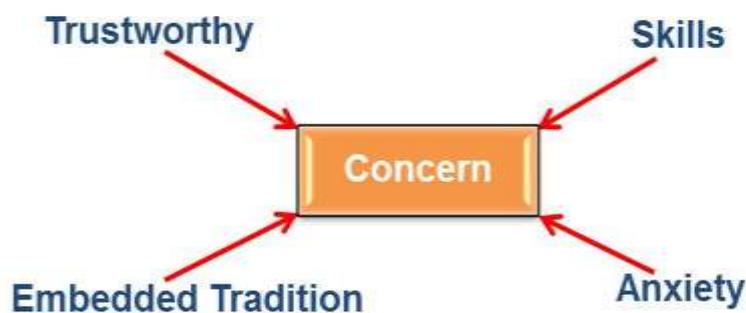


Figure 6-17: Main Areas of Concern in Using ICT

It was found in interviews that the university teachers were concerned about the use of ICT in their teaching during the Before VLE training stage. For example, Interviewee UT23B said:

there is no doubt that most people worry about activating the educational technology of information and communication, perhaps because of the absence of the sufficient skills. (Interviewee UT3B)

According to most teachers, their lack of the necessary technological skills was the main reason for not employing ICT in their teaching. Another reason was ‘worry and anxiety about possible difficulties, while using technology’ (Interviewee UT38B). Again, some teachers, for example Interviewee UT12B, were nervous as they thought that they would not be able to manage their time if they applied technology in their teaching. Additionally, some teachers believed that breaking with tradition would be a matter of great anxiety, as explained by Interviewee UT15B: ‘integration of the created things is a process [that] had been performed for thousands of years with indoctrination’. However, some teachers showed their confidence to overcome their worry. The following reaction of an interviewee is a pertinent example: ‘I won't worry about its activation if I have all the tools that I need, such as the skills...’ (Interviewee UT1B).

- **Fear**



Figure 6-18: Main Areas of Fear of ICT Usage

Who says there is no fear? There is a fear of technology because we only know the basics and we need to learn more. (Interviewee UT22B)

At the Before VLE stage, many interviewees reported their fears about the use of technology in their professional work. According to Interviewee UT18B, ‘both the

students and the teachers have the same fear of this kind of technology in their education'. They mentioned a number of reasons for this, including Interviewee UT33B's statement that 'this approach of teaching is very new in the culture', saying that is why they were not eager to use it. Some teachers were afraid of 'making mistakes while using it' (Interviewee UT5B) as they thought that it might be embarrassing. Many teachers, such as Interviewee UT12B, also had a fear about technology because they considered themselves too old to follow this new approach. Interviewee UT13B was afraid of an ethical dilemma between teachers and students. He said,

The traditional culture classifies the teacher in a certain position and the students in another one. This doesn't allow any kind of communication between the teacher and the students, especially with the girls, out of the educational establishment. (Interviewee UT13B)

6.3.2 Interviews: The After Stage

A change in behaviours and attitudes to the use of ICT and an increased positive perception towards its implementation in teaching were observed during the VLE training. Although at the initial stage most of the participants were eager to learn about the facilities of different technological tools in teaching purposes, many were not confident while operating them. It was often heard from the participants that 'I do not have any idea how it works'. Participant UT13W reflected critically on this issue during the training period that 'there should be detailed information available on the use, advantages, and disadvantages of any ICT tool'. It was observed that whenever some guidelines were supplied to the participants they eagerly started to explore that further and showed their satisfaction verbally and non-verbally. However, in some cases a few teachers wanted more information regarding the operational procedures of a number of ICT tools. For example, Participant UT27W wanted to know more formulas for using Excel, Participant UT22W was looking for a detailed handbook for Smartboard, and Participant UT29W sought guidelines on designing an effective Forum for the student learning. A number of suggestions and feedback was received from the teachers, which indicated the need for further explanations and training on the use of the ICT tools, and at the same time an increase in positive attitudes towards the use of ICT for teaching and learning purposes.

After receiving the VLE training, participants demonstrated their following perceptions through responding to the questionnaire.

- **Inspiration**

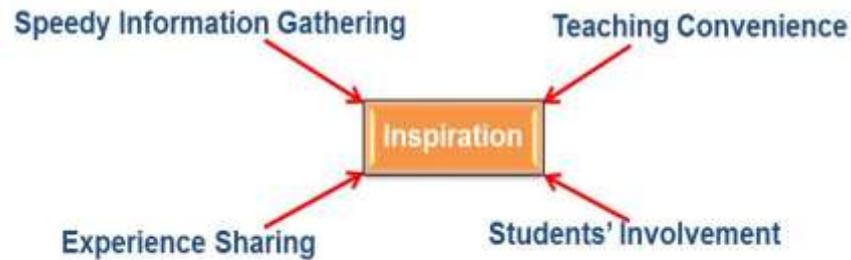


Figure 6-19: Main Areas of inspiration for Using ICT

In the interviews held After VLE training stage, the teachers felt encouraged to use of technology in teaching and reflected on their feelings. According to some, such as Interviewee UT4A, the chance of sharing in the model VLE training programme gave them the idea of applying technology in different ways to their teaching of different subjects, and supplied the ability to obtain information for the respective subjects. Some teachers, such as Interviewee UT36A, also found the use of technology helpful for their students. A number of teachers thought that the technology-supported tools in the VLE training were really helpful as ‘they are available and they make teaching easier’, according to Interviewee UT28A. Most of the interviewees were convinced about the use of technology, reflected by Interviewee UT5A who asked why their university does not apply such kinds of programmes in teaching:

I really do not know why our university does not offer this type of training for the teachers. We attend many training programmes every year, but this looks quite different, but practical and helpful.... This can change the total teaching quality... the university should arrange this programme continuously.
(Interviewee UT5A)

Indicating the facility of experience sharing, Interviewee UT18A added,

I am excited as using ICT (he mentioned about Forum and Blog) I can create a professional circle to share and solve our teaching problems. I am sure using this we can stay together all the time.... (Interviewee UT18A)

Another reason for the teachers' inspiration is the 'high speed of technology in gathering required educational information', as identified by Interviewee UT3A. Some teachers were also encouraged as their colleagues are deeply satisfied using technology in their professional activities. These teachers were motivated to take similar approaches with their students.

Although the experience of using technology for teaching and learning was inspiring for the teachers, still they found some difficulties to overcome. For example, Interviewee UT40A mentioned that 'if the university authority is convinced with their experience, it will inspire them more'. Besides, Interviewee UT33A reflected that there are some teachers in the university who are more skilled in using a number of ICT tools, and they can be engaged to train the teachers who want to learn more about those technology.

- **Optimism**

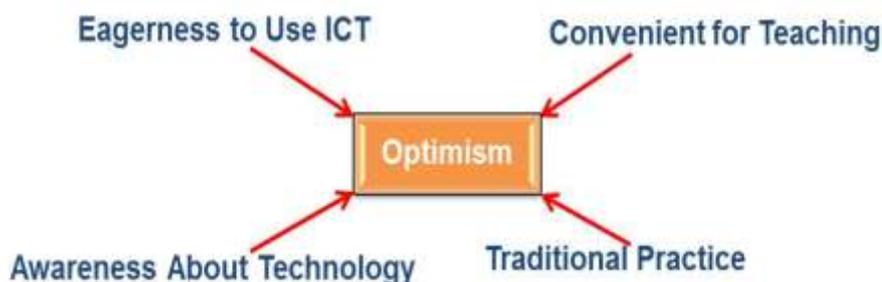


Figure 6-20: Main Areas of Optimism in the Use of ICT

Some teachers believed that this is the generation of technology and therefore the students regularly use it in their personal life. For this reason, Interviewee UT36A suggested that teachers also 'need to use technology for more interactions with their students'. Even so, some teachers were concerned that if they did not learn this now, they would 'not be able to get access to various sources of information', as explained by Interviewee UT3A who also mentioned 'the convenience of using technology' and the fact that 'it makes the communication among teachers and students more flexible'. Much concern was expressed by teachers about universities falling behind, as explained

by Interviewee UT20A: ‘the universities which do not apply the communication technology will fail to grab a place among the universal universities’. Interviewee UT6A added his eagerness by expressing that,

I want to see my students capable to compete with the students of any countries. I want to teach through the best way... I am really convinced that only using ICT in teaching can help fulfil these objectives. (Interviewee UT6A)

Understanding the varied usage of technology in educational practices and observing its overall positive reaction most of the teachers were very optimistic for activating this in their own teaching. Interviewee UT26A confirmed,

I am going to prepare some good PowerPoint slides for my teaching. This is really good... I will make a group emails so that I can send notices to my students so that they never miss them....

In general, most of the teachers wanted to learn more, as they consider technological use as the ‘machine of the educational process’ (Interviewee UT22A). A very positive attitude regarding the optimum use of technology was given by Interviewee UT4A, who reflected, ‘I hope to see the technology in all universities as we see it in some other fields’.

- **Love and Desire**



Figure 6-21: Main Areas of Love for and Desire to Use ICT

We have a great desire to apply what we have learned because we love it. (Interviewee UT6A)

In interviews most of the teachers expressed their love for technology, saying that they really wanted to apply in their educational activities. They shared a number of reasons for this positive attitude. Firstly, they considered that technology gives them a chance

to communicate effectively with their students and colleagues and ‘saves time for getting information for their academic courses’ (Interviewee UT28A). The teachers were highly satisfied and, as Interviewee UT40A put it, ‘they felt the love for the use of technology in their teaching’. Many of them were really interested to take relevant training ‘to know about more functions’ (Interviewee UT13A). Interviewee UT11A shared that many university staff are now interested about this and often ask about the educational processes of teaching by using technology. In his words,

Some of my colleagues are asking me how they can receive this training. I in fact did not know that some of my colleagues really want to teach through ICT, but I can see they do not feel confident doing so. I remember my colleague (he mentioned the name of a teacher) who no wants to learn about Online Forum from me. (Interviewee UT11A)

Generally, it emerged from the answers of the teachers that it is mainly the young teachers who are passionate about using technology, considering it ‘more interesting and easy’ (Interviewee UT2A). However, the teachers agreed that the other teachers of different age groups were also becoming more interested in ICT while they observed the classes and noticed its ‘benefits in transferring information to the students’ (Interviewee UT9A), and ‘the positive involvement of the participants’ (Interviewee UT35A).

- **Awareness**



Figure 6-22: Main Areas of Awareness for Using ICT

I became more aware to know what technology can present to my students and my subject and I became more aware to my need of training of using it. (Interviewee UT20A)

It was noted that the interviewees at this stage shared a higher level of awareness of the use of technology in their professional practices compared to the pre-VLE training

stage. Most of the teachers, such as Interviewee UT13A, now endorsed the importance of general awareness about educational technology for its effective usage. It was found in the interviews that some of these university teachers were aware, in their personal life, 'of responding to the requirements of ICT' (Interviewee UT2A), and some were interested to observe the reaction of the students and other teachers, according to Interviewee UT7A.

Some interviewees, such as Interviewee UT9A, claimed that they had become aware of the importance of technology in education only when they started using it. Additionally, they considered that training sessions can be beneficial for awareness building, as identified by Interviewee UT27A: 'here they can share among themselves the advantages of using technology for educational purposes'.

- **Preparedness**



Figure 6-23: Main Areas of Preparedness for Using ICT

I swear to God that we have whole readiness to use technology in teaching, and we are ready for training, because we have got the benefits especially from the internet which can now find information for our lessons. (Interviewee UT26A)

The interviews during this stage showed that most of the teachers were ready to apply what they had learned about using technology in teaching. Interviewee UT13A believed that some teachers now had the skills for using computer programmes for classroom teaching. Additionally, some teachers thought that technology would be able to supply them with a greater amount of information for use both in and out of the classroom. However, a concern was raised about 'the importance of preparing students for the effective use of technology in education' (Interviewee UT18A). In this regard, most of the teachers, such as Interviewee UT4A expected far more relevant training. According to him,

I am happy as I have received this training, but what about my students? Do they know how to use ICT for their learning? Will they be able to follow me if I use ICT in my teaching? (Interviewee UT4A)

6.3.3 Attitude: Findings by Pre- and Post-tests

In this section, the data received from the university teachers by the Pre-test (Before training) and Post-test (After training) are presented. Through the test questionnaires the respondents were asked about their attitudes towards ICT. The teachers were surveyed according to their attitudes towards ICT, ranging from 'Totally agree,' 'Agree', 'Disagree' and 'Totally disagree', and a value of 4, 3, 2, and 1 was given to each of them. There were 18 statements of choice for the respondents. The outcomes were then tabulated, and SPSS utilised to analyse the results.

Table 6-3: Pre-test and Post-test for the Attitude towards ICT

	The ICT Skills		Frequency			
			Totally agree	Agree	Disagree	Totally disagree
1	PowerPoint makes my lesson presentation better	Pre-test	10(25,0%)	18(45,0%)	9(22,5%)	3(7,5%)
		Post-test	16(40,0%)	18(45,0%)	5(12,5%)	1(2,5%)
2	I feel that a Smartboard is an effective tool to use to present information	Pre-test	4(10,0%)	14(35,0%)	16(40,0%)	6(15,0%)
		Post-test	10(25,0%)	18(45,0%)	9(22,5%)	3(7,5%)
3	Word processor is an important tool for presenting information	Pre-test	12(30,3%)	18(45,0%)	8(20,0%)	2(5,0%)
		Post-test	16(40,0%)	18(45,0%)	4(10,0%)	2(5,0%)
4	I love using PowerPoint in my teaching	Pre-test	11(27,5%)	17(42,5%)	9(22,5%)	3(7,5%)
		Post-test	17(42,5%)	17(42,5%)	6(15,10%)	0
5	I am willing to use email to contact my students	Pre-test	15(37,5%)	15(37,5%)	6(15,10%)	4(10,0%)
		Post-test	17(42,5%)	16(40,0%)	5(12,5%)	2(5,0%)
6	I feel happy when I communicate with my students in forums or blogs	Pre-test	3(7,5%)	12(30,0%)	16(40,0%)	9(22,5%)
		Post-test	9(22,5%)	16(40,0%)	11(27,5%)	4(10,0%)
7	I don't mind chatting with my students via Skype or any other chatting programme	Pre-test	4(10,0%)	14(35,0%)	16(40,0%)	6(15,0%)
		Post-test	6(15,0%)	16(40,0%)	14(35,0%)	4(10,0%)
8	Video conferencing is an effective tool to communicate with others	Pre-test	6(15,0%)	15(37,5%)	14(35,0%)	5(12,5%)
		Post-test	11(27,5%)	21(52,5%)	5(12,5%)	3(7,5%)
9	Videos are useful for students to understand their lessons	Pre-test	15(37,5%)	19(47,5%)	3(7,5%)	3(7,5%)
		Post-test	19(47,5%)	20(50,0%)	0	1(2,5%)
10	Audio recording are helpful for students to review their lessons	Pre-test	12(30,0%)	14(35,0%)	8(20,0%)	6(15,0%)
		Post-test	15(37,5%)	19(47,5%)	2(5,0%)	4(10,0%)
11	I feel that multimedia is an interactive tool to use with students	Pre-test	14(35,0%)	12(30,0%)	10(25,0%)	4(10,0%)
		Post-test	15(37,5%)	17(42,5%)	5(12,5%)	3(7,5%)
12	I trust using e-assessment tools (e-quiz, e-test, e-survey... etc.) to assess my students	Pre-test	5(12,5%)	5(12,5%)	20(50,0%)	10(25,0%)
		Post-test	9(22,5%)	12(30,0%)	12(30,0%)	7(17,5%)
13	E-assessment makes me feel happy and satisfied about the way I assess my students	Pre-test	5(12,5%)	5(12,5%)	21(52,5%)	9(22,5%)
		Post-test	8(20,0%)	12(30,0%)	13(32,5%)	7(17,5%)
14	The internet provides many sources to support me in teaching my subject	Pre-test	15(37,5%)	19(47,5%)	2(5,0%)	4(10,0%)
		Post-test	15(37,5%)	23(57,5%)	0	2(5,0%)
15	I trust using the internet to update the knowledge about my subject	Pre-test	13(32,5%)	15(37,5%)	8(20,0%)	4(10,0%)
		Post-test	16(40,0%)	16(40,0%)	5(12,5%)	3(7,5%)
16	I am happy to refer my students to the internet as a source of information	Pre-test	11(27,5%)	13(32,5%)	11(27,5%)	5(12,5%)
		Post-test	14(35,0%)	16(40,0%)	7(17,5%)	3(7,5%)
17	Using database programmes (e.g. Excel) can support the way I control my teaching	Pre-test	8(20,0%)	14(35,0%)	12(30,0%)	6(15,0%)
		Post-test	9(22,5%)	19(47,5%)	7(17,5%)	5(12,5%)
18	Spreadsheets are an important tool for managing students records	Pre-test	8(20,0%)	14(35,0%)	11(27,5%)	7(17,5%)
		Post-test	8(20,0%)	20(50,0%)	7(17,5%)	5(12,5%)

Pre-test stage

It can be seen from the data in **Table 6–2** that there was a low level of positive attitudes towards a number of areas of technological usage among the university teachers at the pre-VLE training stage. For example, only 7.5% of respondents felt totally happy communicating with their students in Forums or Blogs before receiving the VLE training. Similarly, at this stage, only 10% of the teachers totally agreed that a Smartboard could be an effective tool to present information, and Skype or any other Chat programmes could morally be a way to communicate with students even though this type of discussion might not always be relevant to the agreed discussion topic, or the identity of the participants may not be real. Again, only 12.5% of respondents had full confidence in the use of e-assessment tools, and they were not satisfied with the approach it provides. Regarding video conferencing the picture is similar, as only 15% of the respondents completely agreed that it could be an effective tool to communicate with others.

At the same time, the percentage of respondents who showed a moderate attitude (who just agreed with the given statements) to the use of technology in their professional practice was also not very high for each statement. Less than half the respondents indicated moderate agreement and an attitude in favour of the use of technology. In some areas the percentages were very low. For example, only 12.5% of the respondents showed a moderate liking for e-assessment tools, and only 30% to communication with their students in Forums or Blogs, and to the use of multimedia as an interactive tool.

Post-test stage

The post-test stage training results showed that, for all statements, the percentages of highly positive attitudes ('Totally agreed') increased, apart from responses to the use of spreadsheet and internet, where the percentage who 'Totally agreed' remained the same and the percentage of negative responses fell significantly. At this stage, 47.5% of the teachers possessed a very high level of positive attitudes about using videos, and 42.5% about using email for contacting their students. Similarly, 42.5% of the respondents were strongly positive towards the use of PowerPoint and word processors for lesson presentation, and also toward the use of the internet for updating their knowledge for teaching their subjects. A drop in strongly negative attitudes ('Totally disagree') was also found for most of the technological tools. There was no highly negative attitude

recorded to the use of PowerPoint in teaching. Only 2.5% of the respondents had a highly negative attitude to the use of videos for making their lessons understandable for their students. Only 5% of respondents were not positive about the use of email to contact their students, or the use of the internet for better teaching and word processing for presenting information.

6.3.4 Pre- and Post-test Stages: A Comparison

By analysing the attitudes of the respondents of Jazan University to the use and benefits of a number of technological tools during the Before and After VLE stages, a change was visible.

It was noticeable that there was an increase in highly positive attitudes ('Totally agree') to the use of all the ICT tools such as PowerPoint (15% increase), Smartboard (15% increase), Forums or Blogs (15% increase), word processors (10% increase), videos (15% increase), and e-assessment tools (10% increase). There was a remarkable change in the highly negative attitude ('Total disagree') by the university teachers to the use of all the ICT tools such as PowerPoint (7.5% decrease), e-assessment tools (7.5% decrease), and Smartboard (7.5% decrease). However, there were still some teachers who possessed a moderately negative attitude to the use of Skype or any other Chat programme (35%), and also to the use of e-assessment tools (e-quiz, e-test, e-survey, etc.).

Data processed by SPSS

In order to understand the impact of VLE on the attitudes of the Jazan University teachers regarding the use of ICT in their teaching a repeated measures t-test (or paired samples test) was taken. In this regard the following hypothesis was tested.

H_0 : There is no effect of VLE on the attitudes of ICT in teaching

H_a : There is an effect of VLE in the attitudes of ICT in teaching.

Similar to the Usage test, in this case the independence of the observations was assumed, given that the scores of the questionnaire after the intervention (After training stage) were not influenced by the scores before the intervention (Before training stage). Further, the subjects were randomly allocated to the different treatment groups, and the dependent variable (the scale summation of the ICT Attitude) was continuous.

The assumptions for the test indicated some skewedness in the data, but it was sufficient to claim normal distribution (see Appendix 17).

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Scale summation for ICT attitude post intervention - The scale summation for ICT attitude prior to intervention	24.85000	7.99214	1.26367	22.29399	27.40601	19.665	39	.000

Table 6-4: t-test results for ICT attitudes

The t-test rejects the null hypothesis as it indicates a significant difference of the attitudes between the Before and After the VLE training stages [$t(39) = 19.7, p < .01, h^2 = .91$].

The result indicates that the VLE intervention brought a significant change in the attitude of Jazan University teachers to using ICT in teaching.

6.3.5 Summary of the Attitudes Results

While studying both the interview and test results it was observed that there was a significant change of attitude among most of the teachers to various ICT tools and their use in educational activities. Although at the Before training stage many of the teachers acknowledged the benefits of using technology in teaching, they also expressed their concerns and fears regarding their activation. However, most of the teachers mentioned the need for training to overcome their level of anxiety about ICT usage. The After training stage data gave an idea of the positive attitudes of the teachers regarding the use of ICT in their teaching. By this stage, teachers were inspired by their practical experiences with the ICT tools, and now had more love for this technological approach. It was also found that the teachers were more aware of the applications and advantages of ICT tools, and were more conscious of the need to prepare themselves for activating technology in their professional use. Generally, it was found that the strongly positive attitudes to most of the ICT tools increased, and at the same time highly negative attitudes decreased significantly. This situation can be regarded as a Hawthorne Effect or change in people’s behaviour (French, 1950) as the VLE training in a higher educational setting significantly changed a group of teachers’ perceptions, behaviour

and attitudes. As a result, after the VLE training programme there was an increased positive response towards the use of technology in teaching and learning by the teachers of Jazan University.

6.4 Knowledge: Findings by Interviews

The third data collection area was on the status of knowledge levels of the Jazan University teachers through the use of ICT tools at the Before and After stages of the VLE training. The data collected through interviews at the Before training stage reflected two themes: Lack of Knowledge and Need for Knowledge. The data collected at the After training stage was categorised under three themes: Improved Knowledge, Need for Knowledge, and Request for Knowledge.

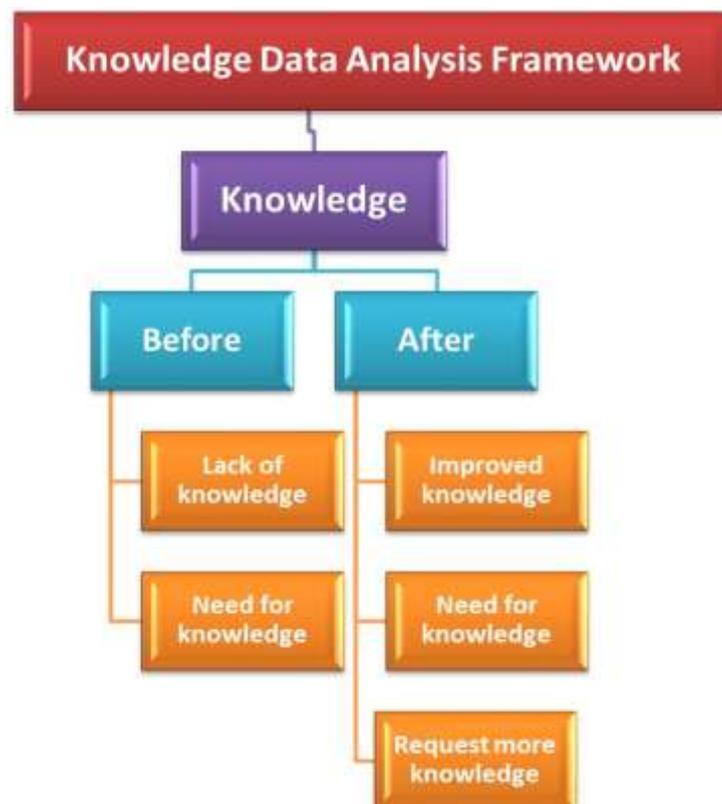


Figure 6-24: Knowledge of ICT

6.4.1 Interviews: The Before Stage

- **Lack of knowledge**

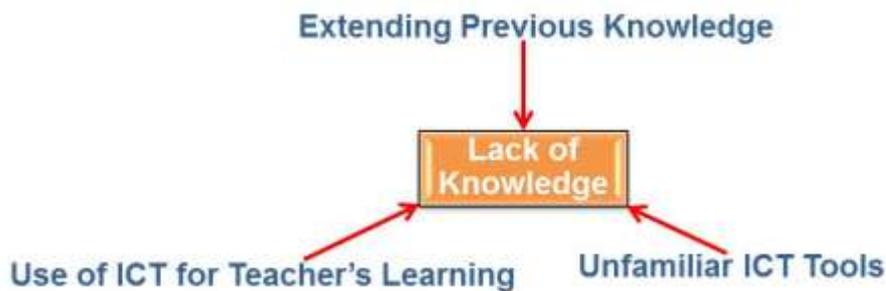


Figure 6-25: Main Areas for the Lack of ICT Knowledge

Knowledge is very important especially in using technology. So, the number of teachers who use technology is low because of low knowledge of technology. (Interviewee UT9B)

The interviews, at the Before VLE training stage, revealed that many university teachers such as Interviewee UT12B were unaware of how to use technology properly for educational purposes. Some of the teachers, however, for example Interviewee UT25B, claimed that they had very minimal knowledge relating to the use of technology in teaching, and that they needed to improve.

I have the basic operational knowledge of computer. There are many programmes even I do not know. Although I know about some programmes, I do not have any knowledge, so how I can operate them, especially for my professional work? (Interviewee UT25B)

The areas of lack of knowledge of the teachers were also identified in the interviews. For example, Interviewee UT16B mentioned that he had ‘a big problem of the lack of knowledge of data processing, making reports and using them in the evaluation process’. Again, Interviewee UT18B did not know how to input Excel formulae to run the necessary reports.

- **Need for Knowledge**



Figure 6-26: Main Areas Regarding the Need for ICT Knowledge

During interviews, most of the respondents agreed that they had a lack of knowledge about various technological options and their application in teaching. Consequently, these respondents showed eagerness to learn about this technology, and to improve their knowledge. Interviewee UT35B emphasised this, saying ‘everyone needs to develop and increase the technological knowledge especially in PowerPoint and Database’. Interviewee UT12B believed that the new technological knowledge can help university teachers teach effectively in the classroom. The profound eagerness for gaining knowledge of technology was expressed by Interviewee UT16B, who said, ‘I need to increase my technological knowledge very much now’. Similarly, Interviewee UT24B mentioned,

I know my students will not advance if they do not learn new methods of learning. They must use ICT for learning, and therefore I must teach them using technology. I am determined that I will learn more about ICT and their use, and apply my ICT knowledge to teach my students well.

According to some interviewees, such as Interviewee UT7B, it was indubitable that all teaching staff at university level needed to increase their knowledge in all aspects of technology such as computers, internet, Microsoft Office and email. Interviewee UT13B believed that gaining the familiarity of ICT knowledge is vital to increase their educational knowledge.

6.4.2 Interviews: The After Stage

While attending the VLE training session, most of the participating teachers showed an enhancement of their ICT knowledge. The teachers were often asked what they thought

about the benefits of a particular ICT tool. After introducing PowerPoint and Blogs, some teachers provided constructive thoughts in the Forum regarding the possible future usage of these tools for their enhanced teaching and students' learning. Participant UT27W mentioned that, 'blogs can be used for writing reflections by the students after each class', which can provide them with an effective evaluation of the session. While talking about PowerPoint, Participant UT14W commented very positively,

Now I see how to prepare a lesson interestingly with pictures and animations. I am really happy as I now know how to prepare effective PowerPoint slides, and how to present them to my students. (Participant UT14W)

Moreover, it was observed that the participants started using the names of various ICT tools and reflecting on their features in their reflections in the Blog and while Chatting.

The following aspects of gained knowledge on ICT in teaching have been collected through interviews after the VLE training programme.

- **Improved knowledge**



Figure 6-27: Main Areas of Improved Knowledge on ICT

In the interviews at the After VLE training stage, most of the interviewees acknowledged that their knowledge about different ICT tools and their usage in teaching had increased. For example, Interviewee UT40A believed that his 'knowledge has been increased in some technological programmes such as the Internet and email'; Interviewee UT3A was now much more familiar with the use of PowerPoint and Interviewee UT28A was excited that his knowledge of PowerPoint was better than before: 'I know now how to change the presentation slides, colour fonts and motion schemes'. It was also found that while many teachers did not use many common ICT tools in their teaching, at least now they knew their benefits (Interviewee UT37A).

I should not tell that I know the use of the entire technology, but I am confident that, if I do more practice, I will be able to use a number of them for my own learning and for teaching my students... I know how to learn more about ICT by using various ICT tools such as the Internet. (Interviewee UT37A)

Although some participants reflected on a number of ways to improve their ICT knowledge, it emerged from the interviews that their ICT knowledge had mainly increased by attending VLE training, where they shared the various usages of ICT tools in teaching and learning (Interviewee UT15A).

- **Need for knowledge**



Figure 6-28: Main Areas about the Need for ICT Knowledge

Even after the training programme we need more knowledge in educational technology. (Interviewee UT2A)

The above comment by an interviewee reflected a deep sense of the need for knowledge about educational technology. It was also found that the university teachers, such as Interviewee UT9A, considered that they needed more ICT knowledge to be ‘able to move forward to the various applications of technology in their teaching’. For example, Interviewee UT14A said that he now ‘urgently needs to know more about database as he thinks it might help him calculate students' marks more easily’.

Many teachers, such as Interviewee UT23A, praised the VLE training that supplied much knowledge about various ICT tools and their usage in educational activities, but they still wanted to gain more knowledge to better their performance.

- **Request more knowledge**



Figure 6-29: Main Areas about the Request for More ICT Knowledge

At the After VLE training stage many teachers shared their satisfaction about using various ICT tools in teaching, and requested further training. Interviewee UT17A mentioned that he needed more ICT training to enhance his knowledge about Excel and data processing programmes. Again, Interviewee UT17A was eager to gain more knowledge about PowerPoint, Excel and Word. Similarly, Interviewee UT30A referred to the wider interest among other colleagues and mentioned the importance of having more knowledge about database.

Although the interviewees agreed that their knowledge about various ICT tools was more than previously, they expressed frustration at the insufficient ICT facilities and narrow scope of professional training available at their workplace. Many interviewees, such as Interviewee UT21A, therefore ‘requested the university administration to make more training programmes for all the teaching staff to increase their technological knowledge’. It can be assumed that the teachers have this sense of frustration after receiving the VLE training because of their new learning of ICT for teaching and eagerness to extend their learning further. To fulfil their expectations some teachers, such as Interviewee UT31A, requested training sessions on ICT tools that they now think might be helpful to enhance their teaching practices.

- **Improved knowledge**



Figure 6-30: Main Areas of Improved Knowledge on ICT

While responding in the interviews at the After VLE training stage, most of the interviewees acknowledged that their knowledge about different ICT tools and their usage in teaching had increased. For example, Interviewee UT40A believed that his ‘knowledge has been increased in some technological programmes such as internet and email’; Interviewee UT3A was now much more familiar with the use of PowerPoint and Interviewee UT28A was excited that his knowledge of PowerPoint was better than before, ‘I know now how to change the presentation slides, colour fonts and motion schemes’. It was also found that while many teachers did not use many common ICT tools in their teaching, at least now they knew the benefits (Interviewee UT37A).

It emerged from the interviews that respondents’ ICT knowledge had mainly increased by attending the VLE training, where they shared the various uses of ICT tools in teaching and learning (Interviewee UT15A).

- **Need for knowledge**



Figure 6-31: Main Areas about the Need for ICT Knowledge

Even after the training programme we need more knowledge in educational technology. (Interviewee UT2A)

The above comment by an interviewee reflected a deep need for knowledge about educational technology. It was also found that university teachers such as Interviewee UT9A considered that they needed more ICT knowledge to be ‘able to move forward to the various applications of technology in their teaching’. For example, Interviewee UT14A said that he now ‘urgently needs to know more about database as he thinks it might help him calculate students' marks more easily’.

Many, such as Interviewee UT23A, praised the VLE training that supplied much knowledge about various ICT tools and their usage in educational activities, but they still wanted to gain more knowledge to better their performance.

- **Request more knowledge**



Figure 6-32: Main Areas about the Request for More ICT Knowledge

At the After VLE training stage many teachers shared their satisfaction about using various ICT tools in teaching, and thus requested arranging further training for them. Interviewee UT17A mentioned that he needed some more ICT training to enhance his knowledge about Excel and data processing programmes. Again, Interviewee UT17A was eager to gain more knowledge about PowerPoint, Excel and Word. Similarly, Interviewee UT30A referred to the wider interest among other colleagues and mentioned the importance of having more knowledge about database.

Although the interviewees agreed that their knowledge about various ICT tools was more than in previously, they expressed frustration regarding the insufficient ICT facilities and narrow scope of professional training available at their workplace. Many interviewees, such as Interviewee UT21A, therefore ‘requested the university administration to make more training programmes for all the teaching staff to increase their technological knowledge’. It can be assumed that after receiving the VLE training the teachers now have this sense of frustration perhaps caused by their new learning of ICT for teaching and their eagerness to extend their learning further. To fulfil their expectations some teachers, such as Interviewee UT31A, requested training sessions on ICT tools that they now think might be helpful for their enhanced teaching practices.

6.4.3 Knowledge: Findings by Pre- and Post-tests

In this section, the data received by the Pre-test (Before training) and Post-test (After training) are presented. In the test questionnaires the respondents were mainly asked about their change in knowledge on using a number of ICT tools for their teaching. The teachers were surveyed to assess their level of technological knowledge, choosing from ‘Totally agree’, ‘Agree’, ‘Disagree’ and ‘Totally disagree’, and a value of 4, 3, 2, and 1 given respectively. There were 24 statements to identify the status of knowledge of

various ICT tools of the respondents. The outcomes were tabulated, and SPSS used to analyse the results. The tabulated results mainly reflect the difference in the ICT knowledge of the Jazan University teachers during the pre-test and post-test stages.

Table 6-5: Pre-test and Post-test for the Knowledge of ICT

	The ICT knowledge statement		Frequency			
			Totally agree	Agree	Disagree	Totally disagree
1	I know how to prepare a lesson by PowerPoint	Pre-test	12(30,0%)	14(35,0%)	9(22,5%)	5(12,5%)
		Post-test	14(35,0%)	19(47,5%)	4(10,0%)	3(7,5%)
2	I know how to introduce animation slides	Pre-test	13(32,5%)	14(35,0%)	8(20,0%)	5(12,5%)
		Post-test	13(32,5%)	20(50,0%)	4(10,0%)	3(7,5%)
3	I know how to use word processor	Pre-test	10(25,0%)	15(37,5%)	10(25,0%)	5(12,5%)
		Post-test	14(35,0%)	17(42,5%)	6(15,0%)	3(7,5%)
4	I know how to use simple editing (e.g. bold, italic, centring, etc.)	Pre-test	10(25,0%)	15(37,5%)	8(20,0%)	7(17,5%)
		Post-test	15(37,5%)	16(40,0%)	6(15,0%)	3(7,5%)
5	I know how to use a Smartboard	Pre-test	9(22,5%)	9(22,5%)	13(32,5%)	9(22,5%)
		Post-test	10(25,0%)	13(32,5%)	9(22,5%)	8(20,0%)
6	I know how to send an email	Pre-test	14(35,0%)	14(35,0%)	8(20,0%)	4(10,0%)
		Post-test	16(40,0%)	17(42,5%)	5(12,5%)	2(5,0%)
7	I know how to attach a file to an email	Pre-test	13(32,5%)	14(35,0%)	9(22,5%)	4(10,0%)
		Post-test	17(5,0%)	16(40,0%)	5(12,5%)	2(5,0%)
8	I know how to chat with others via chatting programmes	Pre-test	12(30,0%)	16(40,0%)	8(20,0%)	4(10,0%)
		Post-test	15(37,5%)	19(47,5%)	6(15,0%)	0
9	I know how to participate with others in a blog	Pre-test	7(17,5%)	10(25,0%)	12(30,0%)	11(27,5%)
		Post-test	10(25,0%)	13(32,5%)	8(20,0%)	9(22,5%)
10	I know how to communicate with others in a forum	Pre-test	7(17,5%)	10(25,0%)	13(32,5%)	10(25,0%)
		Post-test	8(20,0%)	15(37,5%)	9(22,5%)	8(20,0%)
11	I know how to take a photo with a digital camera	Pre-test	21(52,5%)	16(40,0%)	2(5,0%)	1(2,5%)
		Post-test	20(50,0%)	19(47,5%)	0	1(2,5%)
12	I know how to download photos from a digital camera	Pre-test	15(37,5%)	16(40,0%)	5(12,5%)	4(10,0%)
		Post-test	13(32,5%)	19(47,5%)	5(12,5%)	3(7,5%)
13	I know how to use a voice recorder to record	Pre-test	16(40,0%)	13(32,5%)	6(15,0%)	5(12,5%)
		Post-test	16(40,0%)	15(37,5%)	6(15,0%)	3(7,5%)
14	I know how to download a file from a voice recorder	Pre-test	16(40,0%)	13(32,5%)	6(15,0%)	5(12,5%)
		Post-test	15(37,5%)	14(35,0%)	7(17,5%)	4(10,0%)
15	I know how to conduct an e-assessment online	Pre-test	2(5,0%)	4(10,0%)	19(47,5%)	15(37,5%)
		Post-test	7(17,5%)	9(22,5%)	14(35,0%)	10(25,0%)
16	I know how to design an e-quiz	Pre-test	2(5,0%)	5(12,5%)	18(45,0%)	15(37,5%)
		Post-test	7(17,5%)	8(20,0%)	15(37,5%)	10(25,0%)
17	I know how to design an e-survey	Pre-test	4(10,0%)	6(15,0%)	17(17,5%)	13(32,5%)
		Post-test	8(20,0%)	9(22,5%)	14(35,0%)	9(22,5%)

18	I know how to surf the internet	Pre-test	17(17,5%)	18(45,0%)	2(5,0%)	3(7,5%)
		Post-test	19(47,5%)	19(47,5%)	0	2(5,0%)
19	I know how to search for a references on the internet	Pre-test	14(35,0%)	15(37,5%)	6(15,0%)	5(12,5%)
		Post-test	17(17,5%)	19(47,5%)	1(2,5%)	3(7,5%)
20	I know how to download a file from the internet	Pre-test	15(37,5%)	15(37,5%)	6(15,0%)	4(10,0%)
		Post-test	17(17,5%)	18(45,0%)	2(5,0%)	3(7,5%)
21	I know how to use database programmes	Pre-test	10(25,0%)	9(22,5%)	12(30,0%)	9(22,5%)
		Post-test	15(37,5%)	14(35,0%)	6(15,0%)	5(12,5%)
22	I know how to sort data	Pre-test	10(25,0%)	8(20,0%)	13(32,5%)	9(22,5%)
		Post-test	14(35,0%)	13(32,5%)	8(20,0%)	5(12,5%)
23	I know how to input formulae	Pre-test	9(22,5%)	9(22,5%)	13(32,5%)	9(22,5%)
		Post-test	13(32,5%)	15(37,5%)	7(17,5%)	5(12,5%)
24	I know how to produce charts and graphs for data analysis	Pre-test	9(22,5%)	13(32,5%)	10(25,0%)	8(20,0%)
		Post-test	15(37,5%)	16(40,0%)	5(12,5%)	4(10,0%)

Pre-test stage

During this stage, the university teachers responded that they lacked knowledge about using a range of ICT tools. Only 17.5% of interviewees said that they had sufficient knowledge ('Totally agree') about Blog, internet and Forum, whereas 22.5% of interviewees had knowledge about the use of a Smartboard, database formulae, and about charts and graphs for data analysis. The situation was even worse with e-survey design, as only 10% of the respondents knew this tool, and just 5% of the teachers had total knowledge about e-quiz and e-assessment.

A considerable number of university teachers acknowledged that they did not have good knowledge ('Disagree') of the use of some ICT tools in their teaching and 47.5% of them did not know about e-assessment online, with 45% ignorant about e-quiz design. Again, 32.5% of respondents shared that they did not have knowledge about how to use a Smartboard, sort data, or input formulae. Some 30% of the respondents had no idea of Blogs and database programmes. At this stage, the number of teachers who had no knowledge at all about some ICT tools was also high; 37.5% of the respondents said that they had no knowledge about online e-assessment or designing an e-quiz. Similarly, 32.5% of respondents shared a lack of knowledge regarding the design of an e-survey, 27.5% about Blogs, and 25% about Forums for teaching purposes.

Post-test stage

At the post-test training stage, a higher percentage of respondents acknowledged that they now had sufficient knowledge ('Totally agree') about using a number of ICT tools in their teaching. It was found that at this stage half the teachers were able to take a photo with a digital camera, 40% knew how to use a voice recorder and 47% could surf the internet. It was also found that 37.5% knew about using Chat programmes, could download a file from a voice recorder, use database programmes, and produce charts and graphs for data analysis. In addition, 35% of respondents said that they had complete knowledge about sorting data technologically.

At this stage it was also found that the percentage of the teachers who still considered that they had no knowledge at all ('Totally disagree') about ICT tools decreased. It was found that there was no one who did not know how to Chat with others via Chat programmes. Only 2.5% of respondents had no knowledge of taking photos with a digital camera, and only 5% still could not surf the internet, send an email, or attach a file to an email. Again, after training only 7.5% teachers were unable to prepare a lesson by PowerPoint, introduce animation slides, perform simple editing, download photos from a digital camera, use a voice recorder to record, search for a references on the internet, or download a file from the internet.

6.4.4 Pre- and Post-test Stages: a Comparison

By analysing the responses of the teachers at the Pre- and Post-stages it was evident that in most areas the percentages rose for higher levels of knowledge ('Totally Agree') such as using simple editing (12.5% increase), and producing charts and graphs for data analysis (15% increase). In some areas the percentage with higher level of knowledge decreased (such as downloading a file from the internet or a voice recorder), in others the percentage with a moderate level of knowledge ('Agree') increased significantly, such as for downloading a file from the internet (8.5 % increase), and taking a photo with a digital camera (7.5% increase).

It was also evident that there was a significant decrease in the percentage of the teachers still without any knowledge ('Totally disagree') about some ICT tools such as e-assessment online (12.5 % decrease), simple editing (10% decrease), Chat programmes (10% decrease), e-survey design (10% decrease), database programmes

(10% decrease), data sorting (10% decrease), inputting formulae (10% decrease), and producing charts and graphs for data analysis (10% decrease).

Data processed by SPSS

Similar to the tests of the Usage and Attitude parts, to understand the effect of VLE on the knowledge of the Jazan University teachers on the use of ICT in their teaching, a repeated measures t-test (or paired samples test) was taken to establish whether there was a difference in the knowledge before and after the VLE intervention. In this regard the following hypothesis was tested.

H₀: There is no effect of VLE on the knowledge of ICT in teaching

H_a: There is an effect of VLE in the knowledge of ICT in teaching.

The independence of the observations was assumed, given that the scores of the questionnaire after the intervention (After training stage) were not influenced by the scores before the intervention (Before training stage). Further, the subjects were randomly allocated to the different treatment groups, and the dependent variable (which is the scale summation of the ICT Attitude) was continuous.

The parametric assumptions were tested where there was a slight deviation from normal distribution (see Appendix 17). However, it was not regarded as serious, as this is always expected with a small sample size.

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Scale summation for ICT knowledge post intervention - The scale summation for ICT Knowledge prior to intervention	22.55000	7.36224	1.16407	20.19544	24.90456	19.372	39	.000

Table 6-6: t-test results for ICT knowledge

The t-test rejects the null hypothesis as it indicates a significant difference of the attitudes between the Before and After the VLE training stages [t (39) = 19.37, p < .01, h²= .91].

The result indicates that the VLE intervention brought a significant change in the knowledge of the Jazan University teachers regarding using ICT in teaching.

6.4.5 Summary of the Knowledge Results

From both interviews and tests it was found that there was a significant change in the knowledge level of the participating university teachers about various ICT tools. Before receiving VLE training, most did not have sufficient knowledge about the use of a number of tools. After receiving the training most became more conscious of the need to gain knowledge on technological tools essential to their teaching. As they now understood more about the importance of technology, they are more interested in attending relevant training to gain more technological knowledge.

6.5 Skills: Findings by Interviews

6.5.1 Interviews: Before Stage

The fourth area of data collection was to understand the status of the technological skills of the Jazan University teachers at both the Before and After stages of the VLE training. The responses of the interviews at the Before training stage are categorised under three themes namely; Lack, Request Training, and Challenges. Similarly, the After stage interview findings are listed under three themes; namely, Improved Skills by Practice, Perfection, and Request Training.



Figure 6-33: Skills of ICT

- **Lack**

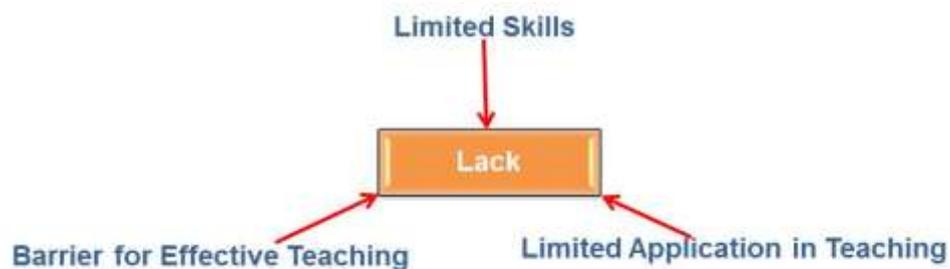


Figure 6-34: Main Areas of the Lack of ICT Skills

At the Before stage, some interviewees commented on their limited skills, as typified by the following: ‘skills are limited in all technologies that could be used in teaching process’ (Interviewee UT33B). For example, Interviewee UT9B talked about his lack of skills in using Forums and Blogs; Interviewee UT7B about email and electronic evaluation, and Interviewee UT15B about using Excel databases. They all regretted for their lack of ICT skills which they considered as a barrier to effective teaching.

According to Interviewee UT7B,

It is a shame for me as do not know how to communicate quickly and properly using emails. I know it is very simple, but there should be some techniques for

better using. I face problems while sending one email to all my students, and when I want to highlight some parts of my letters.... (Interviewee UT7B)

Additionally, it was indicated in interviews that lack of skill ‘regarding the use of ICT tools was obvious and clear among most of the teaching staff’ (Interviewee UT6B). It needs to be mentioned here that great potential for self-improvement is seen among the participants at this stage, which has also been witnessed by this researcher as a general phenomenon in Saudi Arabian university teachers.

- **Request Training**



Figure 6-35: Main Areas for Requesting ICT training

We ask for training and it is essential to include technology in the teaching process. (Interviewee UT24B)

At this stage some interviewees mentioned their basic request for ICT training: ‘all the teaching staff for increasing their technical skills to manage the use of technology in their classes’ (Interviewee UT30B). Interviewee UT8B said that they needed ‘training for increasing various technical skills such as email and internet’, a request made by a number of other interviewees. Database and site design (Interviewee UT8B), and PowerPoint (Interviewee UT13B) were specifically mentioned.

It also emerged from the interviews that the teachers expected that their university administration should take the initiative for ‘arranging their skills development schemes’ (Interviewee UT9B), and that ‘training could be online’ (Interviewee UT13B).

- **Challenges**



Figure 6-36: Main Areas on Challenges of Gaining ICT Skills

I'm very busy in teaching, and it doesn't allow me to increase my skills in the programmes which help to insert technology in teaching process. (Interviewee UT19B)

It was found from the interviews that teachers thought they faced many challenges in learning about technological applications in their teaching. Interviewee UT1B said that he was 'facing problems while operating database programs' as he had not enough time to practise. The teachers mentioned the issue of time and added that they had many administrative tasks to attend to and thus 'could not make time for learning educational technology' (Interviewee UT2B). Some teachers also mentioned the university's lack of facilities, for example Interviewee UT34B said that 'the university did not have all the required facilities for learning essential ICT applications'. Interviewee UT25B mentioned 'the requirement of money for attending training programmes'. These statements were similar to most teachers' remarks, suggesting that their university should support them in this respect.

6.5.2 Interviews: The After Stage

During the VLE training most of the participants showed interest in gaining some essential ICT skill to work with the ICT programmes that were provided. Many were interested to gain mastery on some particular ICT programmes (for example, Participant UT15A on Forum, Participant UT23A on Smartboard, Participant UT28A on database programmes). An enhancement of ICT skill (especially in using the Internet, Smartboard, Blogs, and PowerPoint) was observable during the training sessions. Moreover, there was growing interest in regular skills enhancement. In this connection the statement of Participant UT34A is quoted:

The more I am learning and using it (he mentioned about Blogs) the more I am getting my confidence and skills. I am concerned as, I think, if I do not keep practising, I may forget these skills soon. (Participant UT34A)

This gain in skills and confidence in the use of ICT in teaching was later reflected in interviews at the After stage of VLE training. The findings are discussed below.

- **Improved Skills by Practice**



Figure 6-37: Main Areas of Improved Skills by Practice

Skills are very important to be applied. I confess that I've become better user [after] the training programme with you. Today I am perfect in many programmes which I never knew before... (Interviewee UT7A)

Many interviewees identified improved skills of technology after receiving the VLE training. According to Interviewee UT16A, 'my skills have been improved very much in many programmes such as Excel'. Similarly, Interviewee UT40A thought that after using video, Excel and email his skills had been improved. Again, Interviewee UT3A felt more confident about using educational Forum and PowerPoint in his teaching. It was also widely noticed that most of the university teachers now had skills in Microsoft 'Office-type' programmes and were practising these ICT tools more frequently.

- **Perfection**



Figure 6-38: Main Areas of Approaching Perfection with ICT Skills

Approaching perfection in the use of ICT tools was also reflected in the interviews. Many interviewees, such as Interviewee UT37A, considered that ‘mastering the use of ICT tools is not easy, and it needs adequate training for achieving perfection’. Some interviewees acknowledged that the VLE training they received was very successful. It was found that at this stage many interviewees were feeling confident about their ICT skills as they thought that they had achieved enough. For example, interview UT13A said that he had ‘certainly gained more perfection on PowerPoint, and now [he] can control animations, sounds, etc. more confidently’. Similarly, Interviewee UT37A thought that,

It is not easy to say you're a proficient, but let me say that I've mastered over the skills needed especially with regard to Microsoft Office package such as Word, Excel and PowerPoint. (Interviewee UT37A)

However, some interviewees mentioned needing practice, as typified by Interviewee UT22A: ‘I feel that for enhancing skills on the use of educational technology adequate practice is needed’.

- **Request Training**



Figure 6-39: Main Areas for Requesting Training for Gaining ICT Skills

Training must be continued... it is very important for the teaching staff for gaining mastery over the required skills. (Interviewee UT23A)

During interviews it was found that many teachers wanted continuous training in the use of ICT tools, and believed that, as noted by Interviewee UT30A, ‘all university teachers should increase their skills in them’. Many teachers, including Interviewee UT18A believed ‘that the training will have a positive effect on their teaching’. Also mentioned by Interviewee UT17A were particular computer applications for further training, such as database and PowerPoint. However, according to some university teachers, such as Interviewee UT32A, the belief is that ‘the university authority should find out the university teachers who need technology, and support them for their better

teaching performances’ and it should ‘manage the educational processes more effectively’ (Interviewee UT6A).

6.5.3 Skills: Findings by Pre- and Post-tests

In this section, the data received from the university teachers by the pre-test (Before training) and post-test (After training) are presented. Through the test questionnaires the respondents were asked about their skill in using the ICT tools. The teachers were surveyed according to the amount of their technological skills, ranging from ‘Totally agree,’ ‘Agree,’ ‘Disagree’ and ‘Totally disagree’, and a value of 3, 2, and 1 was given . There were 20 statements for the respondents to consider. The outcomes were then tabulated, and SPSS was used to analyse the results.

Table 6-7: Pre-test and Post-test for the Skills of ICT

	The ICT skills		Frequency			
			Totally agree	Agree	Disagree	Totally disagree
1	I can design a lesson using PowerPoint	Pre-test	9(22,5%)	12(30,0%)	12(30,0%)	7(17,5%)
		Post-test	19(47,5%)	15(37,5%)	4(10,0%)	2(5,0%)
2	I am able to write and edit using a word processor	Pre-test	11(27,5%)	12(30,0%)	10(25,0%)	7(17,5%)
		Post-test	19(47,5%)	16(40,0%)	3(7,5%)	2(5,0%)
3	I am good at using a Smartboard	Pre-test	4(10,4%)	5(12,5%)	19(47,5%)	12(30,0%)
		Post-test	7(17,5%)	11(27,5%)	12(30,0%)	10(25,0%)
4	I can use an overhead projector	Pre-test	12(30,0%)	13(32,5%)	9(22,5%)	6(15,0%)
		Post-test	14(35,0%)	16(40,0%)	7(17,5%)	3(7,5%)
5	I can send an email	Pre-test	14(35,0%)	14(35,0%)	8(20,0%)	4(10,0%)
		Post-test	20(50,0%)	16(40,0%)	2(5,0%)	2(5,0%)
6	I am good at using blogs to support my students' learning	Pre-test	3(7,5%)	7(17,5%)	19(47,5%)	11(27,5%)
		Post-test	7(17,5%)	11(27,5%)	14(35,0%)	8(20,0%)
7	I am able to use forums to support my students' learning	Pre-test	3(7,5%)	7(17,5%)	18(45,0%)	12(30,0%)
		Post-test	6(15,0%)	12(30,0%)	14(35,0%)	8(20,0%)
8	I can communicate with my students and colleagues using synchronous chatting	Pre-test	12(30,0%)	15(37,5%)	7(17,5%)	6(15,0%)
		Post-test	15(37,5%)	19(47,5%)	5(12,5%)	1(2,5%)
9	I am able to use a digital video camera	Pre-test	13(32,5%)	16(40,0%)	7(17,5%)	4(10,0%)
		Post-test	15(37,5%)	19(47,5%)	4(10,0%)	2(5,0%)
10	I can use digital voice recorder to record	Pre-test	8(20,0%)	10(25,0%)	18(45,0%)	4(10,0%)
		Post-test	8(20,0%)	18(45,0%)	11(27,5%)	3(7,5%)
11	I am good at using a digital camera	Pre-test	14(35,0%)	19(47,5%)	5(12,5%)	2(5,0%)
		Post-test	18(45,0%)	20(50,0%)	0	2(5,0%)
12	I can download photos from a digital camera	Pre-test	12(30,0%)	15(37,5%)	9(22,5%)	4(10,0%)
		Post-test	17(42,5%)	18(45,0%)	2(5,0%)	3(7,5%)
13	I am able to design an e-quiz for my students	Pre-test	4(10,0%)	7(17,5%)	16(40,0%)	13(32,5%)
		Post-test	6(15,0%)	9(22,5%)	14(35,0%)	11(27,5%)
14	I am able to design an e-survey for my students	Pre-test	4(10,0%)	7(17,5%)	17(42,5%)	12(30,0%)
		Post-test	6(15,0%)	10(25,0%)	14(35,0%)	10(25,0%)
15	I can surf the internet	Pre-test	16(40,0%)	19(47,5%)	4(10,0%)	1(2,5%)
		Post-test	17(42,5%)	22(55,0%)	1(2,5%)	0
16	I am able to search for a reference on the internet	Pre-test	14(35,0%)	15(37,5%)	7(17,5%)	4(10,0%)
		Post-test	15(37,5%)	18(45,0%)	5(12,5%)	2(5,0%)
17	I am good at using database programmes	Pre-test	15(37,5%)	15(37,5%)	6(15,0%)	4(10,0%)
		Post-test	18(45,0%)	17(42,5%)	3(7,5%)	2(5,0%)
18	I can sort data	Pre-test	15(37,5%)	16(40,0%)	4(10,0%)	5(12,5%)
		Post-test	17(42,5%)	18(45,0%)	3(7,5%)	2(5,0%)
19	I am able to run a query in a database	Pre-test	13(32,5%)	14(35,0%)	9(22,5%)	4(10,0%)
		Post-test	17(42,5%)	18(45,0%)	3(7,5%)	2(5,0%)
20	I can produce a report from database	Pre-test	13(32,5%)	14(35,0%)	9(22,5%)	4(10,0%)
		Post-test	17(42,5%)	19(47,5%)	2(5,0%)	2(5,0%)

Pre-test stage

At this stage there were low percentages of university teachers who indicated high levels of ICT skill ('Totally agree'). Only 7.5% of the respondents said that they could use Blogs and Forums to support their students' learning. Again, only 10% teachers had skills in e-quizzes and knew about designing an e-survey. Additionally, it was found that only 10.4% teachers could use a Smartboard completely, 20% a digital voice recorder, and only 22.5% PowerPoint.

Neither was the number of fairly skilled university teachers ('Agree') very high in most areas. According to the responses, for all 20 areas of ICT it was below half. In some areas the percentages were very low, such as only 12.5% respondents with some skills in using a Smartboard, and only 17.5% Forums, Blogs, e-quizzes and e-surveys. Again, in some areas the percentage of entirely unskilled ('Totally disagree') teachers was high, such as 32.5% in designing e-quiz for assessing students' learning, and 30% in using a Smartboard, e-surveys and Forums.

Post-test stage

The responses of the university teachers showed higher percentages who considered themselves highly skilled ('Totally agree') in using ICT tools in their teaching. For example, half the respondents believed they could now send email efficiently. Similarly, 47.5% teachers now had high skills in using PowerPoint and a word processor, 45% in using a digital camera and database programmes and 42.5% who could widely use the internet, data sorting, and databases for teaching purposes.

The percentage of entirely unskilled teachers was very low in most of the ICT usage areas. For example, only 2.5% of the respondents were now entirely unskilled ('Totally disagree') in the use of synchronous Chat. Additionally, 5% of the teachers still had no skills in PowerPoint, word processing, email, digital video camera, digital camera, internet, and database programs. It was also found that there were no unskilled respondents at internet surfing.

6.5.4 Pre- and Post-test Stages: A Comparison

The responses of the university teachers at both the Pre- and Post-training stages can be compared clearly. It was noticeable that the percentages in most of the areas of higher level skills ('Totally agree') increased, such as in writing and editing using a word

processor (20% increase); in using PowerPoint (15% increase); and in producing a report from database, using Blogs to support students' learning, and in using digital camera and database (12.5% increase in each case).

Again, it was also noticed that there was a drop in the percentage of teachers who still had no skills ('Totally disagree') in some ICT tools such as PowerPoint, word processing, and synchronous Chat (12.5 % decrease) and the use of Forums to support students' learning (10% decrease). However, there was still a high percentage totally unskilled in using some tools, such as 27% in designing an e-quiz; 25% in using a Smartboard and designing an e-survey; and 20% in using Blogs to support students' learning. These results therefore indicate a low development of the ICT skills comparing to the enhancements of ICT usage, attitude, and knowledge of the Jazan University teachers.

Data processed by SPSS

Similar to the tests for Usage, Attitude, and Knowledge to explore the impact of the VLE on the skill of Jazan University teachers in using ICT in their teaching, a repeated measures t-test (or paired samples test) was taken to establish whether there was a difference in skill before and after the VLE intervention. In this regard the following hypothesis was tested.

H_0 : There is no effect of VLE on the skills of ICT in teaching

H_a : There is an effect of VLE in the skills of ICT in teaching.

The independence of the observations was assumed, given that the scores of the questionnaire after the intervention (After training stage) were not influenced by the scores before the intervention (Before training stage). Further, the subjects were randomly allocated to the different treatment groups, and the dependent variable (the scale summation of the ICT Skills) was continuous.

The parametric assumptions were tested where there was some skewedness, but normal distribution could be fairly claimed (see Appendix 17).

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Scale summation for ICT skills post intervention - The scale summation for ICT skills prior to intervention	1.77500	11.35101	1.79475	-1.85523	5.40523	.989	39	.329

Table 6-8: t-test results for ICT skills

The Paired Samples Test failed to reject the null hypothesis [$t(39) = .99$, $p < .05$, $h^2 = .02$]. This implies that while there was some positive change noted in the ICT skills, it was not statistically significant.

6.5.5 Summary of the Skills Results

By observing the responses of the university teachers during the Before and After VLE training stages it was found that they generally considered themselves more skilled after receiving the VLE training. Consequently, they were eager to take more training that they believed would enhance their teaching quality. In most of the ICT usage areas it was found that there was a remarkable increase in highly skilled users. The percentages of fairly skilled university teachers also increased in all areas. On the other hand, the percentages of totally unskilled university teachers decreased in most areas, but in some there were still high percentages of totally unskilled university teachers who might need more training and practice to improve their skills.

6.6 Findings: based on gender and schools

To test whether the effect of the VLE on Jazan University teachers varied by gender, an Independent t-test was made to test the overall impact on the two independent groups (male and female).

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Overall VLE impact	Equal variances assumed	5.640	.023	-1.951	38	.058	-12.44246	6.37840	-25.35485	.46994
	Equal variances not assumed			-2.058	37.905	.047	-12.44246	6.04717	-24.68532	-1.99598

Table 6-9: Independent t-test for overall impact on two independent groups (male and female)

Equal variance not assumed (Leven’s test $F = 5.6, P < .05$), hence the t-test indicates a significant difference in the VLE effect by gender [$t(38) = -2.06, P < .05, h^2 = .10$].

To test the effect of the VLE on the usage, attitude, knowledge, and skills of the Jazan University teachers by the schools they teach, and ANOVA for the school-based differences was taken (see Appendix 17).

ANOVA

Overall VLE impact

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4907.692	7	701.099	1.915	.100
Within Groups	11717.683	32	366.178		
Total	16625.375	39			

Table 6-10: Anova for school-based differences in mean responses on overall VLE impact

Overall, the school-based differences were not found statistically significant.

6.7 Overall Summary

The phases Before and After receiving VLE training are termed are termed Before and After stages in this chapter. Changes in the use of a number of ICT tools by the Jazan University teachers have become evident. The positive and significant enhancements of the attitudes and knowledge of the teachers were also noticeable. Although the change in gaining ICT skills was not statistically significant, a modest development of this area has been established. In support of this claim, the qualitative data received through the interviews at both the pre- and post-training stages were compared with the quantitative data gained by the questionnaires used at pre- and post-training stages.

It was found through the investigation that at the Before stage the use of ICT tools was not very high among the teachers. At this stage they mainly suffered from lack of familiarity with various ICT tools, lack of confidence, lack of available ICT infrastructure, and lack of technical support in using technology in the classroom. Furthermore, they faced many obstacles such as fear of using new technology, cultural restrictions, age barriers, and insufficient time to learn and practise using ICT tools. As a result, these teachers were often hesitant and concerned about using technology as they thought this might cause embarrassment and unnecessary difficulties in their teaching. Additionally, they considered that this new approach would be inimical to the Saudi educational culture and also might prove needless for their professional specialisation.

The results of the interviews and the questionnaires also revealed that the teachers' ICT usage was mainly limited to the use of internet, PowerPoint, email and database programmes (Excel). It can be logically claimed that the main reasons for this were their adverse attitudes, inadequate knowledge and limited technical skills of ICT. Firstly, at this stage many teachers mentioned their concerns and fears in adopting new technology, such as their age, lack of required skills for operating ICT tools, the anticipated difficulties in using technology, inappropriate student-teacher relationships, and making mistakes while teaching, which might have affected their attitude toward technology. However, the teachers also showed assertiveness towards technological tools by mentioning that they have trust in them as they are technically sound, and convenient for teaching if applied properly. Secondly, the teachers admitted that they did not have the necessary knowledge about the benefits and functions of various ICT tools. They specifically mentioned that they did not know how to use ICT tools for their own learning and for manipulating them in teaching. Thirdly, the teachers felt that they did not have the required ICT skills to activate technology in their teaching practices. In this regard, they mentioned that they had a lack of skills for managing ICT tools for teaching purposes, and limited skills in varied application areas of ICT. Moreover, they shared some challenges for gaining required ICT skills such as their heavy workload, insufficient time for practise, and limited financial support for the necessary ICT training.

On the other hand, at the After VLE training stage the same teachers showed a significant increase in their ICT usage, particularly with internet, Smartboard, word processing, synchronous Chat, overhead projectors, slides, and digital video camera.

Although usage of not all the ICT tools had improved highly, the awareness, motivation and confidence of the teachers for using them increased significantly. Regarding the use of ICT, the teachers exhibited enhanced motivation and trust. Besides, according to them, they now know more about various benefits of technology and their use in holding students' attention by making lessons more interesting. They also acknowledged that they were very satisfied with the facilities they received using various ICT tools, and that they trusted them more in teaching. Regarding the use of technology, another positive development was found: the teachers became more able to merge technology with traditional approaches.

Beside increased use of ICT, a positive change in the teachers' attitudes and knowledge was also evident after they received the VLE training. Firstly, many teachers expressed the view that they felt more inspired and confident after trying out some ICT tools in their teaching. They also showed satisfaction with various ICT tools as they found them swift to use for information gathering, for experience sharing, and for involving students in the teaching and learning processes. As a result, they found more usage areas and benefits of ICT tools. In this regard, many teachers admitted that they could easily merge technology with traditional teaching practices and considered this to be convenient in their teaching. The teachers showed a higher rate of awareness about the use of technology and its importance in their personal and professional lives. Consequently, many teachers showed positive perceptions toward the use of technology for educational purposes, and expressed eagerness to undergo more ICT training.

The study findings in general present highly positive attitudes of the teachers of Jazan University about using ICT for teaching, and at the same time it can be seen that the very negative attitudes have decreased remarkably. Secondly, at the After stage many teachers demonstrated their improved knowledge about the educational technology as they were more aware of a number of ICT tools and their benefits along with the necessity of VLE training. Consequently, the teachers also became conscious about the need for gaining more ICT-related knowledge, and therefore they demanded more ICT training for themselves and their colleagues. Thirdly, it was found that after receiving the VLE training the number of fairly skilled university teachers had increased in all areas, although in the short term, which can be considered as a positive impact of the training. At this stage the teachers acknowledged that VLE training had provided them with an opportunity to practise using some ICT tools that had supplied with confidence, and ultimately made them better users of technology. Although at this

point a significant change of ICT skills was not achieved, the teachers were eager to gain more proficiency in using ICT, and believed this could be acquired through more participation in ICT training. Therefore, they very much expected the involvement of their university authority, and felt the need of a CPD scheme to develop their use of ICT.

By analysing the findings of the interviews and questionnaires during both the Before and After VLE training stages a clear change in the usage of a number of ICT tools by the Jazan University teachers is established. Additionally, it is evident that these teachers gained a more positive attitude, wider knowledge, and improved skills in using a number of ICT tools. Moreover, the overall nature of the findings clearly indicates an active continuous development process among the teachers of Jazan University created by the VLE training course.

Chapter 7 Discussion

7.1 Introduction

The study findings of the use of VLE in CPD for enhancing the use of ICT in teaching by Jazan University teachers provide a number of indicative information and guidelines. In order to establish the relevance of the discussion of these findings it is important to connect them to the contemporary teacher development context of Saudi Arabia.

Several research findings, reports and newspaper commentaries (Al-Gahtani, 2005; Al-Jarf, 2007; Clemente, 2007; Al-Khalifa, 2010; Ageel, 2011) have mentioned that, although the use of ICT in educational institutions in Saudi Arabia is comparatively new, its involvement in teaching and learning is being tried by both teachers and educational administrators. It has also been observed that teachers in higher educational institutions have increasingly used ICT tools such as internet, e-portals, e-libraries, and scientific research databases for their own learning and for teaching students (UNESCO – Arab Report, 2009; Ageel, 2011). For improved utilisation of these ICT tools, they have begun taking different types of specialised training courses (Alkhalaf et al., 2012). Although in Saudi Arabia some educational institutions have adopted VLE-based learning, there is little evidence of provision of any CPD for teachers through VLE or using ICT (Al-Rabaani, 2008). However, globally higher educational institutions are facing difficulties in adopting ICT, particularly in ensuring internet-based learning (Beller and Or, 2006), and the contribution of VLE-based teacher training has not been sufficiently proved (Park and Hee, 2009).

7.2 Earlier assumptions and research findings

Teacher training through VLE has already been suggested as an effective approach by a number of researchers (Morell, 2006; Hramiak, 2007). It is, however, anticipated that there might be several factors such as social aspects, transactional distance, lack of preparation and lack of collaboration to hamper this type of technology-supported training (Rovai, 2000; Convery, 2009). It is noted that at Jazan University in Saudi

Arabia the use of technology by teachers was low, and they had limited training and needed experience in using various ICT tools for teaching purposes (Ageel, 2003).

The study findings in general have proved and reinforced a number of teacher development-related assumptions and some previous research findings. Firstly, it has been shown that ICT can be an effective means for forming appropriate professional attitudes, and for gaining knowledge and skills required for effective teaching (Al-Gahtani, 2005). Similarly, the research activity has established that a VLE can be distribute and facilitate various types of learning materials (an earlier claim of Young, 2002 and Glennie et al., 2012). In fact, the research findings support the claim of the researchers (Lai and Eugenia, 2011) that the use of ICT in teaching can effectively enhance the level of various teaching capabilities of teachers. It has been seen that a VLE-based CPD can promote the critical thinking ability of the participating teachers according to the requirement given by Tinio (2002). It has been observed during the VLE training that this kind of professional development scheme can also enhance collaboration and cooperation within an informal (as suggested by Sandarst, 2012; Garcia-Penalvo, Colomo-Palacios, and Lytras, 2012), flexible and encouraging learning environment (as suggested by Wubbels et al., 2006, and Dorman, 2002).

7.3 The impact of VLE intervention

The aspects of VLE training using ICT for teaching have played a significant impact in the perceptions and performances of participating Jazan University teachers. At the Before training stage, the teachers' ICT usage level was low and their perceptions related to technology sometimes negative. Most of the participants identified that they did not use ICT tools for educational purposes. They also shared that, as the approach was new and they had minimal familiarity, they faced a range of obstacles and consequently hesitated to use technology in their teaching. At this stage the participants stated various social and institutional obstacles (similar to the comments of Albirini, 2006), including cultural reasons and the need for technological facilities. The data of this stage particularly supported the need also to design suitable training policies and procedures (as prescribed by Mohamad and Woollard, 2009).

On the other hand, the same teachers showed their enhanced trust in and motivation to use technology in teaching practices after receiving the VLE training. Their performances also showed that they had improved their usage of ICT tools and

gained more capacity in using and blending their new technology-related skills and knowledge into their teaching activities.

Here, firstly is a comparison of the perceptions and usage of the technology, achieved through interviews, of these university teachers at the Before and After stages of receiving the VLE training. There follows a discussion of the findings with the questionnaires. It can be expected that these two types of research findings would provide clearer answers to the research questions and clarify the overall impact of the VLE-based CPD on the teachers.

7.3.1 Findings through interviews

At the Before stage, without VLE training, most of the teachers felt unconfident in using various ICT tools in their teaching. They thought the approach to be new and that they might make many mistakes and be embarrassed. The teachers were not confident in terms of student engagement when using technology in their teaching. Besides, many teachers complained that the support infrastructure for using technology and the time for preparing technology-supported learning materials were inadequate. These complaints indicated two crucial areas, namely the facilities and the time required to improve the use of ICT tools in the classroom (Gulbahar, 2008). Another difficulty the teachers mentioned was the strongly embedded traditional teaching and learning culture of Saudi Arabia that generally does not encourage the use of technology in educational practice.

However, the teachers' increasing usage of ICT tools proves that in Saudi Arabia the adoption of technology in teaching and learning is increasing (Leidner and Jarvenpaa, 2008). Additionally, many teachers considered that they did not want to use ICT tools as they require some preparation. There was also some concern about age, which some thought might affect their keeping up with the modern technology age. A number of teachers were unconfident about using technology for teaching as they thought they might face technical difficulties while operating the technology as they do not have the required technological knowledge and skills. Furthermore, some teachers thought that ICT knowledge and implementation in classroom teaching is not necessary for their professional specialisation. The concerns of these teachers, in fact, reflect Orellana's (2005) research finding that the personal and professional usage of ICT by teachers is generally limited in higher education institutions, which consequently demotivates the teachers from using it for teaching purposes. On the other hand, after

receiving the VLE training, the teachers at Jazan University showed satisfaction with the performance of the ICT tools they used. Most of the teachers have now been able to find various new options for using technology.

Although research evidence shows that technology-oriented teaching and learning can be problematic and many university teachers are generally not interested in working with ICT tools for collaborative learning with their students (Pachler and Daly, 2006), the VLE training has had a significant impact on the perceptions and practices of the Jazan University teachers. The training has supported a number of previous claims such as:

- a) ICT knowledge can enhance learners' interactivity (Geloxen, 2010)
- b) For enhanced use of ICT in teaching a higher level of motivation is required (Gungoren, 2009).
- c) CPD is beneficial for the improvement of the teachers of higher educational institutions (Butcher and Stoncel, 2012)
- d) ICT integration for teacher learning can improve teaching performances (Ming et al., 2010).

7.3.2 Findings through questionnaires

The data received from the questionnaires during the Before and After stages of VLE training confirms that a significant positive change of the usage, knowledge and attitudes has occurred among the teachers of Jazan University attending the VLE training. Although the improvement of the ICT skills after the VLE training was not found significant (please refer to Table 6-8), it follows that the reason may be the short duration of the training programme. The questionnaire results also indicate that the achievements and performances of female participants regarding the usage, attitudes, knowledge and skills of ICT are higher than their male counterparts in Saudi Arabia (please refer to Table 6-9). These findings establish that women teachers in Saudi Arabia are enthusiastic and participate in the processes of ICT integration in teaching purposes. At the same time it has been found from the questionnaires that there are no significant discrepancies in the change of ICT-related usage, attitudes, knowledge and skills between different schools at the university (please refer to Table 6-10). This result indicates that a VLE-based CPD could be successfully implemented among the faculty members of different disciplines, and the participants could learn through collaboration and interaction.

7.4 Responding to research questions

Here in the following sections, the impact of the VLE-based CPD on the use of ICT in teaching by the Jazan University teachers is been discussed according to the four research questions:

7.4.1 *Research Question 1:*

Can a VLE affect the use of ICT in teaching by university teachers in Jazan University to support their teaching?

The VLE training proves Watson's (2001) claim that orientation to the usage of ICT tools can effectively increase ICT usage in university teachers' teaching. Although the Jazan University teachers were made familiar with various ICT tools for teaching purposes, their usage varied from person to person, which indicates that the use of technology generally depends on an individual's needs and choice (Xu and Meyer, 2007). However, most of the teachers experienced a higher level of usage of the ICT tools, such as internet, PowerPoint, a Smartboard and word processing software (please refer to Figure 6-12). The questionnaire data reveals that the number of non-users of each ICT tool has decreased and the number of the regular users for each ICT tool has increased. These changes regarding the use of ICT tools in teaching prove a significant positive change in the use of ICT by the Jazan University teachers in their teaching.

After receiving the VLE training, Jazan University teachers showed the following reflections through the interviews and tests.

Firstly, many teachers showed enhanced awareness about different educational uses of various ICT tools and increased enthusiasm for gaining knowledge and skills about them. Most of the teachers realised that they had gained some essential technological skills required for technology supported teaching. Moreover, these teachers now understood more about the benefits of using ICT tools for teaching.

Secondly, most of the teachers found more opportunity in their teaching for using various ICT tools (please refer to Figures 6-8 and 6-9). Supporting Gao and Tinto (2006), it has been found that while the usage of ICT in teaching has increased after attending VLE training, the teachers have now started finding new ways to use them. This illustrates that the teachers are now in a process of continuous learning and professional development. The teachers acknowledged that they had gained some

essential ICT knowledge and skills, consequently enhancing their usage of ICT. They have become conscious, however, of the need for professional freedom for activating their preferred ICT tools. This awareness seems to be positive in terms of these teachers' autonomy and motivation (Vannatta and Fordham, 2004).

Thirdly, many teachers showed their ability to merge technology-based teaching with traditional teaching practices (please refer to Figure 6-10). This attitude can be taken as very positive for better usage of technology in higher education by the teachers. The teachers also admitted to using various ICT tools to encourage their students to be more engaged in lessons. This evidence can be treated as significant in relation to global experiences with ICT that indicate that students of higher educational institutions are also becoming interested in the use of technology for their learning (Hattangdi and Ghosh, 2008).

Fourthly, through the research findings, the claim of Al-Kahtani et al. (2006) is established in that the university teachers consider factors such as age, cost effectiveness, and field of specialisation influence their adoption of technology for teaching purposes (please refer to Figures 6-8 and 6-9). The teachers also emphasised the need for organising more ICT training, which can build their skills and confidence regarding the use of technology in their teaching practices.

Finally, many teachers expressed a need for training and the opportunity for more practice with various ICT tools (please refer to Figures 6-8 and 6-11), not for their own development but for their colleagues. The teachers' request to arrange training for their colleagues seems to be very positive as it indicates the core problem of implementing technology in higher education. This concerns the problem that if only a portion of the population in an educational institution is technology-literate, it may represent a major obstacle to the proper use of ICT (Muema and Muia, 2011).

Research evidence (such as Watson, 2001) shows that any orientation to ICT tools may enhance ICT usage (Watson, 2001). The VLE training provided the Jazan University teachers with this type of opportunity. It is important to recognise that, although the achievements regarding the use of ICT in teaching may vary with gender, academic backgrounds and scope (as mentioned by Jung et al., 2006), a comprehensive training scheme could be designed and implemented successfully where most of the target learners could improve their use of ICT in teaching . By analysing the outcomes of the VLE training on the Jazan University teachers, a positive impact is clearly visible as the teachers have become more aware and can talk about the benefits they are

receiving in using various ICT tools. These demonstrable characteristics of the use of ICT also signify a strong and positive impact on the professional development and teaching practices in terms of professional knowledge, attitudes and skills, of the mentioned teachers.

7.4.2 Research Question 2:

What is the effect of the VLE-based programme on university teachers' knowledge of ICT at Jazan University?

For teaching effectively with the help of ICT tools, teachers need to have sufficient operational knowledge of technology (Cox et al., 2000). This knowledge can be about the features or the operational procedures of any ICT tool (Yusuf and Onasanya, 2004). It was identified in the interviews and the questionnaires that the teachers of Jazan University experienced an increased level of knowledge (please refer to Figure 6-27), particularly regarding ICT tools and their applications in teaching and learning, by receiving the VLE training. Before the training, most of the participants mentioned their lack of ICT knowledge, and after receiving training they requested more ICT training. They also felt that the use of ICT tools could be to improve both their educational knowledge and teaching skills. The similar situation of the teachers in Saudi Arabia has also been identified in other research work (Ageel, 2011).

During the Before VLE training stage many teachers were unfamiliar with the use of common ICT tools. This is also a reflection of the national picture; only a few institutions in Saudi Arabia are able to implement ICT (Kanamugire, 1993) This unfamiliarity with the use of technology for teaching also supports Ageel's (2011) claim that, although most of the university teachers show positive attitudes about technology-based teaching and learning, because of their insufficient knowledge about the benefits of using ICT tools and about the ways to activate them in teaching, the usage of technology in teaching is very low.

After receiving the VLE training many of the teachers acknowledged that their new knowledge about technology allows them to adopt more ICT tools in their teaching (please refer to Figure 6-30). According to them, a number of ICT tools now provide them with the scope to access various educational resources, and also supply them with various options for utilising information for teaching (Cox et al., 2000). This new knowledge on information searching also seems helpful for the teachers as it can assist

them to research and communicate using technology and to learn from their colleagues in a collaborative manner (Katz, 2005). Besides, many teachers now think that their use of ICT also helps to understand their lessons well (please refer to Figures 6-28 and 6-31), which supports the claim of Yusuf and Onasanya (2004) that ICT can improve subject competence of teachers. Some teachers also stated that they now know how to involve students conveniently in the teaching and learning processes and encourage them to learn with their peers collaboratively. This new knowledge of lesson management shows the teachers' enhanced capabilities to interact with the students effectively (Bennett and Lockyer, 2004).

Although the speed of adoption of various ICT tools by the Jazan University teachers is not rapid, a common problem with implementing technology-based education (Kirkup and Kirkwood, 2007), it shows that the teachers are becoming more aware of the benefits of using ICT tools for teaching purposes. This awareness is vital in activating technology in practice, because the transformation to any new educational practice becomes sustainable if it is consistent with the tradition of the workplace and the teachers' and students' styles (Garrison and Kanuka, 2004). As the teachers have become keener to receive ICT training, they have shown their eagerness to gain more knowledge about technology, particularly about ICT tools for teaching and learning. It can be assumed that the teachers' enhanced knowledge of ICT will influence their attitude towards the use of technology (Allen et al., 2012).

7.4.3 Research Question 3:

What is the effect of the VLE-based programme on university teachers' attitudes toward ICT usage at JU?

Attitudes of teachers of higher educational institutions around the world towards using ICT for teaching have changed positively in recent years (Fry and Love, 2011). A similar trend has been noticed among the Jazan University teachers after they received the VLE-based CPD training. The improved psychological factors (as described by Teo, 2012) of these teachers behind their use of technology in teaching has also been reflected in their higher rates of ICT usage and enhanced levels of technology-related knowledge gaining. This result of VLE training establishes the claim of Vannatta and Fordham (2004) that ICT-related beliefs and attitudes are important for increasing the knowledge and usage of ICT by professionals such as university teachers.

Although the usage level of ICT in teaching by the Jazan University teachers before the VLE training stage was not high, the teachers showed their awareness and positive attitudes towards technology for educational purposes (a similar situation has also been described by another Arabic researcher, Al-Rabaani, 2008). However, at this stage they expressed personal concerns and fears about using technological tools for teaching purposes (please refer to Figures 6-17 and 6-18). Their attitude changed significantly at the After VLE training stage, when many of them acknowledged the new inspiration, optimism, love and awareness they had received through the VLE training (please refer to Figures 6-20, 6-21 and 6-22).

Anderson (2002) mentions the active role of socio-cultural, professional and technological factors in shaping the attitudes of teachers to using technology for educational purposes. Positive attitudes towards technology were seen even at the Before VLE training stage. Through interviews and tests it was found that the teachers admitted that ICT tools are trustworthy as they have been scientifically proved. They also admitted that these tools seem convenient for teaching. At this stage teachers showed their concern about their age, as they thought this might be a barrier to their acceptance and use of technology-based teaching. They also showed anxiety about their role in the classroom while using ICT tools. These types of concerns and attitudes regarding the use of ICT are not new, however, and are identified in other contexts (Harden, 2002).

Another concern the teachers expressed was their lack of skill and anxiety about the use of technology in teaching purposes. They also showed their concern about the role of tradition and culture which they thought might not allow full use of technology. Here, the reason for the teachers' concern might be their lack of ICT orientation as they were unfamiliar with the use and benefits of various ICT tools at that stage (Azjen and Fishbein, 1980). This also led the teachers' anxiety about making mistakes while using ICT tools. In this connection, we can consider a challenge to implementing technology-based teaching and learning, namely the establishment of institutional policies and easy access to various ICT tools by the teachers in order to create a technology-friendly and motivating work environment (Ertmer, 2005).

A final concern that emerged from the investigation is the fear of inappropriate relationships between teachers and students (please refer to Figure 6-18). This perception might be a result of the context and general teaching experience of these teachers that does not allow students to participate in any dialogue that criticises or

argues with teachers' lectures and viewpoints (Albirini, 2006). These concerns portray the context and the challenges for implementing the technology supporting teaching and learning in Saudi higher educational institutions (El-Gawad and Woollard, 2009).

On the other hand, the After VLE training stage reveals a number of positive attitudes of the teachers regarding using technology for teaching. As a result of enhanced positive attitudes, the use of ICT has also been increased, and this corresponds to Ajzen and Fishbein's (1980) theory of reasoned action (TRA) and Davis' (1986) technology acceptance model (TAM) that claim that people's behaviour and performance with ICT are determined by their intentions and attitudes. The higher rates of positive attitudes and psychological factors, reflected in the interviews and questionnaire responses, have found inspiration, optimism, awareness and preparedness similar to Davis' (1986) three aspects, namely 'perceived ease of use', 'perceived usefulness', and 'attitude toward using the system'.

At the After training stage most of the teachers showed an enhanced appreciation toward technology and a desire to use ICT tools in their teaching (please refer to Figure 6-20) that are, according to Reeves (2001), the fundamental requirements for the effective implementation of ICT in teaching. They acknowledged that by using various ICT tools they can collect and share needed information and ideas more speedily, and the use of technology increases the scope for collaborative learning (Kozma, 2003). After receiving the VLE training, teachers also showed changed perceptions about technology and its usage, which also indicates their enhanced professional confidence (Ross et al., 1999). Students' acceptance of the ICT-based teaching approach (Guskey, 2002; Cordingley et al., 2004) and their involvement in learning also take a new dimension as the use of technology enhances more learner-centeredness in teaching practices (Park and Ertmer, 2007). Although most of the teachers in Arab countries avoid making use of the internet for cultural reasons (Albirini, 2006), after receiving training the teachers showed an increase in the use of the internet for their teaching purposes (refer to Figure 6-12).

It was also noticed that the use of ICT tools had increased users' motivation, which supports the claims of Park and Hee (2009). The teachers now demand more ICT-related training, which shows their more positive attitude towards the use of technology for teaching purposes (please refer to Figure 6-21). However, the need for a technology-friendly environment was mentioned by the teachers and also seems necessary for the sustainable transition from traditional teaching to technology-based

teaching (Hinson and LaPrairie, 2005). The teachers also mentioned the need for provision of training to all staff at the university (similar to Muema and Muia's recommendation, 2011) in order to create a favourable ICT-based teaching environment. They fully realised that the VLE training had prepared them with essential skills for using a number of ICT tools for teaching (please refer to Figure 6-23). Consequently, their ability to manipulate information by using technology improved. This finding particularly supports the claim of Lei (2009) that technology can prepare its users for many academic practices. In this research, the teachers also expressed the need of their students' preparation for ensuring the proper use of ICT.

By comparing the teachers' attitudes at both the Before and After VLE stages, it can be said that the VLE training has familiarised the Jazan University teachers with a number of modern ICT tools that are now encouraging them to implement technology in educational practices (Gillingham and Tooper, 1999). After the VLE training stage, the teachers enjoyed more convenience in using various ICT tools and they were able to identify more benefits such as increased inspiration and awareness about the functions and educational benefits of integrating ICT in teaching. Consequently, they became more satisfied with the educational results through using ICT tools.

7.4.4 Research Question 4:

What is the effect of the VLE-based programme on university teachers' ICT skills at Jazan University?

Several researchers (such as Conlon and Simpson, 2003) indicate that ICT knowledge and skills are interrelated as, when the usage of ICT increases, the users gain more self-confidence and independent thinking that ultimately enhance their ICT skills (Chou and Liu, 2005: 40). It therefore can be logically assumed that the skills of the university teachers improve in parallel with the enhancement of their ICT usage, attitudes and knowledge. However, in this research the improvement of skills has not been found to be statistically significant. As the qualitative data shows, although teachers are responding positively to the use of different ICT tools, they are still not using them to a very great extent. However, the rise in use of all the ICT tools for teaching purposes proves that there is progression, albeit slow, among the teachers' skill and expertise regarding ICT in teaching. The trend also indicates the requirement of time and

continuous intervention for acquiring the skill to engage more successfully with ICT in teaching.

The research findings show that a change of ICT skills of the Jazan University teachers is evident after receiving the VLE training (please refer to Table 6-7). Before the VLE training stage the teachers mainly mentioned their limited ICT-related skills and the challenges they faced in using ICT. After the VLE training stage they reported that they now had improved skills, and had achieved more proficiency in activating a number of ICT tools. It is therefore established through analysing the research findings that ICT and VLE can provide a suitable teacher training framework (Love and Fry, 2006) and simultaneously improve student-teacher relations (McComas et al., 2002) in the context of Saudi Arabia.

It was also found that most of the teachers at Jazan University had limited ICT skills relevant to their teaching, and as a general phenomenon they had low self-confidence in using ICT (Bingimlas, 2009). The teachers also identified this lack as a barrier to effective and modern teaching. They therefore felt the need for more ICT training to use more ICT tools. This finding reflects the overall educational scenario of Saudi Arabia where the use of technology by these teachers is very low (Ageel, 2003). Regarding the lack of the required skills, most of the teachers mentioned their excessive workload, insufficient time, lack of ICT facilities and limited budget as obstacles to achieving more skills (please refer to Figure 6-36).

The requirement of essential training and preparations for bringing positive changes in teaching/learning performances (Muir-Herzig, 2004) is reflected by the teachers at the After VLE training stage. Most of the participants of the research identified the need for continuous ICT training (as suggested by Trucano, 2005), and also the scope for sufficient practice (as mentioned by Al-Gahtani, 2005). The instinctive and sub-conscious change of attitudes towards ICT and their utilisation in teaching (Waring and Boardman, 2004) has been reflected in higher rates of ICT usage in teaching, which indirectly indicates a higher level of ICT skill and expertise on the part of the university teachers.

The teachers understood that ICT does not diminish their role in the classroom; rather, 'the teacher's role in the learning process becomes even more critical' (Tinio, 2002: 22). As a result, some teachers have even started blending this technological approach with their traditional teaching styles (a similar situation has also been described by Matheis et al., 2007). Some teachers also showed their leadership qualities

as they could now choose more options to implement various ICT tools according to the needs of their teaching activities (Gao and Tinto, 2006). After the VLE training stage it was also found that many teachers used more ICT tools in their teaching that provide them with the ability to present their lectures with more technology (Khan, 2001). Teachers also admitted that after gaining the essential ICT operational skills, they were able to collect and analyse more information, and find more opportunities for facilitating effective teaching (please refer to Figure 6-37). These enhanced skills of operating ICT tools in fact make both teachers and students confident to engage in interactive functions (Katz, 2005).

The teachers fully acknowledged that the implementation of technology in teaching requires both technological and organisational skills and competence (Barajas, 2002). In this regard, they also provided suggestions for the role of the university authority. Newland et al. (2006) mention that, for effective usage of ICT by university teachers, a university itself should take initiatives to ensure ICT competence and skills. Echoing this, most of the teachers in this research recommended that their university should take the responsibility to support teachers in gaining the required ICT skills.

7.5 The integration of ICT through VLE in CPD

From the interview findings and the responses collected through the questionnaires it can be appreciated that the VLE training impacted significantly on the teachers of Jazan University and boosted their level of technology-related knowledge and attitudes toward the use of ICT tools in teaching activities, and their technological skill in activating technology in their educational purpose. The fastest development among the teachers has been seen to be their change of knowledge and attitudes, which has influenced a higher rate of ICT usage in their teaching. Although the improvement of ICT skills has not been found remarkable, a continuous change is still observable. In this connection, a number of variables such as time, continuous support and available infrastructural facilities have been identified that can play an active role in building ICT-related skills of these university teachers.

One significant finding of the research is that the teachers consider the VLE training as a vehicle that has enabled them to adopt various ICT tools in their teaching. This finding reinforces Tweddell's (2006) remark that a VLE can show ways to communicate with students. The training has also been found effective in preparing the teachers, particularly in lesson planning and in the delivery processes, and in

assessment. Furthermore, the programme seems helpful in preparing the teachers with various administrative skills by training them in data processing and effective communication skills.

However, the teachers have identified some difficulties in using the ICT tools. They particularly mentioned the lack of time for practising, insufficient training for gaining effective operational skills, lack of infrastructural support, and absence of continuous support (please refer to Figure 6-36). Therefore, a common suggestion by these teachers concerned a CPD scheme, which they considered to be the pathway through which the VLE might be utilised to ensure the use of more ICT tools. The major objective of CPD should be to increase the ICT-related usage, knowledge, attitudes and skills of the university teachers. The following diagrams show how the VLE can effectively enable and enhance the use of ICT, through undergoing CPD, by the Jazan University teachers.

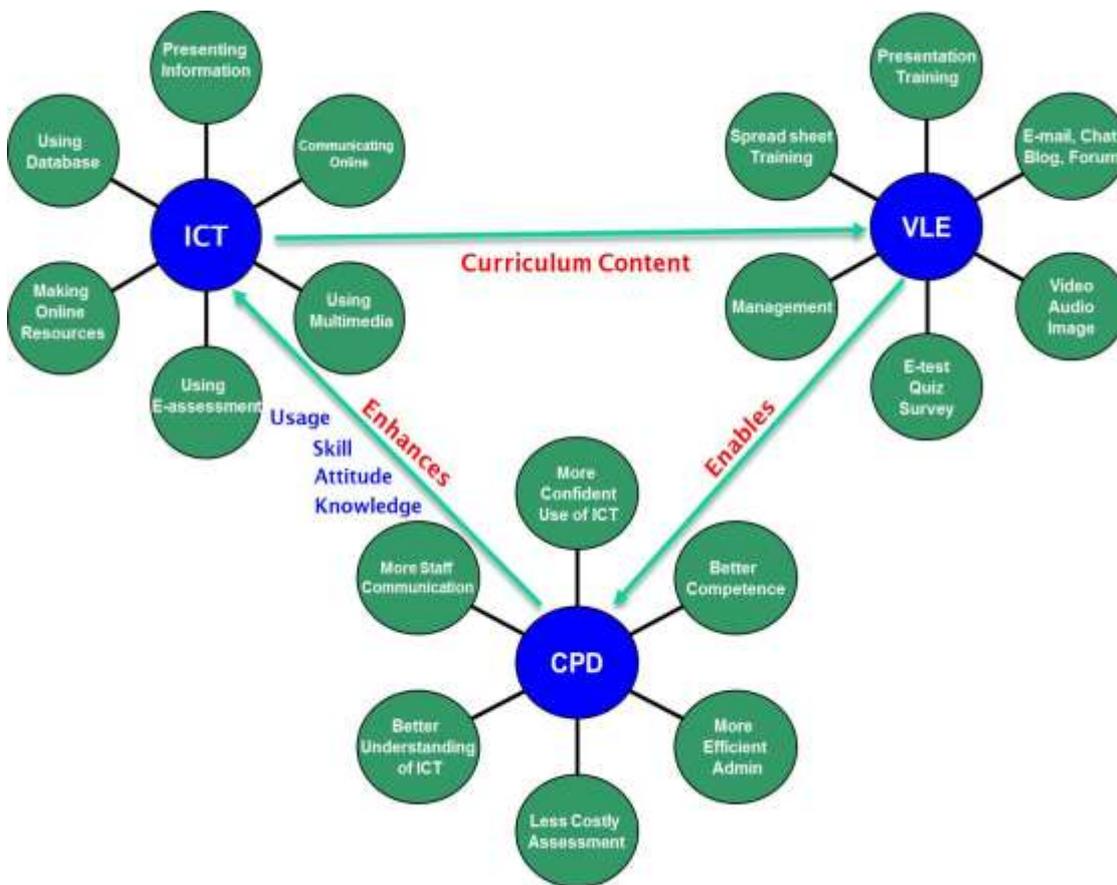


Figure 7-1: ICT Training Model

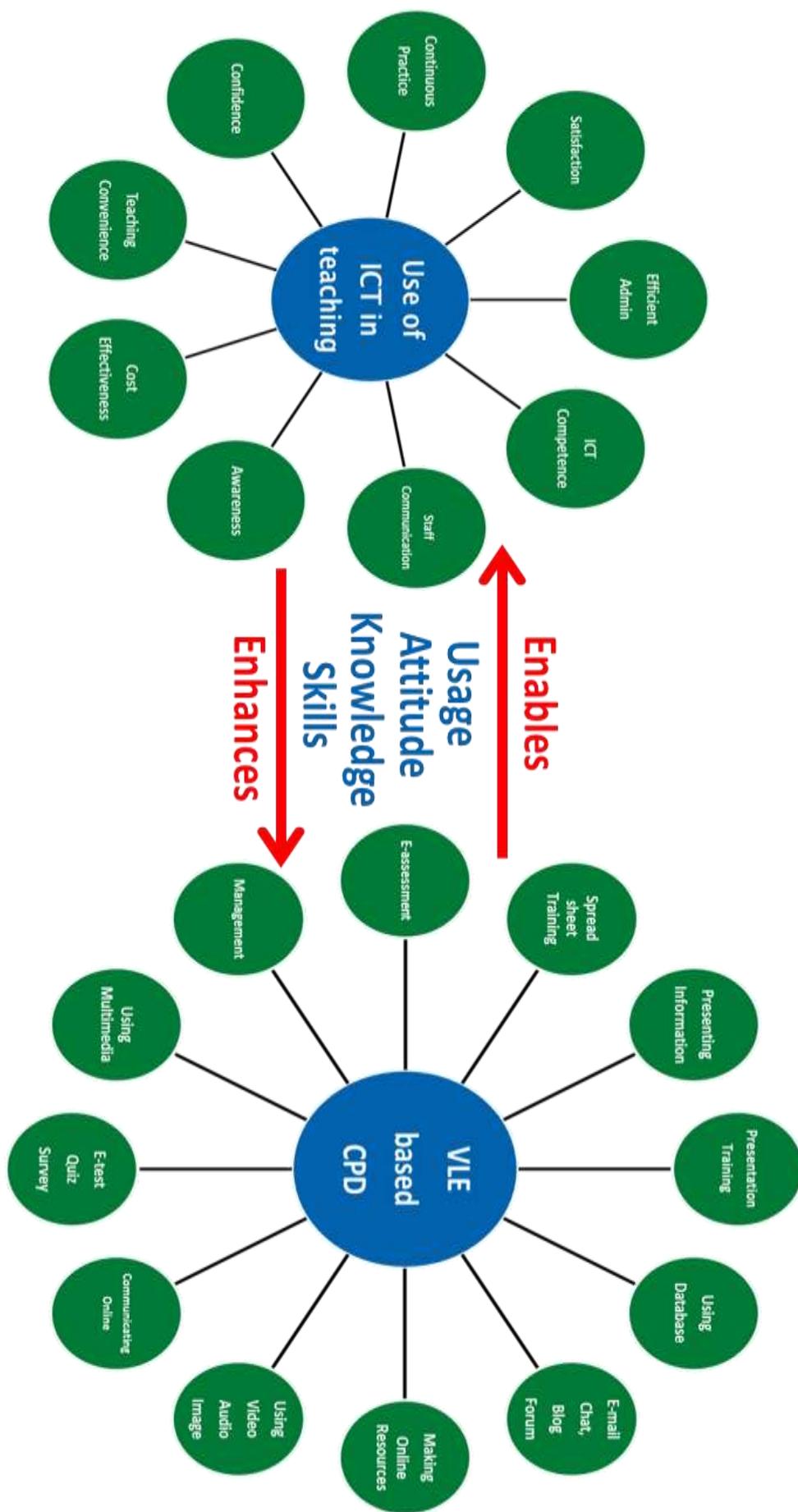


Figure 7-2: ICT Training Model (modified version)

The latter model (Figure 7-2) modifies the earlier (Figure 7-1) and merges the CPD scheme within a VLE situation. The reason for this amalgamation is that, in this kind of continuing teacher training scheme, the teachers can obtain sufficient exposure to the use of ICT for learning, and can also try to apply their knowledge and skills in their teaching. Additionally, this model tries to:

- a) Enable a continuous professional practice of reviewing, renewing and extending the knowledge and skills of both the academic subjects and technological usage as suggested by Cordingley et al. (2004).
- b) Improve teaching styles and techniques (Desimone et al., 2002).
- c) Provide access to various ICT tools for teachers for enhancing their use of technology (Ertmer, 2005).
- d) Create a systematic and continuing professional development opportunity for the Saudi Arabian university teachers (Guskey, 2002).

Based on the research findings of this study it can be claimed that a VLE-based CPD and the use of ICT in teaching by teachers are interdependent and can influence each other, particularly in usage, knowledge, attitude and skills.

In summary, the revised model endorses the need for employing a VLE as a pedagogical tool (Gioia, 2007; Sahin et al., 2007) where CPD is undertaken to integrate curriculum content for involving ICT tools. Similarly, it incorporates the facilities to manage online learning and collect resources for enhanced teaching (University of Warwick, 2006). Additionally, in the model the need is acknowledged for a structured VLE-based CPD to equip teachers to follow a new approach supported by technology. According to the research findings, it can be claimed that this VLE-based CPD will be able to provide skills and knowledge essential to activate technology in teaching by the university teachers (Gray, 2005; King, 2004; Ming, 2010, Trucano, 2005). However, the main objective of the suggested CPD will be to enhance their ICT usage.

Chapter 8 Conclusion and Recommendations

8.1 Conclusion and Recommendations

Although this research has mainly investigated the effect of CPD, through a VLE, on a number of teachers of Jazan University; its findings may reflect a general picture of the usage, knowledge, attitudes and skills of teachers at other universities in Saudi Arabia. In addition, the perceptions and performances of the teachers might be very similar to the perceptions and performances of the teachers working at similar kinds of educational institutions of the Middle East, or any developing country.

By analysing the research findings it can be concluded that the teachers of Jazan University in Saudi Arabia are fairly positive about using technology for teaching purposes, although their usage rates are generally not high. Initially, however, they possessed various negative ideas and attitudes towards the use of ICT in the classroom and were often unaware of the functions of many ICT tools, and afraid of using them because of the lack of required skills. The results show that teachers' knowledge and attitudes towards the use of ICT improved positively after participating VLE-based CPD. However, their skills did not increase at a similar rate to their ICT-related usage, knowledge and skills. This may indicate that, although a short term CPD via VLE can motivate and involve the participants to learn and apply ICT-related knowledge, for sustainable change a long term training scheme is required. Another research finding is that cultural barriers, the nature of the job and university policies have influenced the extent of use of a number of ICT tools by these university teachers. The responses and recommendations of the participants and the observations of this researcher also highlight the need to ensure sustainability by establishing a suitable ICT infrastructure and involving the maximum numbers of teachers possible in this integration of technology with teaching.

In this study, the interviews of the teachers present their perceptions, motivational aspects, problems and future requirements regarding the use of ICT. At the same time, the questionnaire results show the improvement rates of the usage of a number of ICT

tools by the teachers as an outcome of attending VLE training. Based on the participants' responses it is evident that there is an increase in the teachers' use of various ICT tools including internet, overhead projector, slides, a Smartboard, word processing software, synchronous Chat and digital video camera. It can also be seen that the teachers' usage of technology, more specifically the ICT tools, is dependent on their attitudes, knowledge and skill in the relevant technology. In other words, it can be claimed that if the university teachers' technology-related attitudes, knowledge and skills are positively enhanced, the use of technology in their teaching practices also increases. The research identifies some influences on the university teachers' attitudes, knowledge and skills about technology, which include availability of ICT infrastructure, time for learning and lesson material preparation, scope for blending with traditional teaching approaches, provision of continuous support, and options for regular practice. From the interviews it is clear that the university teachers consider awareness building, ridding themselves of technology-related anxieties, and acquiring the necessary technology-related knowledge and skills are vital to improve professional practice.

Firstly, awareness building has been identified as essential for improving positive attitudes towards technology and their applications in teaching among the university teachers. In this regard, teachers need to be familiarised with the various functions and benefits of using technology, both for their personal and professional purposes (based on the information illustrated in Figures 6-20, 6-21, 6-22, 6-26 and 6-27). Additionally, there is a need to establish trust among the users regarding the convenience of applying technology in teaching practices. It is important for the teachers to know how they can easily incorporate various ICT tools in both the traditional and modern classes. It needs to be noted that teachers have various anxieties such as their lack of skill to activate the technology, belief that they are over-age, a fear of being embarrassed by making mistakes, and concern about inappropriate student-teacher relationships. However, this study proves that if these teachers are given structured, flexible, and easy-to-reach training they can engage in an experience sharing process, feel more motivated, and consequently apply more ICT tools more frequently in their teaching (based on the information illustrated in Figures 6-11, 6-22, 6-23 and 6-32).

Secondly, teachers need to gain more technology-related knowledge (based on the information illustrated in Figures 6-26, 6.30, 6.31 and 6.32). This is potentially helpful in their learning for self-development and for better teaching. Technology-

related knowledge can also help teachers modify and advance traditional teaching and learning practices, and try to perform better in the lesson delivery processes (based on the information illustrated in Figures 6-10, 6-18 and 6-20). According to the research findings it can be claimed that the university teachers need to gain ICT knowledge that can assist them to improve their educational knowledge and pedagogic skills, and can help to teach effectively those learning in the classroom. For this reason, the teachers need to know a variety of ICT tools, and attain the knowledge of their functions, advantages and the relevant approaches to their better implementation in teaching (based on the information illustrated in Figures 6-19, 6-26 and 6-27). One interesting fact unveiled by the investigation is mentioned by the teachers: involvement of the greater community of the teaching staff is necessary for the more effective outcomes of technology-based teaching. This insight seems valid as, if most of the teachers of an educational institution possess the required knowledge of a particular subject or educational area, it will provide suitable opportunities to them to share, synthesise, evaluate and argue about them. Moreover, this type of knowledge-receiving activity is demanded by the teachers who believe that a CPD scheme, delivered conveniently by electronic means at a distance, can provide this type of opportunity for multiple benefits such as personal ICT skill gains, teaching improvement and ICT knowledge and skills transfer to students.

Thirdly, this research has identified that the teachers need to gain sufficient ICT skill to activate them in their teaching. Insufficient skill might hamper effective teaching and limit the use of technology in the classroom. To overcome these problems teachers need to undergo proper induction, particularly on how to manage different ICT tools in teaching and how to deal with the difficulties they might face. However, this training might not be effective or motivating for teachers if it takes a long time or requires excessively hard work, or if it does not deal with the teachers' practical professional practice. Yet, the findings of this research indicate only slow development of skills compared to use CPD time, and for this reason a long term, on-going, flexible (in terms of training time and venues) professional development scheme seems inevitable. Based on the success of the training via the VLE, it can be claimed that by implementing this type of technology-enhanced training, teachers' knowledge and motivation toward the use of technology and ICT tools can be increased through flexible and continuous learning processes. The principal benefit of VLE training is that it can be done as a CPD scheme or an on-going university-based process, and can tackle the common

challenges of the university teachers of developing countries such as workload, insufficient time for practise, and the need for large budgets to attending traditional training. VLE training and its CPD nature might motivate and help teachers use more ICT tools on a regular basis, in more efficient ways. Through this study it can be seen that the university or educational authority needs to take the responsibility. A university should provide necessary ICT facilities for its teachers and allow them to practise, apply and share their experiences with their colleagues.

In order to ensure the proper usage of various ICT tools, the following recommendations need to be taken into account. The first set of recommendations is particularly about VLE training and its possible approaches. The second set outlines a suitable CPD scheme for the university teachers. Although the recommendations are for Jazan University, they might also be viable for other universities in Saudi Arabia, or even for another developing country.

For effective implementation of VLE training the following recommendations are made:

- While facilitating the VLE training with the university teachers, the researcher observed that participants gradually started to reflect and share their learning and teaching difficulties, satisfaction, queries and opinions regarding the use of ICT tools in their learning and teaching. In order to contribute to the discussions they started to use the blog and the forum and this gradually increased during the training period. Moreover, they started exchanging emails and even began to chat online. This improvement in their sharing and collaborative attitude helped them overcome their initial concern and fear (please refer to Figures 6-17 and 6-18 in the Results chapter) with enhanced inspiration and affection (please refer to Figures 6-19 and 6-21 in the Results chapter) for the use of ICT in learning and teaching. Based on this observation it can be claimed that regular interaction and cooperation among teachers may reduce their anxiety about using ICT for learning and teaching, and perhaps vice versa. Therefore, the main objective of VLE training should focus on a professional development scheme where the learning environment is collaborative and interactive in nature. However, this type of learning environment should properly address the relevant issues e-safety, etiquette and professional online behaviour, ensuring that participants are sufficiently safe and free from anxiety. In this regard, it is necessary to build awareness between both participants and VLE tutors so that

their mistakes and difficulties neither embarrass them, nor damage their professional dignity nor impede their online activities. The online tutor has a vital role to play, which is to confirm that the training is relevant, practical and motivating for the participants (this supports the recommendations of Salmon, 2003). Continuous collaboration and interaction is required among participants, including the online tutor.

- VLE training needs to be flexible in terms of time and operational procedures. It should be kept in mind that the university teachers are busy and often do not feel interested in participating in training because of a heavy workload and professional job responsibilities. VLE training should allow teachers to attend its activities both from home and on university premises.
- It can be assumed that the VLE training needs to be practice-oriented (based on the information illustrated in Figures 6-18 and 6-38). There may be many advantages, as sufficient practice will minimise teachers' fear of making mistakes, and will enhance confidence and capabilities of using various ICT tools. Practice sessions will also allow the teachers to find new areas to incorporate the usage of technology. Additionally, it will enable them to share their experiences with their colleagues and this will ultimately increase their knowledge, efficiency and motivation to use technology in teaching and learning practices.
- While designing VLE training, there should be proper consideration of the participating teachers' ages and subject specialisations (based on the information illustrated in Figure 6–18). It is commonly found that older and experienced teachers are often very traditional, and may be reluctant to accept new approaches. It is therefore crucial to understand these teachers' problems. Additionally, teachers in some subjects do not acknowledge the importance of involving technology in teaching. Similarly, subject-specific requirements and scope for using technology needs to be taken into account while preparing and initialising VLE training.
- VLE training should try to address and include all types of participants or teachers (based on the information illustrated in Figure 6–29). It has been found that a training programme cannot produce the expected outcomes unless most of the colleagues are involved. To ensure the participation of all teachers, the

educational and administrative authorities need to establish and follow appropriate policies and procedures.

- It is important to try to ensure that, in the VLE training, teachers reflect on their experiences about using technology in the classroom. Through reflection teachers can share their knowledge and skills with their colleagues that may enhance the overall capacity of the teachers of a university, both in problem-solving and activation, to adopt technology for teaching purposes (based on the information illustrated in Figure 6–19).
- VLE training should be a continuous process for university teachers. The research has identified that the adoption of technology by the teachers in their teaching happens gradually. Again, while using various ICT tools, teachers constantly face different difficulties and thus they need regular support, both about operating technology and the approach to its use for better teaching and learning outcomes (based on the information illustrated in Figures 6–35 and 6–39).

For effective implementation of VLE training, recommendations are provided that mainly discuss how a CPD scheme should work with the teachers:

- University teachers are eager to gain proficiency in using various ICT tools. For them, CPD should be designed in such a way that they can continuously practise, both for personal and professional purposes. It might be beneficial to provide opportunities to incorporate ICT tools into their traditional teaching. It has been found from the research that if teachers can blend technology with their traditional approaches they feel more motivated and confident about using ICT tools in their teaching.
- It is essential in a CPD programme to address the difficulties, such as anxieties about operating technology, lack of knowledge, and inadequate ICT skills of the teachers. The principal objectives of the programme should be to enhance positive attitudes and trust, and to familiarise teachers with various options for using technology, particularly ICT tools.
- Confidence building seems vital for ensuring proper use of ICT in teaching by teachers. Having the necessary ICT-related knowledge and the skill to employ the tools to prepare and deliver lessons may build confidence among teachers. Practical examples and guided practice may also boost their confidence.

- CPD should be designed as a continuous process as teachers might regularly need support to learn and implement various technological tools in their teaching. Considering this, it seems more convenient, time effective and financially viable if the teachers can attend at their workplace. If the university arranges the facilities for VLE-based CPD it can also be used for teaching students, and also for students' learning.
- To design and implement an effective CPD, the university and its authority should play an important role. Besides establishing the necessary ICT infrastructure, the university should try to include most of its teachers in the process in order to help develop a learning community among the teachers. The university should also design the programme in such a way that the teachers can comfortably cope alongside their professional workload. Additionally, the university should ensure that the learning content does not conflict with local beliefs and culture, and suits the backgrounds and specialisations of the teachers. Moreover, there should be an institutional mechanism by which the performances and progression of the teachers can be effectively monitored, and necessary feedback provided to enhance the efficiency and usage of various ICT tools. It is also a concern that, if the teachers do not use ICT facilities beyond the university premises, the adaption might not be sustainable. It is therefore necessary to encourage and guide these teachers to use ICT for personal activities not entirely related to their work.

8.2 Concluding Remarks and Future Direction of the Research

This research is entitled 'Using a VLE to increase the use of ICT by teachers at Jazan University in Saudi Arabia'. It establishes that Saudi university teachers' use of technology in their teaching is strongly influenced by their knowledge, attitudes and skills about technology. It also provides evidence that a CPD scheme using a VLE can potentially enhance their knowledge, attitudes and skills, and can lead them to greater use of ICT tools.

Yet the research has the potential to explore the factors responsible for effective CPD programmes on using ICT by teachers within a VLE. There are still opportunities to learn about the perceptions of university teachers on CPD and VLEs, and the ways

of using ICT tools in pedagogical activities at Jazan University. It can be expected that the findings of this research might lead future researchers to investigate these areas.

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Appendices

Appendix 1: Ethical Approval

UNIVERSITY OF
Southampton

Mr Mohammed N Ageel
School of Education
University of Southampton
University Road
Highfield
Southampton
SO17 1BJ

RG0 Ref: 6605

04 August 2009

Dear Mr Ageel

Project Title Using a VLE to Increase the Use of ICT by Lecturers in Jazan University in Saudi Arabia

This is to confirm the University of Southampton is prepared to act as Research Sponsor for this study, and the work detailed in the protocol/study outline will be covered by the University of Southampton insurance programme.

As the sponsor's representative for the University this office is tasked with:

1. Ensuring the researcher has obtained the necessary approvals for the study
2. Monitoring the conduct of the study
3. Registering and resolving any complaints arising from the study

As the researcher you are responsible for the conduct of the study and you are expected to:

1. Ensure the study is conducted as described in the protocol/study outline approved by this office
2. Advise this office of any change to the protocol, methodology, study documents, research team, participant numbers or start/end date of the study
3. Report to this office as soon as possible any concern, complaint or adverse event arising from the study

Failure to do any of the above may invalidate the insurance agreement and/or affect sponsorship of your study i.e. suspension or even withdrawal.

On receipt of this letter you may commence your research but please be aware other approvals may be required by the host organisation if your research takes place outside the University. It is your responsibility to check with the host organisation and obtain the appropriate approvals before recruitment is underway in that location.

May I take this opportunity to wish you every success for your research.

Yours sincerely



Dr Lindy Dalen
Research Governance Manager

Tel: 023 8059 5058
email: rgoinfo@soton.ac.uk

Corporate Services, University of Southampton, Highfield Campus, Southampton SO17 1BJ United Kingdom
Tel: +44 (0) 23 8059 4684 Fax: +44 (0) 23 8059 5781 www.southampton.ac.uk

Appendix 2: Letter for Data Collection

UNIVERSITY OF
Southampton
School of Education

**Cultural Bureau in London
630 Chiswick High Road
London
W4 5RY
United Kingdom**

Reference: Mohammed Ageel

This letter confirms that Mr. Mohammed Ageel is a full-time research student within the School of Education at the University of Southampton. This letter confirms that Mr. Mohammed Ageel's intended research study procedures for data collection and fieldwork are in Saudi Arabia.

Mr. Mohammed Ageel proposed study is:

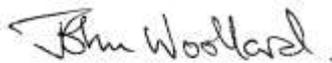
Using a Virtual Learning Environment (VLE) to increase the use of information and communication technology (ICT) by university teachers in Jazan University

The proposed research will adopt a qualitative and quantitative approach with data collected through questionnaires and interviews with University teachers in Jazan University. Appropriate ethical protocols will be adopted according to the policies of the University of Southampton.

He also plans to visit some Saudi universities that are already using VLE in their teaching (King Abdul-Aziz University, King Fahad University, King Saud University and Tabuk University) in Tabuk, Dammam, Riyadh, and Jeddah City to get their experience of implementing VLE.

In order to complete the fieldwork Mr. Mohammed Ageel plans to travel to Saudi Arabia around mid July to mid of October 2010. At which point Mr. Mohammed Ageel plans to return to the University of Southampton and begin writing up his work.

Yours faithfully,



Dr John Woollard
Lecturer in Information Technology Education
Doctorate supervisor

Appendix 3: Letter to Request Permission for Data Collection

بسم الله الرحمن الرحيم

التاريخ 3 / 3 / 1431 هـ

سعادة الملحق الثقافي السعودي في المملكة المتحدة وإيرلندا

حفظه الله

وبعد

السلام عليكم ورحمة الله وبركاته

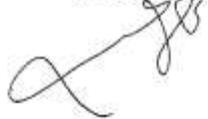
أفيدكم برغبتني في إجراء رحلة علمية لتطبيق دراستي على أعضاء هيئة التدريس في جامعة جازان وجمع بيانات البحث ومأطلب من قسم تقنيات التعليم وهو القسم الذي ابتعثت منه الموافقة على زيارة بعض الجامعات السعودية (جامعة الملك سعود- جامعة الملك فهد للبترول والمعادن- جامعة الملك عبدالعزيز- جامعة تبوك) التي تطبق برامج التعليم بالواقع الافتراضي وهو موضوع بحثي وذلك للإطلاع على تجاربهم في مجال التعليم بالواقع الافتراضي والاستفادة منها في بحثي بحسب الخطة الزمنية المرفقة. عليه أرجوا منكم الموافقة على طلبي هذا.

ولكم تحياتي.....

المبثعث

محمد بن ناصر عقيل

JZU 006



Appendix 4: Permission for Data Collection from Jazan University

Kingdom of Saudi Arabia
Ministry of Higher Education
Jazan University
Department of Scholarship
And Culture Relationships



المملكة العربية السعودية
وزارة التعليم العالي
جامعة جازان
إدارة البعثات والعلاقات الثقافية

حفظه الله

سعادة الملحق الثقافي بالمملكة المتحدة

والسلام عليكم ورحمة الله وبركاته وبعد،،،

إشارة إلى خطابكم رقم ٤/٢٦٥٤ وتاريخ ١٤٣١/٠٣/٠٥ هـ بخصوص طلب مبعث الجامعة / محمد بن ناصر محمد عقيل (JZU٠٠٦) والمبعث إلى جامعة ساوثهامبتون (University Of Southampton) للحصول على درجة الدكتوراه في تخصص (تكنولوجيا المعلومات والاتصالات التربوية) للقيام برحلة علمية إلى المملكة العربية السعودية وذلك لتطبيق برنامج دراسته على أعضاء هيئة التدريس وجمع بيانات البحث وتطبيق استبيانات وعمل مقابلات شخصية بجامعة جازان وكذلك زيارة بعض الجامعات السعودية، وذلك لإنجاز الجانب العملي المتعلق بموضوع بحثه.

نفيدكم بأنه تم عرض موضوعه على المجالس المختصة ولجنة الإبتعاث والتدريب بالجامعة وتمت الموافقة بقيام المبعث بالرحلة العلمية إلى المملكة العربية السعودية لاستكمال متطلبات الحصول على درجة الدكتوراه وذلك لتطبيق الجانب العملي المتعلق بموضوع بحثه وجمع البيانات في جامعة جازان وبعض الجامعات الأخرى المشار إليها في خطابكم اعتباراً من تاريخ ١٤٣١/٠٧/٢٧ هـ ولمدة ثلاثة أشهر.

أمل من مساعدتكم التكرم والاطلاع وإكمال اللازم.

وتفضلوا سعادتكم بقبول تعباتي وتقديرى ...

وكيل الجامعة
للدراسات العليا والبحث العلمي
د. محمد بن علي ربيع عبد الله



- صورة المبعث
- صورة للمعدة عند كلية التربية
- شهادة من عمارة الإدارة العامة للتعليم بوزارة التعليم العالي بجازان
- شهادة من عمارة الشؤون الإدارية والتعليم العالي بوزارة التعليم العالي بجازان
- شهادة من عمارة الشؤون الإدارية والتعليم العالي
- صورة المبعث
- صورة لملف المبعث

المرفقات:

التاريخ: ١٤٣١/٠٧/٢٧

الرقم: ٧/٢٦٥٤

المملكة العربية السعودية - جازان - ص ب ١٤ هاتف : ٠٠٩٦٦٣٢١٧٨٠٠ فاكس : ٠٠٩٦٦٣٢١٧٨٠٠
K.S.A. Jazan P.O.Box:114 - Tel: 0096673217800 - Fax : 0096673217800 www.Jazanu.edu.sa
Email: scholarship@Jazan.edu.sa

Appendix 5: Confirmation of Data Collection from Jazan University

<p>Kingdom of Saudi Arabia Ministry of Higher Education Jazan University Vice-President's Office for Graduate Studies and Research</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة جازان مكتب وظيف الجامعة لدراسات العليا والبحث العلمي</p>
<p>سعادة الملحق الثقافي بالمملكة المتحدة وفقه الله</p>		
<p>السلام عليكم ورحمة الله وبركاته</p>		
<p>إلحاقاً لخطابنا رقم ٧/٣٢٥ بتاريخ ١٤٣١/٦/٢٦هـ رداً على خطابكم رقم ٤/٢٦٥٤ بتاريخ ١٤٣١/٣/٥هـ بشأن طلب مبعث الجامعة / محمد بن ناصر محمد عقيل (jzu006) والمبعث لجامعة ساوثهامبتون للحصول على درجة الدكتوراة في تخصص تكنولوجيا المعلومات والاتصالات التربوية للقيام برحلة علمية إلى المملكة العربية السعودية لتطبيق برنامج دراسة وكذلك زيارة بعض الجامعات السعودية لإنجاز الجانب العملي المتعلق بموضوع بحثه . عليه نفيدكم بأن المبعث أنهى رحلته العلمية وقدم تقريراً بذلك تم عرضه على المجالس المختصة وأوصت بالموافقة على التقرير المقدم . لإحاطة سعادتكم .</p>		
<p>واقبلوا أطيب تحياتي وتقديري !!!</p>		
<p>وكيل الجامعة لدراسات العليا والبحث العلمي أ.د محمد بن علي ربيع عبدالله</p>		
<p>المرافقات:</p>	<p>التاريخ: ١٤٣١/٦/٢٦هـ</p>	<p>الرقم: ٢١٦٩</p>
<p>المملكة العربية السعودية - جازان ص ب ٢٠٩٥ هاتف: ٠٧٢٢٣٠٧٦٦ فاكس: ٠٧٢٢٣٣٨٦ K.S.A Jazan P.O.Box 2095 Tel : 073230766 Fax : 073233386 E-mail : VPOFGSAR@JAZANU.EDU.SA</p>		

Appendix 6: Consent Form

<h2>Consent Form</h2>

Study title: Using a VLE to Increase the Use of ICT by University Teachers in Jazan University in Saudi Arabia

Researcher name: Mohammed N Ageel

Study reference:

Ethics reference:

After reading through the participant information sheet

Please initial the boxes if you agree with the statements:

I have read and understood the information sheet and have had the opportunity to ask questions about the study

I agree to take part in this research project and agree for my data to be used for the purpose of this study.

I agree to take part in this project by participating in a recorded interview.

I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected

Name of participant:

Signature of participant:

Date:

Appendix 7: Consent Form in Arabic

نموذج إقرار بالمشاركة

عنوان الدراسة: إستخدام الواقع الافتراضي لزيادة استخدام أعضاء هيئة التدريس لتكنولوجيا المعلومات والاتصالات في جامعة جازان في المملكة العربية السعودية

الباحث: محمد بن ناصر عقيل

رقم كود الدراسة:

رقم كود موافقة لجنة أخلاقيات البحث:

بعد قراءة ورقة معلومات المشاركة في البحث أرجوا التكرم بتعبئة هذا النموذج والتوقيع عليه في حالة الموافقة على البنود المرفقة فيه شاكرين لكم تعاونكم

لقد قرأت وفهمت ورقة معلومات المشاركة في البحث وحصلت على الفرصة الكافية لطرح أسئلتى واستفساراتى عن الدراسة

أوافق على المشاركة في مشروع البحث هذا ووافق على استخدام بياناتي لأغراض هذا البحث

أتفهم أن مشاركتي في هذا البحث هي تطوعية ولي الحق في الانسحاب في أي وقت دون أن يترتب على ذلك أي حقوق أو متطلبات قانونية

أوافق على المشاركة في مشروع البحث هذا عن طريق المشاركة في مقابلات مسجلة

إسم المشارك:

توقيع المشارك:

التاريخ:

Appendix 8: Participant Information Sheet

Participant Information Sheet

Research title: **Using a VLE to Increase the Use of ICT by Lecturers in Jazan University in Saudi Arabia**

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.

I am at the present undertaking research for a Ph.D. at the University of Southampton, United Kingdom. The purpose of this study is to investigate the current situation with regard to information and communication technology (ICT) usage and so design and implement a continuing professional development (CPD) programme based on a virtual learning environment (VLE) to improve the university teacher's ability to use ICT in their teaching. It will bring about a better understanding of ICT issues.

In order to do this, I would like to know your opinions toward ICT, and the way in which you use ICT by participating in a recorded interview, answering a questionnaire. This will help to understand your needs better and to plan for the future. In this matter your opinions, views and suggestions will be of great value and will not be used for any purpose other than this research and will be kept anonymous. Please consider all statements carefully. You are kindly asked to give your honest opinion in response to each question. There are no wrong or right answers.

The project is committed to and will abide by the terms of the Data Protection Act. All the data will be stored on password protected computer. You will have the right to withdraw at any time.

If you decide to take part in this research, please complete the consent form attached, sign it and return it to me. I will sign it and send you a copy for your personal records. If you need to ask about anything at any time please do not hesitate to contact me. For any reason you may wish to contact my supervisor directly, he will respond to emails sent to J.Woollard@southampton.ac.uk.

Thank you.

Yours sincerely,

Researcher: Mohammed N Ageel

Email: mohammed.ageel@hotmail.com

In case of concern/ complaint contact:

Trudi Storey

Research Governance

Corporate Services

Building 37, Level 4, Room 4001

University of Southampton, Highfield Campus

Southampton, SO17 1BJ

Tel: 023 8059 (2) 5058

Appendix 9: Participant Information Sheet in Arabic

ورقة معلومات المشاركة

عنوان الدراسة:

إستخدام الواقع الافتراضي لزيادة استخدام أعضاء هيئة التدريس لتكنولوجيا المعلومات والاتصالات في جامعة جازان في المملكة العربية السعودية

فضلاً إقرأ هذه المعلومات قبل أن تقرر المشاركة في هذا البحث. إذا قررت المشاركة سيطلب منك التوقيع على نموذج الموافقة المرفق.

في الوقت الحاضر أقوم ببحث للحصول على درجة الدكتوراه من جامعة ساوثهامبتون في بريطانيا. تتمحور فكرة البحث حول إستخدام التعليم بالواقع الافتراضي لزيادة استخدام أعضاء هيئة التدريس بجامعة جازان لتكنولوجيا المعلومات والاتصالات التربوية وتتطلع الدراسة إلى إيجاد فهم أفضل للواقع الحالي إضافة إلى فهم المشكلات التي تواجه إستخدام تكنولوجيا المعلومات والاتصالات التربوية وتطبيقاتها من قبل أعضاء هيئة التدريس في جامعة جازان كما تتطلع الدراسة إلى تصميم وإختبار برنامج مناسب للتدريب أثناء الخدمة على إستخدام تكنولوجيا المعلومات والاتصالات التربوية من قبل أعضاء هيئة التدريس في الجامعة عن طريق تطبيق تقنية الواقع الافتراضي.

ومن أجل تحقيق ذلك أرغب في معرفة رأيك تجاه تكنولوجيا المعلومات والاتصالات التربوية وطريقتك في إستخدامها أثناء التدريس عن طريق المشاركة في إجراء مقابلات مسجلة والاجابة على أسئلة الإستبانة الخاصة بالدراسة وهذا سيساعد في معرفة أفضل لإحتياجاتكم والتخطيط الجيد للمستقبل لذلك رأيكم وإقتراحاتكم ستكون ذات أهمية وقيمة عالية للبحث ونحيطكم علماً بأن كافة المعلومات التي ستقدمونها لن تستخدم لغير أغراض هذا البحث.

فضلاً إقرأ كافة التعليمات بعناية وسيطلب منك الإجابة بما تراه بصدق وراحة على كل سؤال مع العلم بأنه لا توجد إجابة صحيحة وأخرى خاطئة.

مشروع الدراسة هذا محمي بشروط وقوانين البحث العلمي وحماية المعلومات بجامعة ساوثهامبتون.

إذا قررت المشاركة في هذا البحث فضلاً إملأ نموذج الموافقة المرفق وسأوقعه وأعطيك نسخة لحفظها في سجلاتك الخاصة وإذا كان لديك أي إستفسار لا تتردد بالتواصل معي عن طريق البيانات التالية

الإيميل: mohammed.ageel@hotmail.com

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Appendix 10: The Interview Questions (in English)

The following semi-structured interview questions have been designed to ask the research participants before and after the VLE intervention. The questions are formed according to four themes which are based on four research questions of this thesis.

Theme 1: ICT usage during Before and After VLE training stages

Questions for the Before VLE training stage:

- a) Do you use technology in your teaching? What technological tools do you use?
- b) Please share your experience of using any ICT tools in your teaching. Can you explain the obstacles you face or the advantages you get while using them for teaching?
- c) Do you have any suggestions about improving the use of ICT for teaching purposes?

Questions for the After VLE training stage:

- a) Do you use technology in your teaching? What type of technological tools do you use?
- b) Please share your experience of using any ICT tools for teaching. Can you explain the obstacles you face or the advantages you get while using them in your teaching?
- c) Do you have any suggestions about improving the use of ICT for teaching purposes?
- d) Has the VLE training helped you in using ICT more in your teaching? How did it help (according to the answer given by the interviewee)?

Theme 2: Attitude toward the use of ICT in teaching during Before and After VLE training stages

Questions for the Before VLE training stage:

- a) Is the use of ICT for university teaching advantageous? Why do you think so (according to the answer given by the interviewee)? What ICT tools do you find helpful for classroom teaching? How can they help you (according to the answer given by the interviewee)?
- b) Is the learning of the use of ICT in teaching difficult? What difficulties do you think the approach has (according to the answer given by the interviewee)?
- c) Do you believe that the use of ICT can improve our traditional teaching? How (according to the answer given by the interviewee)? Can you give any example on this?

Questions for the After VLE training stage:

- a) Is the use of ICT in university teaching advantageous? Why do you think so (according to the answer given by the interviewee)? What ICT tools do you find

helpful for classroom teaching? How can they help (according to the answer given by the interviewee)?

- b) Is the learning of the use of ICT in teaching difficult? What difficulties do you think the approach has (according to the answer given by the interviewee)?
- c) Do you believe that the use of ICT can improve our traditional teaching? How (according to the answer given by the interviewee)? Can you give any example on this?
- d) How is your feeling after participating the VLE training? Why do you think this (according to the answer given by the interviewee)? Can you explain this with examples (according to the answer given by the interviewee)?

Theme 3: Knowledge of ICT during Before and After VLE

training stages

Questions for the Before VLE training stage:

- a) Do you consider yourself sufficiently knowledgeable on various ICT tools and the procedures of using them in teaching? What ICT tools are familiar to you?
- b) Do you think that sufficient ICT related knowledge is essential for using them properly? Why do you think so (according to the answer given by the interviewee)?
- c) What types of ICT related knowledge would you like to gain? Why do you want to gain this type of knowledge (according to the answer given by the interviewee)?
- d) What are the barriers that you think stop us gaining required knowledge of ICT for teaching? Do you have any suggestions to overcome these problems?

Questions for the After VLE training stage:

- a) Do you consider yourself sufficiently knowledgeable on various ICT tools and the procedures of using them in teaching? What ICT tools are well known to you?
- b) Do you think that sufficient ICT related knowledge is essential for using them properly? Why do you think so (according to the answer given by the interviewee)?
- c) What types of ICT related knowledge would you like to gain? Why do you want to gain this type of knowledge (according to the answer given by the interviewee)?
- d) What are the barriers that you think stop us gaining required knowledge of ICT for teaching? Do you have any suggestions to overcome these problems?
- e) What knowledge have you gained after attending the VLE training? Do you think this knowledge can help your use of ICT in teaching? Why do you think so (based on the answer given by the interviewee)? How can you use this knowledge in your teaching (based on the answer given by the interviewee)?

Theme 4: ICT skills during Before and After VLE training stages***Questions for the Before VLE training stage:***

- a) What ICT tools do you feel comfortable to use in your teaching? What ICT tools do you feel difficult to use? Please explain what difficulties you face (according to the answer given by the interviewee)?
- b) Do you consider yourself sufficiently skilled for using various ICT tools in your teaching? What ICT skills do you possess (according to the answer given by the interviewee)? Give some examples.
- c) What reasons do you think cause the lack of ICT skills of the university teachers? Do you have any suggestions to overcome them? Please give your opinion on this.

Questions for the After VLE training stage:

- a) What ICT tools do you feel comfortable to use in your teaching? What ICT tools do you feel difficult to use? Please explain what difficulties you face (according to the answer given by the interviewee)?
- b) Do you consider yourself sufficiently skilled for using various ICT tools in your teaching? What ICT skills do you possess (according to the answer given by the interviewee)? Give some examples.
- c) What reasons do you think cause the lack of ICT skills of the university teachers? Do you have any suggestions to overcome them? Please explain your opinion on this.
- d) Has the VLE training provided you any essential ICT skills? Can you explain how they increased your ICT skills?

Appendix 11: The Interview Schedule (in Arabic)

أسئلة المقابلة التالية صممت لسؤال المشاركين في البحث قبل وبعد التدريب على التعلم بالواقع الافتراضي. الأسئلة صممت بناءً على المواضيع الأربعة الأساسية والمبنية على أسئلة البحث:-

الموضوع 1: استخدام تكنولوجيا المعلومات والاتصالات التربوية خلال مرحلتي ما قبل وما بعد التدريب

أسئلة لمرحلة ما قبل التدريب على الواقع الافتراضي:

- (أ) هل تستخدم التكنولوجيا في تدريسيك؟ ماهي الأدوات التكنولوجية التي تستخدمها؟
 (ب) فضلاً تحدث لي بخبراتك في استخدام أدوات تكنولوجيا المعلومات والاتصالات في تدريسيك؟ هل من الممكن أن تشرح لي المعوقات التي واجهتك أو المميزات والفوائد التي حصلت عليها عندما كنت تستخدمها في التدريس؟
 (ت) هل لديك أي إقتراحات لتطوير أدوات تكنولوجيا المعلومات والاتصالات لأهداف تعليمية؟

أسئلة لمرحلة ما بعد التدريب على الواقع الافتراضي:

- (أ) هل تستخدم التكنولوجيا في تدريسيك؟ ما أنواع الأدوات التكنولوجية التي تستخدمها؟
 (ب) فضلاً تحدث لي بخبراتك في استخدام أدوات تكنولوجيا المعلومات والاتصالات في تدريسيك؟ هل من الممكن أن تشرح لي المعوقات التي واجهتك أو المميزات والفوائد التي حصلت عليها عندما كنت تستخدمها في التدريس؟
 (ت) هل لديك أي إقتراحات لتطوير أدوات تكنولوجيا المعلومات والاتصالات لأهداف تعليمية؟
 (ث) هل التدريب على الواقع الافتراضي ساعدك في استخدام تكنولوجيا المعلومات والاتصالات التربوية في تدريسيك أكثر؟ كيف حدث ذلك (كما سيجيب من أجريت معه المقابلة)؟

الموضوع 2: اتجاهات استخدام تكنولوجيا المعلومات والاتصالات التربوية خلال مرحلتي ما قبل وما بعد

التدريب

أسئلة لمرحلة ما قبل التدريب على الواقع الافتراضي:

- (أ) هل استخدام تكنولوجيا المعلومات والاتصالات التربوية في التدريس الجامعي ذو فائدة؟ ما رأيك (كما سيجيب من أجريت معه المقابلة)؟ ما هي أدوات تكنولوجيا المعلومات والاتصالات التربوية التي وجدتها ذات فائدة في التدريس داخل الفصل؟ كيف استطاعت أن تساعدك (كما سيجيب من أجريت معه المقابلة)؟
 (ب) هل تعلم استخدام تكنولوجيا المعلومات والاتصالات من أجل التدريس صعب؟ ما هي الصعوبات التي تضمن أنها ستقابلك في هذا الجانب (كما سيجيب من أجريت معه المقابلة)؟
 (ت) هل تؤمن بأن استخدام تكنولوجيا المعلومات والاتصالات يستطيع تطوير تعليمنا التقليدي؟ كيف (كما سيجيب من أجريت معه المقابلة)؟ هل يمكن وضع أمثلة على ذلك؟

أسئلة لمرحلة ما بعد التدريب على الواقع الافتراضي:

- (أ) هل استخدام تكنولوجيا المعلومات والاتصالات التربوية في التدريس الجامعي ذو فائدة؟ لماذا تظن ذلك (كما سيجيب من أجريت معه المقابلة)؟ ماهي أدوات تكنولوجيا المعلومات والاتصالات التربوية التي وجدتها مفيدة للتدريس داخل الفصل؟ كيف تكون مفيدة (كما سيجيب من أجريت معه المقابلة)؟
 (ب) هل تعلم استخدام تكنولوجيا المعلومات والاتصالات من أجل التدريس صعب؟ ما هي الصعوبات التي تضمن أنها ستقابلك في هذا الجانب (كما سيجيب من أجريت معه المقابلة)؟

- (ت) هل تؤمن بأن استخدام تكنولوجيا المعلومات والاتصالات يستطيع تطوير تعليمنا التقليدي؟ كيف (كما سيجيب من أجريت معه المقابلة)؟ هل يمكن وضع أمثلة على ذلك؟
- (ث) كيف هو شعورك بعد المشاركة في التعلم بالواقع الافتراضي؟ كيف تظن ذلك (كما سيجيب من أجريت معه المقابلة)؟ هل تستطيع شرح ذلك مع بعض الأمثلة (كما سيجيب من أجريت معه المقابلة)؟

الموضوع 3: المعرفة في استخدام تكنولوجيا المعلومات والاتصالات التربوية خلال مرحلتي ما قبل وما

بعد التدريب

أسئلة لمرحلة ما قبل التدريب على الواقع الافتراضي:

- (e) هل تعتبر أن لديك المعارف اللازمة لاستخدام أدوات تكنولوجيا المعلومات والاتصالات والإستراتيجية اللازمة لإستخدامها في التدريس؟ ماهي أدوات تكنولوجيا المعلومات والاتصالات التي تشعر أنها معروفة لديك؟
- (f) هل تظن أن المعرفة لتكنولوجيا المعلومات والاتصالات التربوية أساسية لإستخدامها الأمتل؟ لماذا تظن ذلك (كما سيجيب من أجريت معه المقابلة)؟
- (g) ما هي أنواع المعارف التي ترغب في الحصول عليها؟ لماذا ترغب في الحصول على هذا النوع من المعارف (كما سيجيب من أجريت معه المقابلة)؟
- (h) ماهي المعينات التي تظن أنها تمنعنا من الحصول على المعارف المطلوبة في تكنولوجيا المعلومات والاتصالات في التدريس؟ هل لديك أي مقترحات لحل هذه العوائق؟

أسئلة لمرحلة ما بعد التدريب على الواقع الافتراضي:

- (أ) هل تعتبر أن لديك المعارف اللازمة لاستخدام أدوات تكنولوجيا المعلومات والاتصالات والإستراتيجية اللازمة لإستخدامها في التدريس؟ ماهي أدوات تكنولوجيا المعلومات والاتصالات التي تشعر أنها معروفة لديك؟
- (ب) هل تظن أن المعرفة لتكنولوجيا المعلومات والاتصالات التربوية أساسية لإستخدامها الأمتل؟ لماذا تظن ذلك (كما سيجيب من أجريت معه المقابلة)؟
- (ت) ما هي أنواع المعارف التي ترغب في الحصول عليها؟ لماذا ترغب في الحصول على هذا النوع من المعارف (كما سيجيب من أجريت معه المقابلة)؟
- (ث) ماهي المعينات التي تظن أنها تمنعنا من الحصول على المعارف المطلوبة في تكنولوجيا المعلومات والاتصالات في التدريس؟ هل لديك أي مقترحات لحل هذه العوائق؟
- (ج) ماهي المعارف التي حصلت عليها بعد حضورك للتدريب على التعلم بالواقع الافتراضي؟ هل تظن أن هذه المعارف تستطيع مساعدتك في استخدام تكنولوجيا المعلومات والاتصالات في التدريس؟ لماذا تظن ذلك (كما سيجيب من أجريت معه المقابلة)؟ كيف يمكنك استخدام هذه المعارف في تدريسك (كما سيجيب من أجريت معه المقابلة)؟

الموضوع 4: المهارات في استخدام تكنولوجيا المعلومات والاتصالات التربوية خلال مرحلتي ما قبل وما

بعد التدريب

أسئلة لمرحلة ما قبل التدريب على الواقع الافتراضي:

- (أ) ماهي أدوات تكنولوجيا المعلومات والاتصالات التي تشعر بالإرتياح لإستخدامها في التدريس؟ ماهي أدوات تكنولوجيا المعلومات والاتصالات التي تشعر أنها صعبة الإستخدام؟ فضلا إشرح الصعوبات التي تواجهها؟ (كما سيجيب من أجريت معه المقابلة)؟
- (ب) هل تعتبر نفسك ذو مهارة عالية في استخدام العديد من أدوات تكنولوجيا المعلومات والاتصالات في تدريسك؟ ماهي مهارات تكنولوجيا المعلومات والاتصالات تفضلها (كما سيجيب من أجريت معه المقابلة)؟ فضلا إذكر بعض الأمثلة؟

ت) ماهي الأسباب في إعتقادك التي سببت النقص في مهارات تكنولوجيا المعلومات والإتصالات في التدريس الجامعي؟ هل لديك أي مقترحات أو حلول لهذه المشكلات؟ فضلا إذكر رأيك في هذا الموضوع.

أسئلة لمرحلة ما بعد التدريب على الواقع الافتراضي:

e) ماهي أدوات تكنولوجيا المعلومات والإتصالات التي تشعر بالإرتياح لإستخدامها في التدريس؟ ماهي أدوات تكنولوجيا المعلومات والإتصالات التي تشعر أنها صعبة الإستخدام؟ فضلا إشرح الصعوبات التي تواجهها؟ (كما سيجيب من أجريت معه المقابلة)؟

f) هل تعتبر نفسك ذو مهارة عالية في إستخدام العديد من أدوات تكنولوجيا المعلومات والإتصالات في تدريسك؟ ماهي مهارات تكنولوجيا المعلومات والإتصالات تفضلها (كما سيجيب من أجريت معه المقابلة)؟ فضلا إذكر بعض الأمثلة؟

ث) ماهي الأسباب في إعتقادك التي سببت النقص في مهارات تكنولوجيا المعلومات والإتصالات في التدريس الجامعي؟ هل لديك أي مقترحات أو حلول لهذه المشكلات؟ فضلا إذكر رأيك في هذا الموضوع.

ج) هل قدم لك التعلم بالواقع الافتراضي أي مهارات أساسية لتكنولوجيا المعلومات والإتصالات؟ هل يمكن أن تشرح كيف عززت من مهارات تكنولوجيا المعلومات والإتصالات لديك؟

Appendix 12: The Questionnaire (in English)

Questionnaire

Number :

Stage :

Dear Participant,

**Please fill out the attached questionnaire
and return it back to the researcher.
Your participation is highly appreciated.**

Name:

School:

A) Do you use the following ICT sources when you are teaching?

Please tick (✓) to answer the question in the space provided

	ICT Source	Always	Some Time	Never
1	PowerPoint			
2	Word Processing			
3	Smart board			
4	Overhead Projector			
5	Slides			
6	E-mail			
7	Video Conference			
8	Synchronous chat			
9	Forums			
10	Blogs			
11	Digital Video Camera			
12	Digital Voice Recorder			
13	E-quiz			
14	E-survey			
15	Internet			
16	Data Base Programs (Excel)			

B) What is your opinion about using ICT in teaching?
Please read the statement and tick (✓) in the space provided to answer the question

	The ICT Attitude statement	Totally agree	Agree	Disagree	Totally disagree
1	PowerPoint makes my lesson presentation better				
2	I feel that smart board is an effective tool to use to present information				
3	Word processor is an important tool for presenting information				
4	I love using PowerPoint in my teaching				
5	I am willing to use email to contact my students				
6	I feel happy when I communicate with my students in forums or blogs				
7	I don't mind chatting with my students via Skype or any other chatting programme				
8	Video conferencing is an effective tool to communicate with others				
9	Videos are useful for students to understand their lessons				
10	Audio recording are helpful for students to review their lessons				
11	I feel that multimedia is an interactive tool to use with students				
12	I trust using e-assessment tools (e-quiz, e-test, e-survey.....etc.) to assess my students				
13	E-assessment makes me feel happy and satisfied about the way I assess my students				
14	The Internet provides many sources to support me in teaching my subject				
15	I trust using the internet to update the knowledge about my subject				
16	I am happy to refer my students to the internet as a source of information				
17	Using Data base programs (e.g. excel) can support the way I control my teaching				
18	Spread sheet is an important tool for managing students records				

C) What is your level of knowledge about using ICT in teaching?

Please read the statement and tick (✓) in the space provided to answer the question

	The ICT knowledge statement	Totally agree	Agree	Disagree	Totally disagree
1	I know how to prepare a lesson by PowerPoint				
2	I know how to introduce animation slides				
3	I know how to use word processor				
4	I know how to use simple editing (e.g. bold,italic,centring,etc)				
5	I know how to use smart board				
6	I know how to send an email				
7	I know how to attach a file to an email				
8	I know how to chat with others via chatting programs				
9	I know how to participate with others in a blog				
10	I know how to communicate with others in a forum				
11	I know how to take a photo with a digital camera				
12	I know how to download photos from a digital camera				
13	I know how to use a voice recorder to record				
14	I know how to download a file from a voice recorder				
15	I know how to conduct an e-assessment online				
16	I know how to design an e-quiz				
17	I know how to design an e-survey				
18	I know how to surf in the internet				
19	I know how to search for a references on the internet				
20	I know how to download a file from the internet				
21	I know how to use database programs				
22	I know how to sort data				
23	I know how to input a formulae				
24	I know how to produce charts and graphs for data analysis				

E) What is your opinion about the improvement in using the following skills?
Please read the statement and tick (✓) in the space provided to answer the question

	The ICT skills	Totally agree	Agree	Disagree	Totally disagree
1	I can design a lesson using a PowerPoint				
2	I am able to write and edit using word processor				
3	I am good at using smart board				
4	I can use an overhead projector				
5	I can send an email				
6	I am good at using blogs to support my students learning				
7	I am able to use forums to support my students learning				
8	I can communicate with my students and colleagues using synchronous chatting				
9	I am able to use a digital video camera				
10	I can use digital voice recorder to record				
11	I am good at using a digital camera				
12	I can download photos from a digital camera				
13	I am able to design an e-quiz for my students				
14	I am able to design an e-survey for my students				
15	I can surf the internet				
16	I am able to search for a reference on the internet				
17	I am good at using database programs				
18	I can sort data				
19	I am able to run a query in a database				
20	I can produce a report from database				

Appendix 13: The Questionare (in Arabic)

استبانة

الرقم:.....

المرحلة:.....

عزيزي المشارك

أرجوا التكرم بتعبئة الاستبانة المرفقة بما تراه مناسباً لكم
شاكرين لكم المشاركة في هذا البحث العلمي.

الإسم:.....

الكلية:.....

(أ) هل تستخدم مصادر تكنولوجيا المعلومات التالية أثناء تدريسك ؟
 فضلا استخدم علامة (√) للإجابة على السؤال في الفراغ المقابل له

	مصادر تكنولوجيا المعلومات والاتصالات التربوية			
	أبدا	أحيانا	دائما	
1				يوريونت
2				الوورد
3				السيورة الذكية
4				جهاز عرض فوق الرأس
5				الشرائح
6				الإيميل
7				مؤتمرات الفيديو
8				المحاكاة المتزامنة
9				المنتديات
10				المدونات
11				كاميرا التصوير الرقمية
12				مسجل الصوت الصوت الرقمي
13				الاختبارات الالكترونية
14				الاستبيانات الالكترونية
15				الانترنت
16				برامج قواعد البيانات

ب) ماهي اتجاهاتك حول استخدام تكنولوجيا المعلومات والاتصالات التريوية في التدريس؟
فضلاً إقرأ الجملة ثم ضع علامة (✓) في المكان المقابل لها للإجابة على السؤال

	الجملة			
		وافق بشدة	وافق	لا اوافق
1	اليوتيوب يجعل عرضي للدرس افضل			
2	اشعر ان السبورة الالكترونية وسيلة فعالة لعرض المعلومات			
3	اليوتيوب اداة مهمة لعرض المعلومات			
4	احب استخدام اليوتيوب في تدريسي			
5	انا مستعد لاستخدام الايميل للتواصل مع طلابي			
6	اشعر بالمساعدة عندما اتواصل مع طلابي في منتدى او مدونة			
7	لا امانع المحادثة مع طلابي عن طريق المحادثة المتزامنة			
8	مؤتمرات الفيديو اداة فعالة للتواصل مع الآخرين			
9	مقاطع الفيديو نافعة للطلاب من اجل فهم دروسهم			
10	التسجيل الصوتي جيد للطلاب من مراجعة دروسهم			
11	اشعر بان الوسائط المتعددة فعالة للاستخدام مع الطلاب			
12	أثق في استخدام أدوات التقييم الإلكتروني لتقييم طلابي			
13	أثق في استخدام أدوات التقييم الإلكتروني لتقييم طلابي			
14	الانترنت تقدم الكثير من المصادر ادعني في تدريسي مادتي			
15	أثق في استخدام الانترنت لتحديث المعارف في مادتي			
16	انا سعيد لإحالة طلابي إلى الانترنت كمصدر للمعلومات			
17	استخدام برامج قواعد البيانات يساعدني في التحكم في تدريسي			
18	الإكسل اداة مهمة لإدارة ملفات الطلاب			

ج) ما هو مستوى معرفتك عن تكنولوجيا المعلومات والاتصالات التربوية في التدريس ؟
فضلاً إقرأ الجملة ثم اختر علامة (✓) في الفراغ المقابل للإجابة على السؤال

الجملة	الجملة			
	لا اوافق بشدة	لا اوافق	اوافق بشدة	
1				أعرف كيف أحضر درس بالبوربوينت
2				أعرف كيف أقدم شرحاً بالمشغلات
3				أعرف كيف أستخدم الورد
4				أعرف كيف أستخدم أدوات التحرير البسيطة
5				أعرف كيف أستخدم السبورة الذكية
6				أعرف كيف أرسل إيميل
7				أعرف كيف أرثق ملف بالايمل
8				أعرف كيف أتناقش مع الآخرين عن طريق برنامج محادثة
9				أعرف كيف أشارك مع الآخرين في مدونة
10				أعرف كيف أتواصل مع الآخرين في منتدى
11				أعرف كيفية أخذ صورة بالكاميرا الرقمية
12				أعرف كيفية تنزيل الصور من الكاميرا الرقمية
13				أعرف كيفية استخدام المسجل الصوتي للتسجيل
14				أعرف كيفية تنزيل ملف صوتي من المسجل الصوتي
15				أعرف كيفية عمل تقييم إلكتروني
16				أعرف كيفية تصميم اختبار إلكتروني
17				أعرف كيفية تصميم استبيان إلكتروني
18				أعرف كيف أتصفح الإنترنت
19				أعرف كيفية البحث عن مرجع في الإنترنت
20				أعرف كيفية تنزيل ملف من الإنترنت
21				أعرف كيفية استخدام برامج قواعد البيانات
22				أعرف كيفية معالجة البيانات
23				أعرف كيفية إدخال صيغة
24				أعرف كيفية إنتاج رسوم بيانية لتحليل البيانات

د) ما هو رأيك في التطور في استخدام المهارات التالية؟
فضلا إقرأ الجملة ثم ضع علامة (✓) أمام الفراغ للإجابة على السؤال

المهارات	المهارات			
	اوافق بشدة	اوافق	لا اوافق بشدة	
1				استطيع تصميم درس بالوربوينت
2				أنا قادر على الكتابة والتعديل بواسطة وورد
3				أنا جيد في استخدام السيورة الالكترونية
4				استطيع استخدام جهاز عرض فوق الرأس
5				أستطيع إرسال ايميل
6				أنا جيد في استخدام المدونات لدعم تعليم طلابي
7				أنا جيد في استخدام المنتديات المنتديات لدعم تعليم طلابي
8				استطيع التواصل مع طلابي وزملائي باستخدام المحادثة (المزمنة)
9				استطيع استخدام كاميرا الفيديو الرقمية
10				أستطيع استخدام مسجل صوت رقمي للتسجيل
11				أنا جيد في استخدام الكاميرا الرقمية
12				أنا جيد في استخدام كاميرا التصوير الرقمية
13				أنا قادر على تصميم إختبار إلكتروني لطلابي
14				أنا قادر تصميم إستبانه الكترونية لطلابي
15				أستطيع تصفح الانترنت
16				أستطيع البحث عن مرجع في الانترنت
17				أنا جيد في استخدام برامج قواعد البيانات
18				أستطيع معالجة البيانات
19				أستطيع تشغيل طلب في قواعد البيانات
20				أستطيع إصدار تقرير من قاعدة بيانات

Appendix 14: Sample of the Questionnaire

استبانة

الرقم:
٧١٣٩
2

المرحلة:
القبليّة
3

عزيزي المشارك

أرجوا التكرم بتعبئة الاستبانة المرفقة بما تراه مناسباً لكم
شاكرين لكم المشاركة في هذا البحث العلمي.

الإسم:
[Redacted]

الكلية:
العلوم الطبية التطبيقية

(أ) هل تستخدم مصادر تكنولوجيا المعلومات التالية أثناء تدريسك ؟
فضلا استخدم علامة (✓) للإجابة على السؤال في الفراغ المقابل له

	مصادر تكنولوجيا المعلومات والاتصالات التربوية		
	أبدا	أحيانا	دائما
1		✓	
2		✓	
3			✓
4			✓
5		✓	
6			✓
7		✓	
8			✓
9	✓		
10		✓	
11		✓	
12		✓	
13			✓
14			✓
15			✓
16		✓	

ب) ماهي اتجاهاتك حول استخدام تكنولوجيا المعلومات والاتصالات التربوية في التدريس؟
فضلاً اقرأ الجملة ثم ضع علامة (✓) في المكان المقابل لها للإجابة على السؤال

الجملة	الجملة		
	لا اوافق بشدة	لا اوافق	لا اوافق بشدة
1 اليوبيونت يجعل عرضي للدرس افضل		✓	
2 اشعر ان السيورة الالكترونية وسيلة فعالة لعرض المعلومات		✓	
3 الورد اداة مهمة لعرض المعلومات		✓	
4 احب استخدام اليوبيونت في تدريسي			✓
5 انا مستعد لاستخدام اليميل للتواصل مع طلابي			✓
6 اشعر بالسعادة عندما اتواصل مع طلابي في منتدى او منونة		✓	
7 لا امانع المحادثة مع طلابي عن طريق المحادثة المتزامنة		✓	
8 مؤتمرات الفيديو اداة فعالة للتواصل مع الآخرين		✓	
9 مقاطع الفيديو نافعة للطلاب من اجل فهم دروسهم			✓
10 التسجيل الصوتي جيد للطلاب من مراجعة دروسهم		✓	
11 اشعر بان الوسائط المتعددة فعالة للاستخدام مع الطلاب			
12 اثق في استخدام ادوات التقييم الالكتروني لتقييم طلابي		✓	
13 اثق في استخدام ادوات التقييم الالكتروني لتقييم طلابي		✓	
14 الانترنت تقدم الكثير من المصادر لدعسي في تدريسي مادتي			✓
15 اثق في استخدام الانترنت لتحديث المعارف في مادتي			✓
16 انا سعيد لإحالة طلابي إلى الانترنت كمصدر للمعلومات		✓	
17 استخدام برامج قواعد البيانات يساعدني في التحكم في تدريسي		✓	
18 الاكسل اداة مهمة لإدارة ملفات الطلاب		✓	

ج) ما هو مستوى معرفتك عن تكنولوجيا المعلومات والاتصالات التربوية في التدريس ؟
فضلا إقرأ الجملة ثم اختر علامة (✓) في الفراغ المقابل للإجابة على السؤال

الجملة	اوافق بشدة	اوافق	لا اوافق	لا اوافق بشدة
1 اعرف كيف أحضر درس بالبوربوينت	✓			
2 اعرف كيف اقدم شريحة بالمؤتمرات	✓			
3 اعرف كيف استخدم الوورد	✓			
4 اعرف كيف استخدم أدوات التحرير البسيطة	✓			
5 اعرف كيف استخدم المسبورة الذكية	✓			
6 اعرف كيف ارسل إيميل	✓			
7 اعرف كيف ارفق ملف بالاييميل	✓			
8 اعرف كيف اتحدث مع الآخرين عن طريق برنامج محادثة	✓			
9 اعرف كيف اشارك مع الآخرين في مدونة	✓			
10 اعرف كيف اتواصل مع الآخرين في منتدى	✓			
11 اعرف كيفية أخذ صورة بالكاميرا الرقمية	✓			
12 اعرف كيفية تنزيل الصور من الكاميرا الرقمية	✓			
13 اعرف كيفية استخدام المسجل الصوتي للتسجيل	✓			
14 اعرف كيفية تنزيل ملف صوتي من المسجل الصوتي	✓			
15 اعرف كيفية عمل تقييم الكتروني	✓			
16 اعرف كيفية تصميم اختبار الكتروني	✓			
17 اعرف كيفية تصميم استبيان الكتروني	✓			
18 اعرف كيف اتصفح الانترنت	✓			
19 اعرف كيفية البحث عن مرجع في الانترنت	✓			
20 اعرف كيفية تنزيل ملف من الانترنت	✓			
21 اعرف كيفية استخدام برامج قواعد البيانات	✓			
22 اعرف كيفية معالجة البيانات	✓			
23 اعرف كيفية إدخال صيغة	✓			
24 اعرف كيفية إنتاج رسوم بيانية لتحليل البيانات	✓			

د) ما هو رأيك في التطور في استخدام المهارات التالية؟
فضلا اقرأ الجملة ثم ضع علامة (✓) أمام الفراغ للإجابة على السؤال

المهارات	لا اوافق بشدة		لا اوافق	
	لا اوافق بشدة	لا اوافق	اوافق	اوافق بشدة
1 أستطيع تصميم درس باليوروبوينت			✓	
2 أنا قادر على الكتابة والتعديل بواسطة وورد			✓	
3 أنا جيد في استخدام السيورة الإلكترونية			✓	
4 أستطيع استخدام جهاز عرض فوق الرأس			✓	
5 أستطيع إرسال ايميل			✓	
6 أنا جيد في استخدام المدونات لدعم تعليم طلابي			✓	
7 أنا جيد في استخدام المنتديات المنتديات لدعم تعليم طلابي			✓	
8 أستطيع التواصل مع طلابي وزملائي باستخدام المحادثة المتزامنة			✓	
9 أستطيع استخدام كاميرا الفيديو الرقمية			✓	
10 أستطيع استخدام مسجل صوت رقمي للتسجيل			✓	
11 أنا جيد في استخدام الكاميرا الرقمية			✓	
12 أنا جيد في استخدام كاميرا التصوير الرقمية			✓	
13 أنا قادر على تصميم إختبار إلكتروني لطلابي			✓	
14 أنا قادر تصميم إستهانة الكترونية لطلابي				✓
15 أستطيع تصفح الانترنت				✓
16 أستطيع البحث عن مرجع في الانترنت			✓	
17 أنا جيد في استخدام برامج قواعد البيانات		✓		
18 أستطيع معالجة البيانات			✓	
19 أستطيع تشغيل طلب في قواعد البيانات			✓	
20 أستطيع إصدار تقرير من قاعدة بيانات			✓	

٦٤ استخدام اليوتيوبية بسبب طبيعة المحتوى من صور وأفلام

وأنا أدرك استخدام اليوتيوبية أكثر من أي شيء آخر ربما لطبيعة التخصص الذي يحتاج لكثير من الصور والأفلام

تفريغ جيد

س: هل من الممكن ان نتحدث الي عن التعلم الافتراضي؟

ج: ما اعرفه عن الواقع الافتراضي هو عملية المحاكاة للواقع باستخدام برامج معينة تسمى بالسمولثين ولا يوجد له امثلاثامات كثيرة عندنا في الكلية الا في عملية تصوير العينات النادرة

وهو الحقيقة يوفر في التكلفة بشكل كبير كما أنه يوفر الجهد ويقلل المخاطر بشكل كبير فهو يسهل عملية التعليم وأنا أريد استخدامه وتفعيله في العملية التعليمية بشكل كبير

يقلل المخاطر

يوفر الجهد

يوفر المال

٦٥ انشاء ابحاث عن السرعة

وعلى الطلاب

التواصل عن طريق الانترنت : أنا في حقيقة الامر وبكل صراحة أرى ان استخداميا سيثري العملية التعليمية بشكل كبير من حيث التواصل السريع وملاحظتي الوحيدة هي ان بعض الطلاب قد لا يثبثون على ايميله بشكل دائم وبالتالي قد يفقد التواصل الالكتروني فعاليته في عملية السرعة اما بالنسبة له كطريقة تواصل فهو لا شك جيد وأكثر من جيد وأنا أرى ان التواصل عن طريق الإيميل أفضل من الشات الذي قد لا يناسب وقت المعلم أو الطالب

تجارب زياتي

تكملة مناسبة لوقت

٦٦ انشاء جيه

العروض التقديمية: أنا من مؤيدي استخدام العروض التقديمية وازدت استفادته بعد البرنامج الذي حضرته

فانا ارى أنها تساعدني في شرح مادتي التعليمية وقد قطعت وعدا على نفسي ان ادرك كل دروسي إلى عروض تقديمية حتى أتمكن من طرحها للطلاب ويستطيع الطالب ان يراجع كامل الدرس متى شاء

٦٧ انشاء ابحاث جديدة

أبناء في إيبير بسبب عدم رغبة الطلاب

التقييم الإلكتروني: بالنسبة للتقييم الإلكتروني أنا أرى أنه سهل بشكل كبير عملية التقييم على المعلم ولكن المشكلة هل سيلتزم الطالب بقوانين التقييم الإلكتروني أم نه قد يحاول الغش أو لن يكون واعيا لهذا النوع من التقييم

لذلك أرى الثاني قليلا في عملية التقييم الإلكتروني

الوسائط المتعدده: مهمة جدا وأرى ضرورة تفعيلها لأنها وسيله جذبة للطلاب وإدخالها ضمن العروض التقديمية سيكون جميل جدا وأنا أرى أن لها فعالية خاصة في تخصص العلوم

مهاره متقدمه

قواعد البيانات: طبعا أنا استخدم الاكمل وأحس أنني استعدت مهاريا في الاكمل بعد حضوري للدورة وهو جيد في ادارة المعلم لبياناته

في بعض النواحي

استخدام جيد

المصادر والمراجع الإلكترونية: طبعا أنا استخدمها كمراجع لي أنا كباحث وكاستاذ لكن استخدامي لها مع الطلاب هو في نطاق ضيق جدا لاني اشعر بأنهم الطلاب عندما احيلهم الى مراجع او مصادر معينة حتى وإن كانت الكترونية فالطالب يفضل ان تقدم له المعلومة جاهزة دون ان يبذل جهدا في الرجوع الى المراجع والمصادر اما أنا فأستخدمها في بحثي العلمي وفي التحضير لدروسي

لا أستعملها مع طلابي

أشعر الطلاب من الامثلة في المراجع

الطلاب يفضلون ان تقدم لهم معلومات جاهزه

س: كيف نقيم استخدامك لتكنولوجيا المعلومات التربوية؟

ج: طبعا مع الثورة المعلوماتية والإنفجار التكنولوجي ارى أن لا يمكن أن يكون هناك معلم

لا يستطيع استخدام التكنولوجيا وأنا أرى أن استخدامي لها سيكون متويط حتى أضمن وعي

الاستخدام سيقتصر على الطلاب

مصدره متوصله

الطلاب أي تفعيل هذه التكنولوجيا ثم من بعد ذلك سأتحول الى تفعيلها بشكل كامل يعني من واحد الى خمسة استطوع أن أقول ثلاثة

س: كيف ترى مستقبل تكنولوجيا المعلومات والاتصالات التربوية في التعليم؟

المستقبل مشرق

- ج: أرى أنه مستقبل مشرق إذا ما ركزنا على نوعية الطلاب بفعاليتها فالطالب هو الركيزة الأولى في العملية التعليمية إذا ما رفضها أو لم يتجاوب معها فلا يمكن تطبيقها أما إذا ما تقبلها وأصبح مجيدا لإستخدامها ومحبيا لها فإن مستقبلها سيصبح مستقبلا زاهرا

يعتمد على نوعية الطلاب
يعتمد على تجاوب الطلاب

Appendix 16: Sample of the Interviews Data Analysis (in categories)

Usage UTB 3
القصير : مقابلة رقم ٣ :
 (هذه اللون طريف مع انه الالوان اجتناب
 الكمبيوتر فيها عن تصويري الالوان الى
 جود و في مناطق نادره اجتناب الكمبيوتر
 ان جود الالوانه بر الكمبيوتر اما المقدمه
 فلا اجتناب)

Attitude UTB 7
المتنوع : مقابلة رقم ٧ :
 (لا شك ان الالوان المتعدده لا تعطى
 الكمبيوتر في كل مناسبات الالوانه
 في الالوانه)

Usage UTA 40
اجتناب افضل : مقابلة رقم ٤٠ :
 (الحقيقة في تصويره مع انه في المناسبات المتعدده
 و جود الالوانه التي كانت الالوانه
 على كل الالوانه مع انه في المناسبات المتعدده
 الالوانه اجتناب الالوانه)

Attitude UTA 13
الالوانه : مقابلة رقم ١٣ :
 (مع انه في الالوانه المتعدده لا تعطى
 الكمبيوتر في كل مناسبات الالوانه
 في الالوانه)

Knowledge

UTA 34

مقاله ریحی ۳۴

مقاله ریحی ۳۴
در بیان هدف و اهداف و روش تحقیق و نتایج و بحث و نتیجه گیری
تعمیرات اساسی الکترونیک و سیستم های دیجیتال و میکروکنترلر
در مبحث سیستم های دیجیتال و میکروکنترلر

Skills

UTA 9

مقاله ریحی ۹

مقاله ریحی ۹
در بیان هدف و اهداف و روش تحقیق و نتایج و بحث و نتیجه گیری
تعمیرات اساسی الکترونیک و سیستم های دیجیتال و میکروکنترلر
در مبحث سیستم های دیجیتال و میکروکنترلر

Knowledge

UTB 2

مقاله ریحی ۲

مقاله ریحی ۲
در بیان هدف و اهداف و روش تحقیق و نتایج و بحث و نتیجه گیری
تعمیرات اساسی الکترونیک و سیستم های دیجیتال و میکروکنترلر
در مبحث سیستم های دیجیتال و میکروکنترلر

Skills

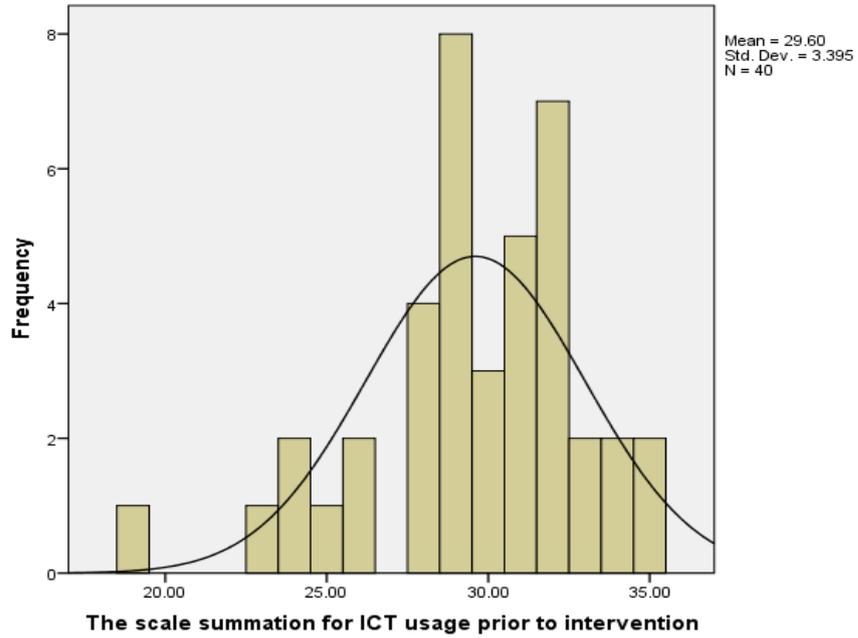
UTB 21

مقاله ریحی ۲۱

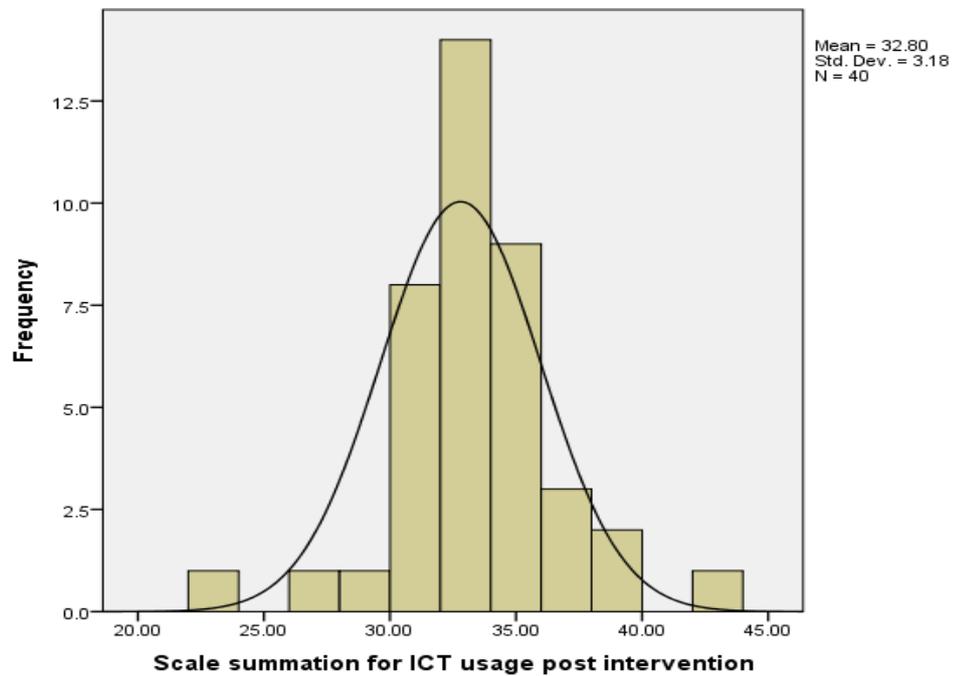
مقاله ریحی ۲۱
در بیان هدف و اهداف و روش تحقیق و نتایج و بحث و نتیجه گیری
تعمیرات اساسی الکترونیک و سیستم های دیجیتال و میکروکنترلر
در مبحث سیستم های دیجیتال و میکروکنترلر

Appendix 17: Quantitative Data Analysis

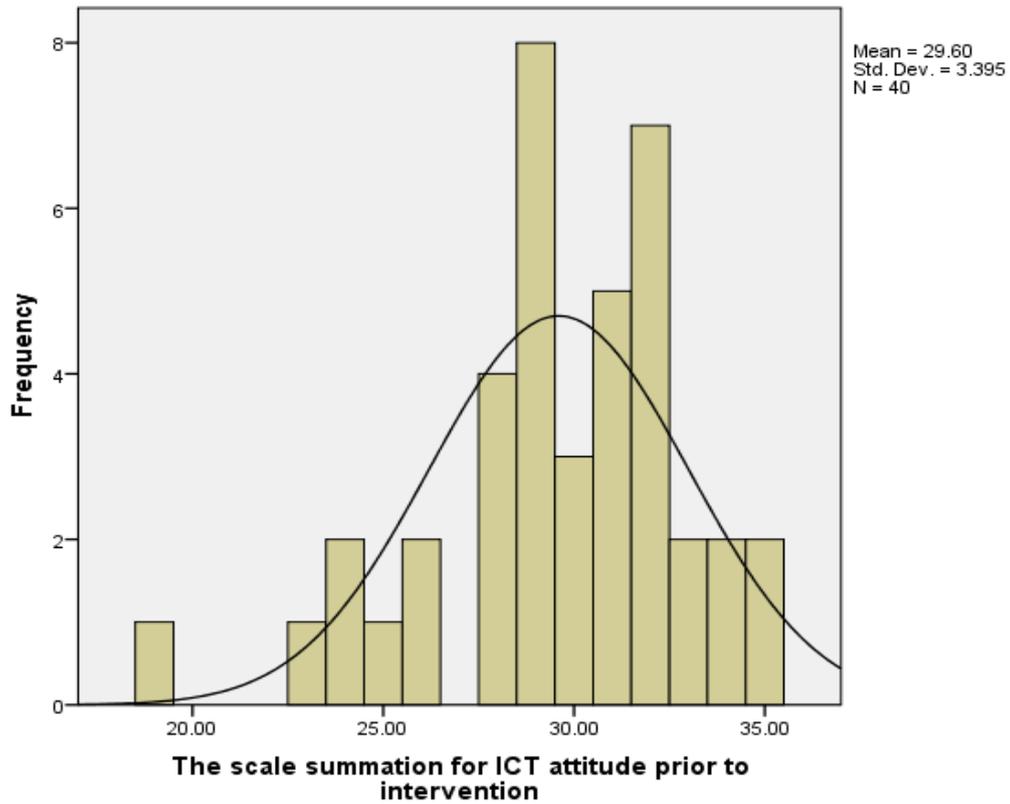
Normal distribution for ICT Usage (Before stage)



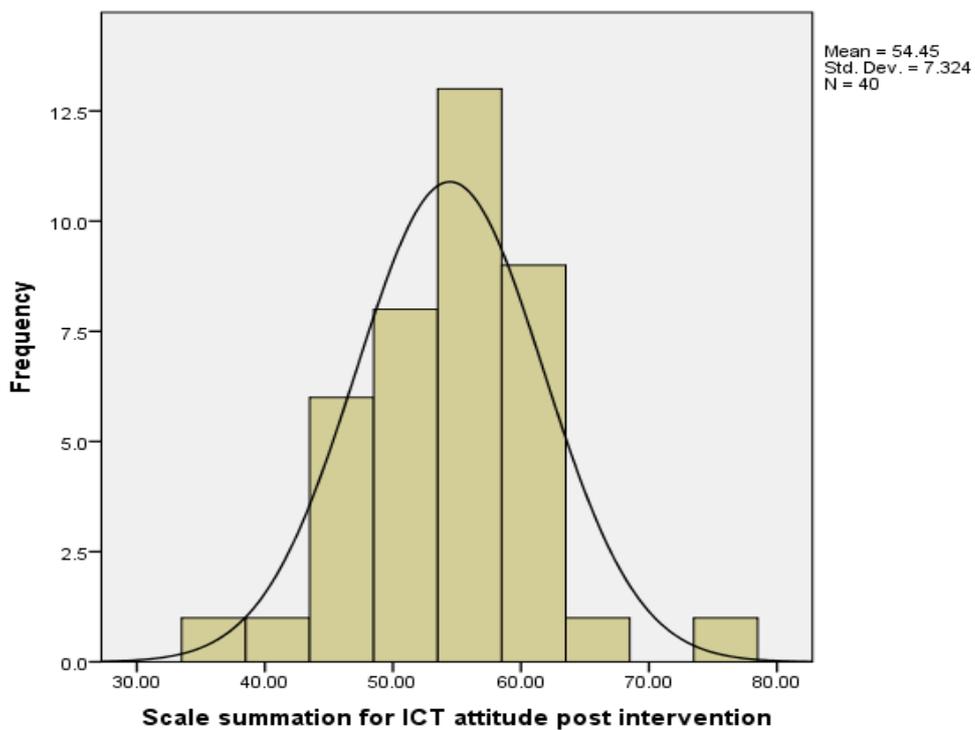
Normal distribution for ICT Usage (After stage)



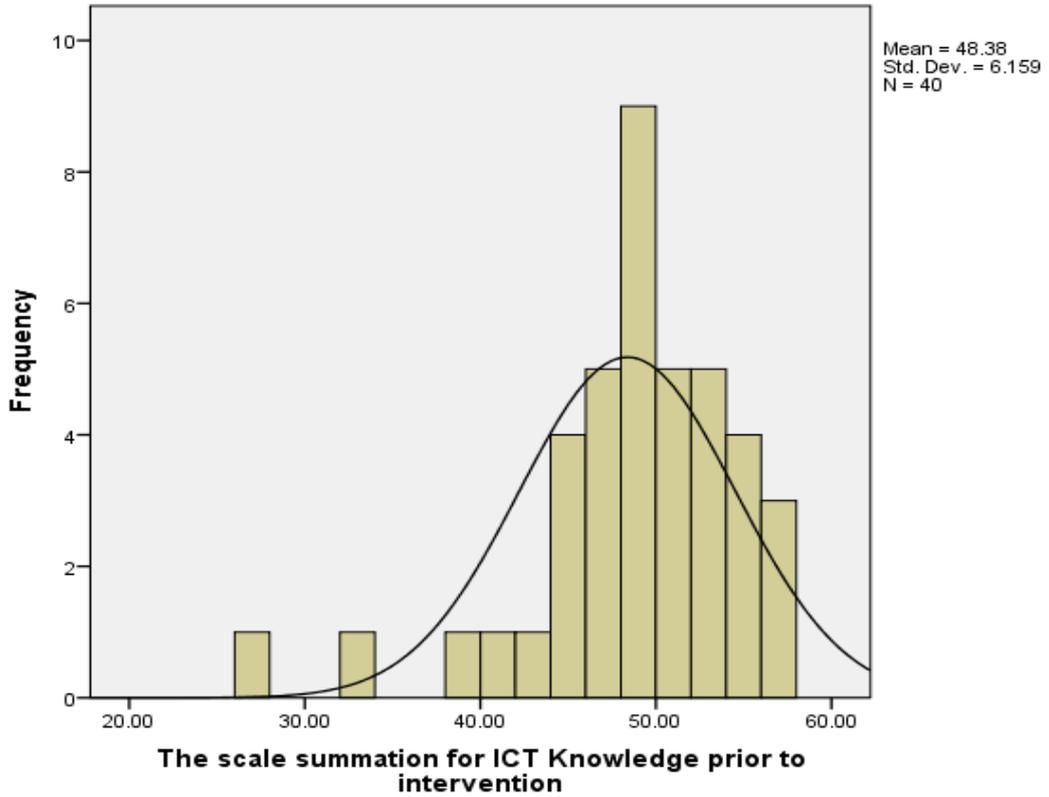
Normal distribution for ICT Attitude (Before stage)



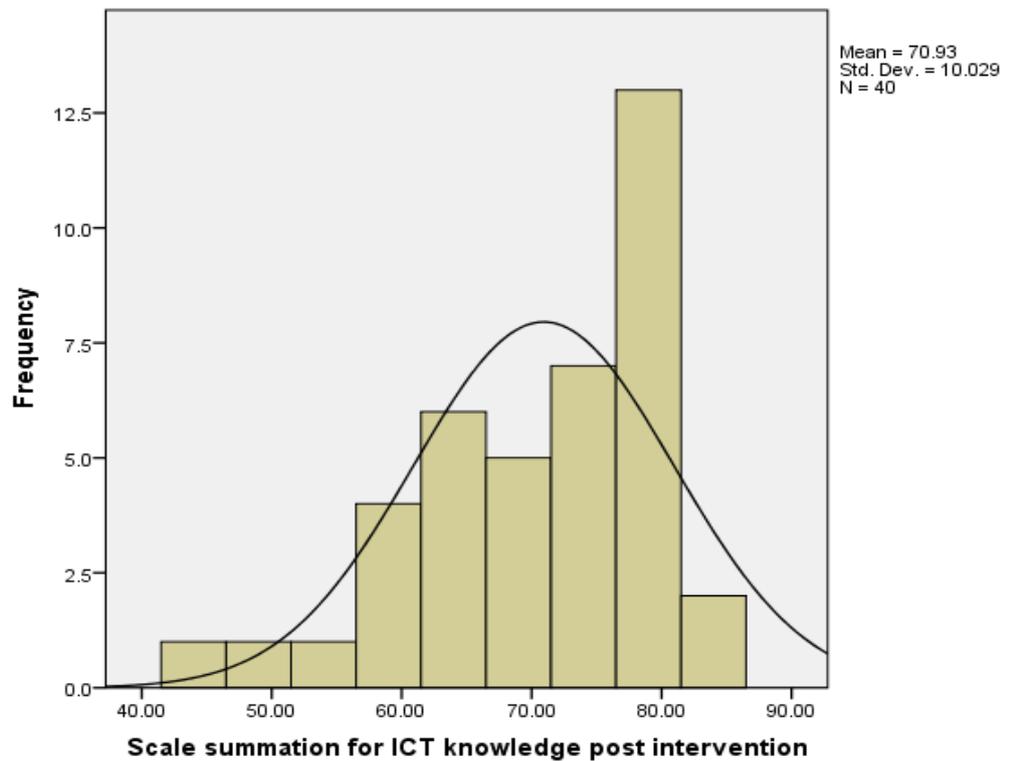
Normal distribution for ICT Attitude (After stage)



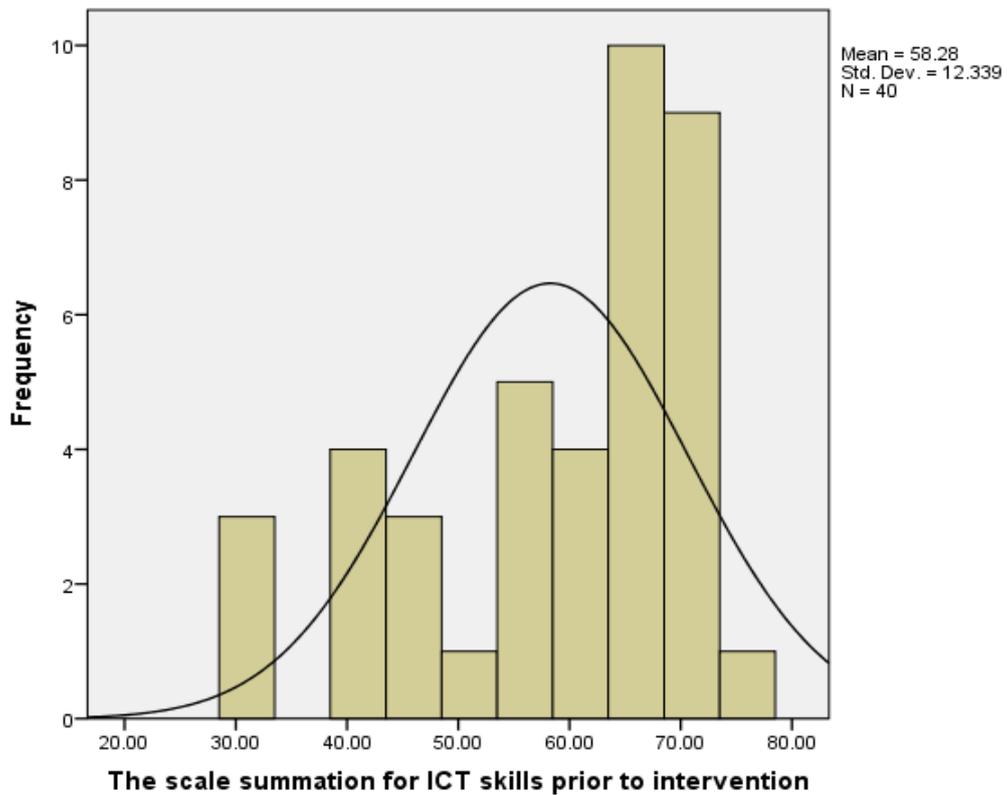
Normal Distribution for ICT Knowledge (Before stage)



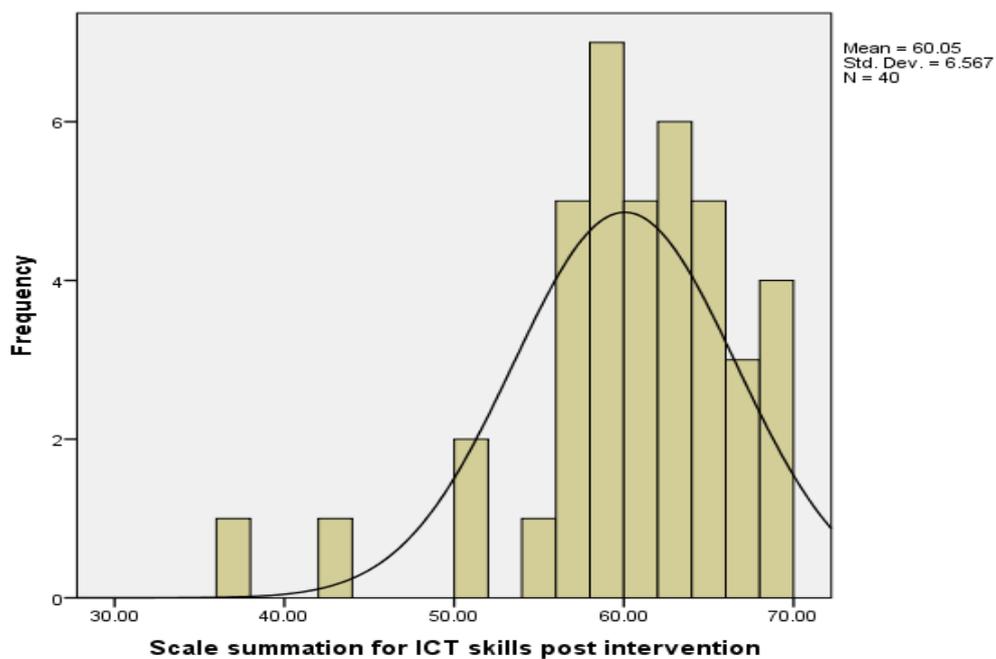
Normal Distribution for ICT Knowledge (After stage)



Normal Distribution for ICT Skills (Before stage)



Normal Distribution for ICT Skills (After stage)



Though negatively skewed, fairly acceptable as normal

Independent t-test for overall impact on two independent groups (male-female)

Independent Samples Test

	Levene's Test for Equality of Variances		t-Test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Overall VLE impact: Equal variances assumed	5.640	.023	-1.951	38	.058	-12.44246	6.37840	-25.35485	.46994
Equal variances not assumed			-2.058	37.905	.047	-12.44246	6.04717	-24.68532	-.19959

Anova for school based differences in mean responses on overall VLE on usage, attitude, knowledge, and skills

ANOVA

Overall VLE impact

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4907.692	7	701.099	1.915	.100
Within Groups	11717.683	32	366.178		
Total	16625.375	39			

Multiple comparisons of school-based differences

Multiple Comparisons

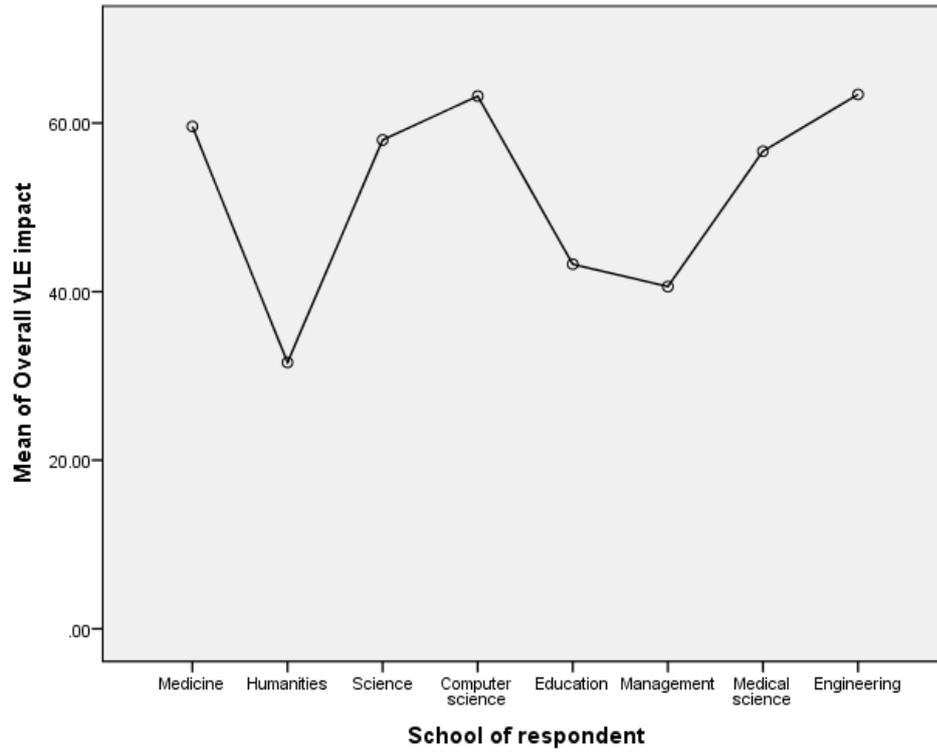
Dependent Variable: Overall VLE impact

LSD

(I) School of respondent	(J) School of respondent	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Medicine	Humanities	28.00000*	12.10252	.027	3.3480	52.6520
	Science	1.60000	12.10252	.896	-23.0520	26.2520
	Computer science	-3.60000	12.10252	.768	-28.2520	21.0520
	Education	16.35000	12.83666	.212	-9.7974	42.4974
	Management	19.00000	12.10252	.126	-5.6520	43.6520
	Medical science	2.93333	11.58728	.802	-20.6692	26.5359
	Engineering	-3.80000	12.10252	.756	-28.4520	20.8520
Humanities	Medicine	-28.00000*	12.10252	.027	-52.6520	-3.3480
	Science	-26.40000*	12.10252	.037	-51.0520	-1.7480
	Computer science	-31.60000*	12.10252	.014	-56.2520	-6.9480
	Education	-11.65000	12.83666	.371	-37.7974	14.4974
	Management	-9.00000	12.10252	.463	-33.6520	15.6520
	Medical science	-25.06667*	11.58728	.038	-48.6692	-1.4641
	Engineering	-31.80000*	12.10252	.013	-56.4520	-7.1480
Science	Medicine	-1.60000	12.10252	.896	-26.2520	23.0520
	Humanities	26.40000*	12.10252	.037	1.7480	51.0520
	Computer science	-5.20000	12.10252	.670	-29.8520	19.4520
	Education	14.75000	12.83666	.259	-11.3974	40.8974
	Management	17.40000	12.10252	.160	-7.2520	42.0520
	Medical science	1.33333	11.58728	.909	-22.2692	24.9359
	Engineering	-5.40000	12.10252	.658	-30.0520	19.2520
Computer science	Medicine	3.60000	12.10252	.768	-21.0520	28.2520
	Humanities	31.60000*	12.10252	.014	6.9480	56.2520
	Science	5.20000	12.10252	.670	-19.4520	29.8520
	Education	19.95000	12.83666	.130	-6.1974	46.0974
	Management	22.60000	12.10252	.071	-2.0520	47.2520
	Medical science	6.53333	11.58728	.577	-17.0692	30.1359
	Engineering	-.20000	12.10252	.987	-24.8520	24.4520
Education	Medicine	-16.35000	12.83666	.212	-42.4974	9.7974
	Humanities	11.65000	12.83666	.371	-14.4974	37.7974
	Science	-14.75000	12.83666	.259	-40.8974	11.3974
	Computer science	-19.95000	12.83666	.130	-46.0974	6.1974
	Management	2.65000	12.83666	.838	-23.4974	28.7974
	Medical science	-13.41667	12.35208	.286	-38.5770	11.7437
	Engineering	-20.15000	12.83666	.126	-46.2974	5.9974
Management	Medicine	-19.00000	12.10252	.126	-43.6520	5.6520
	Humanities	9.00000	12.10252	.463	-15.6520	33.6520
	Science	-17.40000	12.10252	.160	-42.0520	7.2520
	Computer science	-22.60000	12.10252	.071	-47.2520	2.0520
	Education	-2.65000	12.83666	.838	-28.7974	23.4974
	Medical science	-16.06667	11.58728	.175	-39.6692	7.5359
	Engineering	-22.80000	12.10252	.069	-47.4520	1.8520
Medical science	Medicine	-2.93333	11.58728	.802	-26.5359	20.6692
	Humanities	25.06667*	11.58728	.038	1.4641	48.6692
	Science	-1.33333	11.58728	.909	-24.9359	22.2692
	Computer science	-6.53333	11.58728	.577	-30.1359	17.0692
	Education	13.41667	12.35208	.286	-11.7437	38.5770
	Management	16.06667	11.58728	.175	-7.5359	39.6692
	Engineering	-6.73333	11.58728	.565	-30.3359	16.8692
Engineering	Medicine	3.80000	12.10252	.756	-20.8520	28.4520
	Humanities	31.80000*	12.10252	.013	7.1480	56.4520
	Science	5.40000	12.10252	.658	-19.2520	30.0520
	Computer science	.20000	12.10252	.987	-24.4520	24.8520
	Education	20.15000	12.83666	.126	-5.9974	46.2974
	Management	22.80000	12.10252	.069	-1.8520	47.4520
	Medical science	6.73333	11.58728	.565	-16.8692	30.3359

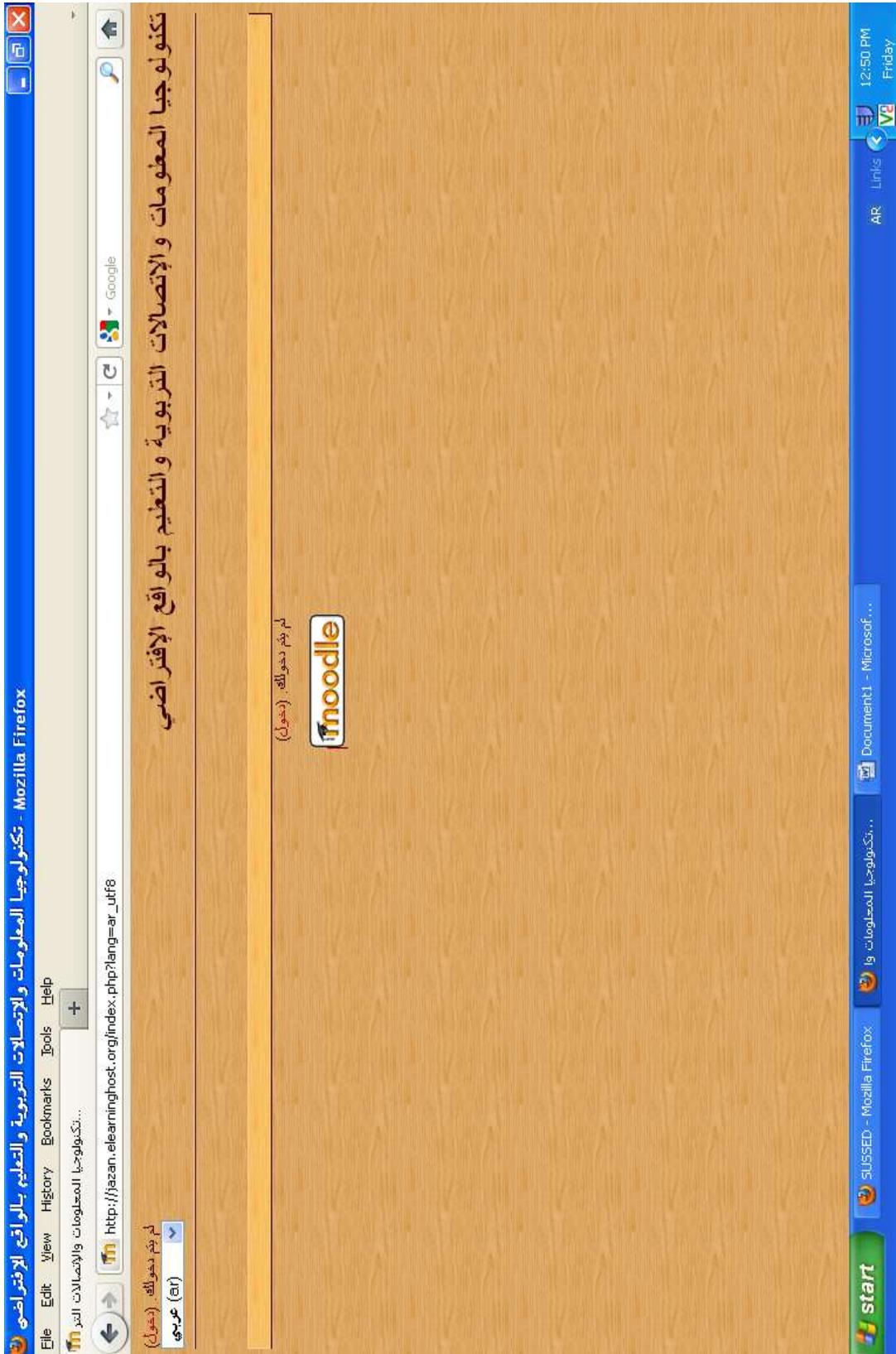
*. The mean difference is significant at the 0.05 level.

Mean plots of school-based differences

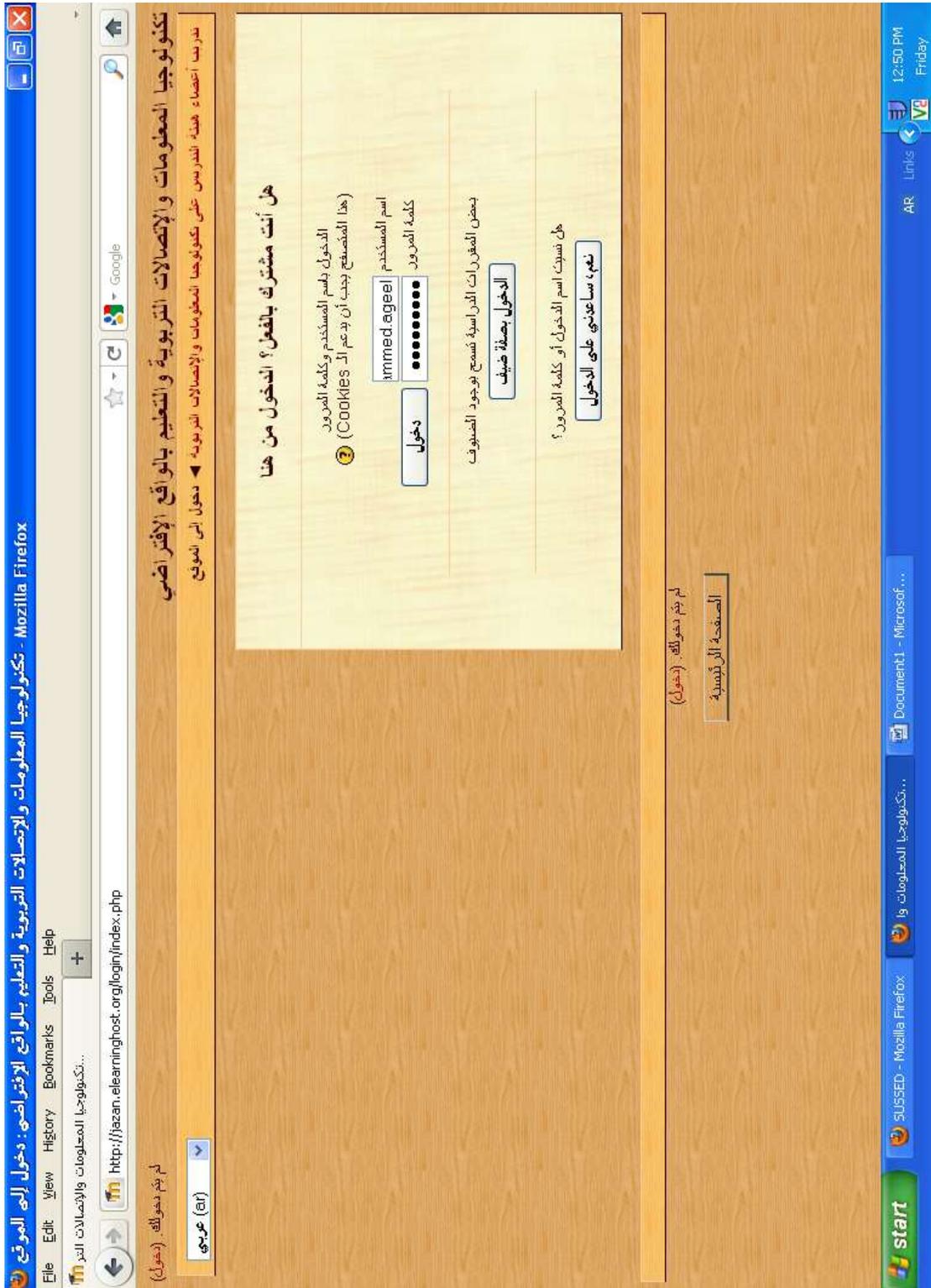


Appendix 18: The Implemented VLE (Moodle)

The Implemented VLE (Moodle)



Login Page



VLE Home Page

تكنولوجيا المعلومات والاتصالات التربوية والتعليم بالواقع الافتراضي

مقررات الدراسة المتاحة

إشعارات
المستخدمين
مقررات دراسية
درجات
الموقع
اللغة
وحدات
أمان
المظهر
الصفحة الرئيسية
حلم
شبكة
تقارير
مشروع

الدرس الأول: عرض المعلومات
في هذا الموضوع نعرف المترجم على تكنولوجيا التعليم تعريفاتها المقصود بها، فوائدها وأثرها على استخدامها وتطبيقها في التعليم

الدرس الثاني: الاتصال الإلكتروني
تعريف المترجم في هذا الموضوع على عملية الاتصال الإلكتروني وتطبيقه في العملية التعليمية والتربوية كجزء أساسي من عملية التعليم الإلكتروني. وينطى هذا الموضوع تعريفات الاتصال الإلكتروني وعناصره ومكوناته وكيف تتم هذه العملية

الدرس الثالث: الوسائط المتعددة
يشرح هذا الموضوع الوسائط المتعددة وعملية توظيفها في التربين ومدى فعالية استخدامها كما يوضح بعض نماذج من هذه الوسائط وتطبيقاتها وأصلها وأشكالها المتعددة وكذلك مميزاتها وعيوبها بالإضافة لكل من المعلم والمتعلم والمؤسسة التعليمية كما يقدم نماذج وأمثله على ذلك

الدرس الرابع: استخدام التقييم الإلكتروني
يوضح هذا الموضوع عملية التقييم الإلكتروني باعتباره أحدث أساليب التقييم الفعالة كما يقدم شرحاً عن مميزاته وعيوبه وكذلك يقدم نماذج وأمثله عليه

الدرس الخامس: المصادر والمراجع الإلكترونية
في هذا الموضوع سنعرف المترجم على استخدام المصادر الإلكترونية كالتلفزيون والمعلومات

تم دعمك بصفة مستمرة من قبل فريق عمل (خروج) عربي (ar)

تشغيل الفيديو

فصل 2011

العدد	الاسم	التاريخ	المتخصص	الاصناف	الاسماء
2	1				
9	8	7	6	5	4
16	15	14	13	12	11
23	22	21	20	19	18
30	29	28	27	26	25
					24

الفكرة هي عبارة عن برنامج لتدريب أعضاء هيئة التدريس في جامعة جازان على تكنولوجيا المعلومات والاتصالات التربوية من خلال تقديم المحتوى و الفعالة التعليمية لها عن طريق قالب جديد هو التعليم بالواقع الافتراضي (مورد) حيث سيتلقى المترجمون تدريبهم من خلال برنامج التدريب المستمر أثناء الخدمة

start

SUSSED - Mozilla Firefox

Document1 - Microsoft...

12:51 PM Friday

Week One: Presenting Information

The screenshot displays a Moodle course page for 'الدرس الأول: عرض المعلومات' (Lesson 1: Presenting Information). The page is viewed in Mozilla Firefox. The main content area is titled 'مخطط الموضوع' (Topic Outline) and contains a list of items:

- 1
- منتدى الأخبار
- مقدمة عن عرض المعلومات
- العروض التقديمية وأماها
- فوائد ومميزات العروض التقديمية
- برنامج عرض المعلومات والعروض التقديمية
- التوربوينت
- خطوات تصميم العروض التقديمية عن طريق التوربوينت
- طريقة أداء عرض تقديمي
- محددات الدرس الأول
- منتدى الدرس الأول

The interface also features a navigation menu on the left with options like 'الأمثلة', 'المشاركات', 'ملاحظات', and 'مصادر'. The top status bar shows the time as 12:51 PM on Friday.

Appendix 19: Moodle Beginner User Manual



التدريب على نظام التعليم الإلكتروني

Moodle V 1.8

النسخة الخاصة بالمبتدئ

Moodle Beginner Guide

الحقوق الفكرية لهذه الوثيقة

تم إنشاء هذه المادة العلمية برعاية مؤسسة الأسلوب الذكي Smartway في المملكة العربية السعودية

www.smartway-me.com

www.Sa-m.org

ويوزع هذا المرجع بشكل مجاني تحت رخصة الوثائق الحرة (GNU) ، كما يسمح بنسخ وتداول هذا المستند مع الاحتفاظ باسم المؤلف و الجهة التي أشرفت على التأليف على الوثيقة، ولمراجعة حقوق النشر عبر GNU يمكن الإطلاع على الرابط التالي

www.gnu.org/copyleft/tdles.html

ولا يجوز استخدام هذا المرجع لأغراض تجارية دون إذن خطي من مؤسسة الأسلوب الذكي SmartWay

الموقع الرسمي لنظام التعليم مودل هو : www.moodle.org

SMART
way
الأسلوب الذكي
جدول المحتويات

5	مقدمة :
5	ما هو مودل (MOODLE) ؟
5	التسجيل في مودل (MOODLE)
6	صفحتك في مودل
8	تحرير ملفك الشخصي
12	يُوق
13	دخول المقرر الدراسي
15	ما بعد دخول الدرس
15	صفحة الدرس
17	المواضيع
17	الأدوات التشطية
17	استعراض الأدوات في مودل
17	الموارد
18	الأنشطة المختلفة
18	أدوات المندى (أيقونات مودل =)
18	أداة الملف (أيقونات مودل =)
18	المنكرة (أيقونات مودل =)
18	أداة المهام (أيقونات مودل =)
19	أداة الاختبار (أيقونات مودل =)
19	أداة الدرس (أيقونات مودل =)
19	أداة الويكي (أيقونات مودل =)
20	أداة ورشة العمل (أيقونات مودل =)
20	أداة الاختيار (أيقونات مودل =)
20	المسرد (أيقونات مودل =)
20	أداة كاعدة البيانات (أيقونات مودل =)
20	أداة المحادثة (أيقونات مودل =)
21	أداة الاستبيان (أيقونات مودل =)



21	أداة المسكوكم (إيقونات موند) = (م)
21	أداة البريد (إيقونات موند) = (ك)
21	أدوات المكتبى
21	أداة المكتبى
23	التقييم
23	محرر النصوص فى موند
24	كيفية استخدام محرر النص المتقدم
26	محرر الروابط
26	محرر الصور
27	المحرر البسيط
27	الرسائل
30	الكتل
31	الكتل القياسية
31	الأشخاص
31	الرسائل
31	المستخدمون المتواجدين
31	الأنشطة
31	البحث فى المستندات
31	الإدارة
31	تصنيف المناهج الدراسية
32	آخر الأخبار
32	الأحداث القادمة
32	الأنشطة الحديثة
32	الكتل الغير قياسية
32	المقررات الدراسية
32	ملفلى مسردى عنوانى
32	الجدول الزمنى
34	المجموعات
34	التوصيات
34	توصيات لمستخدم PC



35 توصيات الطلاب

35 توصيات المعلمين



مقدمة :

هذا الدليل يعرض أساسيات مودل لمستخدمي مودل المبتدئين ، مثلا التسجيل ، تعديل الملف الشخصي ، التسجيل في أحد المقررات والخروج منها ، كما يعرض لمحة عامة عن الأدوات المختلفة التي يمكن أن تجدها في مودل وبالطبع يفسر الأدوات الأكثر شيوعا بمزيد من التفاصيل.

تنبيه : هذا الدليل التدريبي لبرنامج مودل يقدم "كما هو" لأي متصفح لهذه الصفحات على أمل أن تكون مفيدة .. حيث أن أي إختلاف وارد حول هذه المعلومات في هذه الصفحات قد تكون بسبب التحديث الدائم الحاصل على نظام مودل العلمي أو بسبب إختلاف البرينات ، تركيب البرمجيات ، الصيغ والميانات بين التركيب وغيرها. علما أن هذا الدليل يخضع باستمرار إلى تحديث ، لذلك فإن هذه المعلومات تتغير وتتطور بمرور الوقت.

ما هو مودل (moodle) ؟

مودل هو أحد البرمجيات مفتوحة المصدر ، وهذا يعني أن البرنامج متاح مجانيا لأي شخص من موقع <http://moodle.org> كما أن تنزيل مودل يتضمن مجموعة من الأدوات القياسية ، إضافة إلى ذلك ، هناك العديد من الأدوات الخاصة .

مودل هو بيئة تعلم افتراضية (إلكترونية) ، وهو موقع إلكتروني يمكن أن يدعم التعليم والتعلم عن طريق الحاسوب بشبكة الانترنت. لذلك ، يلزمك حاسوب شخصي مع وصلة انترنت للدراسة عبر مودل ، ولعلك تلاحظ اليوم ، هناك العديد من الطلاب يستخدمون الحواسيب في المنزل ، ولكن ، إمكانية الوصول إلى الانترنت عبر شبكات الحاسوب في المدارس والمكتبات العامة يعتبر أمر صعب نسبياً .

ملاحظة : الصور في هذا الدليل مأخوذة باستخدام متصفح مستكشف الانترنت ، لذلك قد ترى إختلاف بعض الشيء إذا كنت تستخدم متصفح آخر ، ولكن تظل المعلومات هي نفسها.

التسجيل في مودل (moodle)

هناك عدد متزايد من المقررات الدراسية التي تدعمها أنشطة التعلم على الانترنت ، لذلك يجب أن تشمل الدورات الدراسية مواد دراسية عبر الانترنت / المهام و / أو الإتصال وغالبا ما يضع المدرس بيئة المقرر الدراسي من خلال الاجتماعات الأولى ليخبر الطلاب بما يلي :

- ❖ العنوان على الانترنت لخدمة مودل (موقع مودل) .
- ❖ اسم بيئة المقررات الدراسية (ليس دائما نفس الاسم للمقرر الدراسي) .
- ❖ الفئة المخصصة لاستخدام هذا المقرر الدراسي .



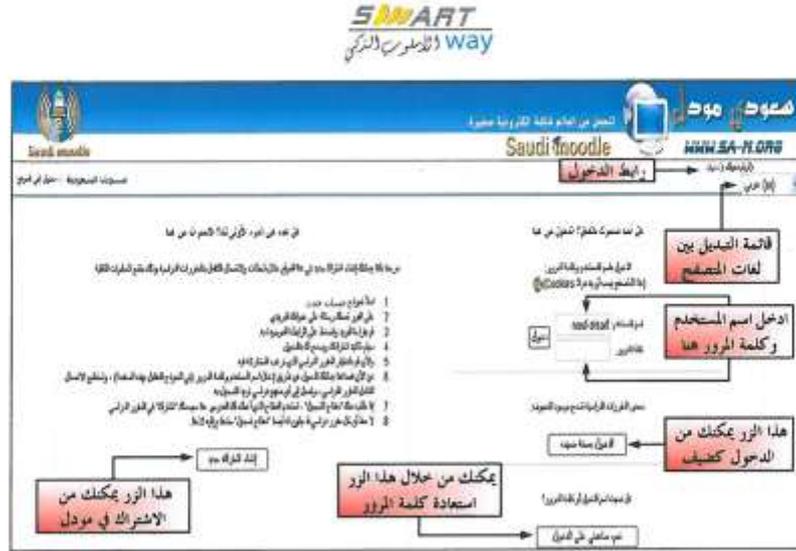
❖ مفتاح التسجيل ، رمز الدخول ، بالشمسية للمناهج (معظم المقررات لا يمكن الوصول إليها بحرية ، وعندما تسجل لأول مرة ، ستطالب بمفتاح التسجيل).

صفحتك في مودل

عندما يكون لديك مفتاح دخول في جهاز الكمبيوتر الخاص بك وفتحتم برنامج المتصفح (فإن مستكشف الإنترنت Explorer هو الأفضل مع مودل) وستكتب عنوان مودل الذي قدمه لك المعلم أو يمكنك الدخول على موقع مودل السعودية على الرابط www.sa-m.org ، ومن ثم سوف تعرض لك صفحة شبيهة بهذه الصفحة:

The screenshot shows the Moodle Saudi Moodle website interface with several red callout boxes and arrows pointing to specific features:

- عرض بعض تصنيف المقررات الدراسية وبعض الدروس المتاحة** (Display some course classifications and available courses): Points to the 'Courses' section.
- الجدول الزمني يعرض لك معلومات عن المقررات في حالة دخولك مودل** (The time schedule displays information about courses when you log in to Moodle): Points to the 'Calendar' section.
- قائمة بالأنشطة المتاحة** (List of available activities): Points to the 'Activities' section.
- خاصية البحث في المتطلبات** (Search feature for requirements): Points to the 'Requirements' section.
- قائمة بالأنشطة الجديدة** (List of new activities): Points to the 'New Activities' section.
- يمكنك من خلال هذا المربع عرض ما تريد حول مودلك وكذلك إخراج الصور** (You can through this box display what you want about Moodle and also export images): Points to the 'Profile' section.
- في القائمة الرئيسية يتم عرض بعض المقررات والاختبارات والأنشطة بشكل عام** (In the main menu, some courses, exams, and activities are displayed in general): Points to the main navigation menu.



- إذا كنت قد نسيت كلمة السر يمكنك أن تنقر على " نعم ساعدني على الدخول " ، ثم أكتب عنوان البريد الإلكتروني ومعلومات الدخول وسيتم إرسالها إليك ، وبالطبع ستتم هذه العملية إذا كنت قد أعطيت مسبقاً رقم دخول خاص بك وكذلك عنوان بريد إلكتروني صحيح!
- إذا كتبت رقم دخولك بشكل صحيح سوف تتمكن من الدخول إلى مودل ، ويعود بك المتصفح إلى الصفحة الأولى وبإمكانك الذهاب إلى ملفك الشخصي (لتعبئة كتابة كلمة المرور الخاصة بك من جديد) .
- كذلك في حال رغبتك الخروج من مودل يمكن النقر على رابط "خروج" ، أو يمكنك ببساطة أن تطلق المتصفح .
- كما يمكنك الدخول على مودل بصفة ضيف Guest للإطلاع على المقررات المتاحة .
- وفي بعض المواقع لمودل يمكنك تسجيل نفسك بنفسك بإختيار اسم مستخدم وكلمة مرور مثل الإيميل حيث يطلب منك النظام ان يكون لديك بريد إلكتروني صحيح لكي يرسل لك تفعيل النظام كلمة المرور الخاصة بكل عليه

تحريير ملفك الشخصي

يمكنك الوصول إلى الملف الشخصي للمستخدم عن طريق الضغط على اسم المستخدم أو الصورة الشخصية الخاصة بالمستخدم ، وسيعرض لك مودل الملف مثل ما يظهر للآخرين ، على سبيل المثال :

The screenshot shows the Saudi Moodle website. At the top, there is a navigation bar with the Moodle logo and the text 'الانتقال إلى أماكن أخرى في Moodle'. Below this, there is a main content area with several sections. On the left, there is a section titled 'الوصول إلى بلوق وإلى مواقع بلوق لجميع مستخدمي Moodle'. In the center, there is a section titled 'خطة بسيطة عن مشاركات المنتدى في Moodle'. On the right, there is a section titled 'اضغط هنا لتحرير سيرتك الذاتية'. At the bottom, there is a section titled 'من هنا تغير كلمة المرور' and another titled 'الوصول إلى أداة رسائل Moodle'. The Moodle logo is visible at the bottom center of the page.

- لتغيير كلمة السر ، استخدام زر " قم بتغيير كلمة السر " ، اعطي كلمة سر جديدة لنفسك .
- يمكنك تغيير المعلومات في ملفك الشخصي ، بالنقر على زر " حرر ملف سيرتك الذاتية " أو عن طريق ملفك الموجود في مربع الإدارة في كل مقرر دراسي ستفتح لك جميع خيارات الملف كما هو مبين أدناه :

The image shows a screenshot of the SMART way website registration page. The page title is "SMART way" and the user name is "Nouf alsalf". The registration form includes fields for name, email, password, and phone number. There are several red annotations and arrows pointing to specific fields:

- An arrow points to the "أدخل بياناتك هنا اعلى . يمكنك الرجوع لتعديلها مرة أخرى" (Enter your data here above. You can return to edit it again) annotation.
- An arrow points to the "اختر الطريقة التي يود فيها التأكد من تسجيلك" (Choose the way you want to confirm your registration) dropdown menu.
- An arrow points to the "ادخل بريدك الإلكتروني" (Enter your email) field.
- An arrow points to the "اختر طريقة عرض بريدك للأخرين في الموقع الإلكتروني" (Choose how you want others to see your email on the website) dropdown menu.
- An arrow points to the "اختر نوع البريد الذي يسلق كملخص عن ما حدث في المقالات الدراسية التي سجلت فيها "مدون" ملخص "كامل" أو "مختصر" طريقة تسجيلك في المنتدى" (Choose the type of email you want to receive as a summary of what happened in the educational articles you registered in the "Blog" section. Summary "Complete" or "Short" registration method in the forum) dropdown menu.
- An arrow points to the "ادخل رقم هاتفك وأنتك" (Enter your phone number) field.

Below the registration form, there is a section with a red box containing the text: "ها آكتب تعريف بسيط حول نفسك بطلب عليه الآخرون" (I will write a simple introduction about yourself that others will request). Below this, another red box says: "أخفظها لتحدثت صوتك لداية" (Save it so you can talk at the end). At the bottom, a button says "تسجيل بريدك الإلكتروني" (Register your email).



- تأكد أن اسمك قد تمت كتابته بشكل صحيح ، وتأكد أن عنوان البريد الإلكتروني تم تعبئته بالشكل المطلوب ، لأن مودل سوف يرسل الرسائل عن المقررات الدراسية عبر هذا البريد.
- مع البريد الإلكتروني يمكنك تحديد ما إذا كنت تريد الحصول على نسخة من مناقشة كل فصل ، أو هل ترغب في الحصول على رسالة واحدة يوميا تتضمن جميع الرسائل مرة واحدة (جميع المواضيع وفي كل الأوضاع) .
- ضبط اللغة المفضلة ، وستكون هي اللغة التي تستخدمها تلقائياً بمجرد التسجيل في مودل ، لاحظ أنه يمكنك تجاوز هذه التلقائية في اللغات باستخدام خيارات اللغة في الصفحة الأولى ، بالإضافة إلى ذلك ، تجدر الإشارة إلى أن تغيير اللغة يؤدي فقط إلى تغيير واجهة المستعرض ، ولا تؤثر على لغة المواد الدراسية الموجودة في البيئة التعليمية ، كما أن لغة المقررات الدراسية غالباً ما تكون اللغة الثابتة في المتصفح عبر برنامج مودل.
- أكتب وصفا موجزا عن نفسك ، بحيث يعرف زملائك الطلاب القليل من المعلومات عنك ، وتذكر أن جميع مستخدمي مودل يمكنهم قراءة معلوماتك في ملفك الشخصي ، لذلك تجنب كتابة معلومات شخصية خاصة بك في ملفك الشخصي.

صورة ناتية اصغرها:

الصورة المدالية: حذف

صورة شخصية جديدة:

صفحة إقرات: أو اكتب هنا رابط الصورة على الإنترنت

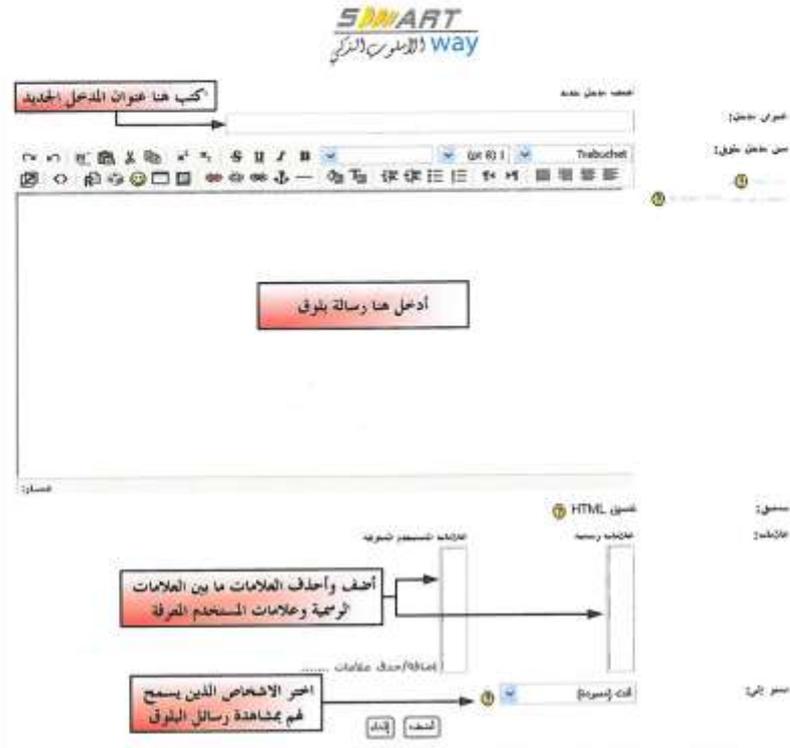
- لإضافة صورة إلى ملفك الشخصي ، انقر على زر استعراض ، اختر الصورة التي تريد استخدامها وانقر عليها مرتين وسيظهر لك رابط الصورة في مربع استعراض (علماً أن هذه الصورة يجب أن تكون 50 كيلو بايت أو أقل) ، كما أن صور المستخدمين يتم احتواءها تلقائياً لتتناسب مع مربع الصور .
- **ملاحظة:** الصور الغير لائقة ، أو الصور التي تستهدف إشاعات حول الميمنة أو الدين ، ستكون مرفوضة وسيتم إزالتها فوراً ، كما أن استخدام هذه الصور في مودل سيؤدي إلى فرض عقوبات على مستخدميها! وتذكر أن الكثير من البنود المختلفة الأخرى الاختيارية في مودل يمكن للمستخدمين الوصول إليها .
- وبعد تعديل ملفك الشخصي يمكنك مشاهدة التحديثات الأخيرة بالنقر على الزر الموجود أسفل الصفحة ، علماً بأنه يمكنك دائما العودة إلى ملفك الشخصي وتقديم معلوماتك الشخصية الجديدة عند اللزوم.



بلوق

- بلوق مثل صفحات شبكة الانترنت التي تنشر آراء المستخدمين بشأن المواضيع والقضايا المختلفة والتي تهم المستخدمين الآخرين للقراءة ، ويمكن أن يستخدم المعلم بلوق كجزء من أنشطة المقرر الدراسي.
- جميع مستخدمين مودل يمكنهم المحافظة على بلوق في مودل ويمكن أن تتيح للمستخدمين الآخرين الإطلاع على رسائل بلوق ، كما يمكن البحث في بلوق عن طريق اختيار تصنيف البطاقات أو محتوى المفكرة.
- ليبدأ بلوق ، عليه أن تعود إلى ملفك الشخصي (أي انقر على اسمك أو صورتك المستخدمة في أي مكان في مودل) وانقر على رابط بلوق فوق ملفك الشخصي ، وهنا يفتح صفحة بلوق التي تحتوي في جهة اليمين كتلة قائمة بلوق وكتلة بطاقات بلوق :





دخول المقرر الدراسي

بعد تسجيلك في مودل ، تستطيع الدخول إلى المقررات الدراسية المختلفة التي سجلت فيها ، وهي مدرجة في العمود الأيسر من الصفحة الرئيسية في مودل في مربع يسمى المقررات الدراسية ويمكنك دخول أي مقرر بالنقر على اسمه.

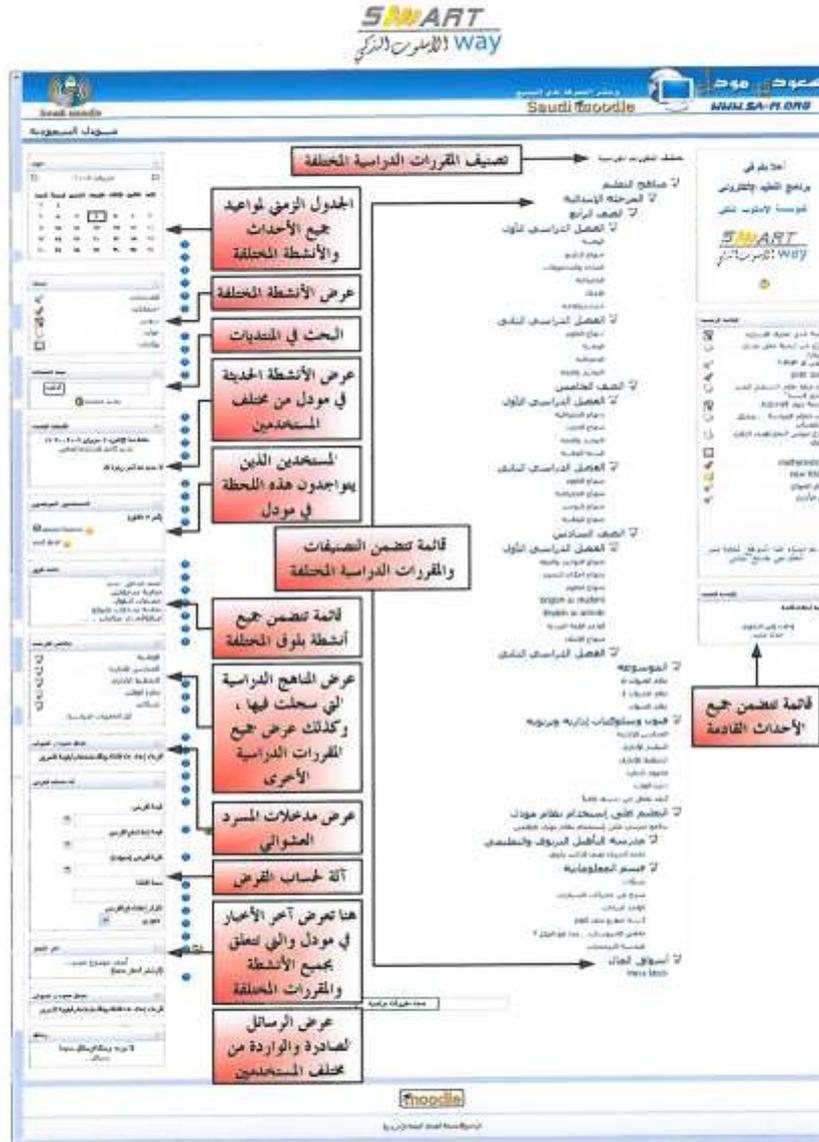


ما بعد دخول الدرس

- تختلف طريقة إنشاء المقررات وتتوقف على أسلوب المعلم ومدى استفادته من البيئة ، ولكن جميع هذه المقررات تشمل على منتدى لتسجيل الأخبار الجديدة والإعلانات ، والمعلومات المهمة التي تسجل من قبل المعلم ، مثل التغييرات في الجدول الزمني أو التذكير بمهام الأسبوع ، كما أن الرسائل المنشورة في هذا المنتدى سيتم إرسالها بالبريد الإلكتروني لجميع المشاركين في المقرر الدراسي ، ولذا لا ينبغي أن يستخدم هذا المنتدى في مناقشة المهام .
- قد تتضمن المقررات وصلة إلى موقع المكاتب العامة والعلمية ، إضافة إلى ذلك ، يمكن للمعلم أن يضيف جدول زمني مفصل ، أو يوميات الدراسة أو أدوات ماسنجر للمقرر الدراسي ، فهي أيضاً قد تحتوي على معلومات قيمة عند بدء المقرر الدراسي.

صفحة الدرس

في حالة قيامك بتسجيل الدخول ، بالتأكيد ستشاهد الصفحة التالية :



SMART way

- معظم صفحات مقررات مودل تتكون من ثلاثة أعمدة ، ويحتوي العمود الأيسر صناديق صغيرة تسمى الكتل التي هي في معظمها ذات طبيعة إدارية ، ويحتوي العمود الأيمن الكتل التي هي في معظمها ذات طابع إعلامي ، بينما يحتوي العمود الأوسط على مواد تدريبية و أدوات نشطة.
- كل صفحة في مودل تحتوي على شريط لقي في الأعلى ، هذا الشريط يوضح لك مسارك أثناء تنقلك في مودل ويتيح لك العودة إلى مسار صفحة أخرى (في حالة الضغط على اسم الصفحة) في أي وقت تشاء .

المواضيع

- مواد المقرر الدراسي (المصادر والأنشطة) في صفحة المقرر الدراسي مقسمة إلى مجموعة أو أكثر في العمود الأوسط ، تسمى هذه المجموعات ، خلال المقرر الدراسي يستطيع المعلم أن يخفي ويكشف أو يبرز المواضيع وفقا للجدول الزمني ، وإذا كان المقرر الدراسي يحتوي على كثير من المواضيع ، يمكنك إسقاط أحد المواضيع ويتم ذلك عن طريق النقر على مربع في الزاوية العليا اليمنى في الموضوع.

تولاً : التأسيس للقيادي

مواضيع وسائط
تسعة مشقة .. نكتة !!
أسئلة حول مفاهيم وسائط القيادة
لا تنسى التأسيس للقيادي
معاينة مواد التأسيس للقيادي
الواجب الأول
ساعة الفقه

احفظ هذا المربع لعرض تفاصيل أكثر حول المقرر الدراسي ، ولتح عرض التفاصيل احفظ مرة أخرى على هذا المربع لإحضارها

- لاستعادة قائمة المواضيع ، انقر نقراً مزدوجاً على المربع في الموضوع المختار.

الأدوات النشطة

استعراض الأدوات في مودل

- يتضمن مودل اختيار واستعمال أدوات مختلفة على الانترنت ، وسيتم شرحها بليجاز أثناءه .

الموارد

- معظم المقررات الدراسية تتضمن مجموعة معينة من مواد الدراسة التي تم تحميلها أو مرتبطة مع المعلم ، وهذه المواد تستخدم كمعلومات إضافية أو كتقطة بداية أو أساس لأنشطة التعلم مثل المناقشات والمهام ، الموارد عادة يتم فتحها بالنقر عليها ويقصد بها عرض الدرس دون مزيد من التفاعل ، موارد الدراسة في المقررات الدراسية تتضمن تحميل صفحات الويب ، مستندات مايكروسوفت وورد ، عروض بوربوينت ، جداول أكسيل ، ملفات PDF ،



والصور [] ، والصوت [] (يتطلب مشغل الفلاش لتشغيل ملفات الصوت وللفيديو اللازمة لتشغيل الفيديو) ، أو أي مجموعة من هذه العناصر ، حتى ملفات الضغط [] يمكن أن تكون جزءاً من مواد الدراسة ، كما أنه يستحيل ضمان جميع الموارد دائماً مع جميع المقررات الدراسية .

الأنشطة المختلفة

هذه لمحة عامة عن نشاط كل الأدوات المتاحة من مودل.

أدوات المنتدى (أيقونات مودل =)

- المنتدى هو الوسيلة التي تستخدم عملياً في كل مقرر دراسي ، وسوف يتم شرح استعماله بالتفصيل في مكان آخر من هذا الدليل.

أداة الملف (أيقونات مودل =)

- أداة الدليل ليست أكثر ولا أقل من أي ملف من الملفات التي تعرضها مباشرة للطلاب من المعلمين ، بدلاً من عرضها بشكل منفصل ويمكن للطلاب فتح أو تنزيل هذه الملفات .

المذكرة (أيقونات مودل =)

- أداة للمذكرة في مودل تشبه يوميات التعلم ، ويمكن أن يستخدمها الطلاب لإبقاء مذكراتهم أمامهم ، أي أنهم يستطيعون العودة إلى هذه المذكرات مرات كثيرة حسبما يحلو لهم وإضافة أو تغيير المعلومات ، وهي تعمل مع نفس المحرر الموجود في المنتدى ولذا فمن السهل استعمالها ، ويستطيع المعلم فقط قراءة الرسائل والتعليقات أو إعطاء المشورة أو النصيحة .
- ويمكن أن تستخدم أيضاً لكتابة مهمة ، ولكن من الأفضل استخدام أداة المهام لكتابة وإنشاء المهمات .

أداة المهام (أيقونات مودل =)

- تتضمن أداة المهام واجبات على الطلاب القيام بها ، وغالباً ما يكون مطلوب تحميل وتقديم أعمالهم عبر الكمبيوتر ، ولكن يمكن أيضاً أن تتضمن مهام أخرى ، مثل كتابة مهمة على صفحة الانترنت ، أو نشاط بدون اتصال مثل العرض في الصف ، أو عن طريق الرد الآلي وتقييمك على هذه المهمة .

SMART way الأسلوب الإلكتروني

- عادة يكون هناك موعد نهائي لإنجاز المهام يجب مراعاته من قبل الطلاب ، عند انقضاء الموعد والوقت المحدد ، فإن المعلم يمنع التعديل على المهام أو تحميلها حيث لا يسمح للطلاب بالقيام بأي تعديل ، لذلك فإنه لا بد من الطلاب أن يتوخى الحذر ويدير وقته من أجل إنجاز مهمته بنجاح وفي الوقت المحدد.
- وبمجرد ما يقوم الطلاب بتسليم أعمالهم (ك تحميل ملف ، أو كتابة أي نص على الانترنت) فإن المعلم يمكنه الوصول إليها وإعطاء رده / تعليقاته.
- عادة ، يتسلم الطلاب درجته التي حصل عليه كتقييم على عمله ، كما يتم إخباره عن هذه الدرجة تلقائياً بإرسال بريد إلكتروني يخبره بذلك (إذا كان عنوان البريد الإلكتروني مسجل بشكل صحيح في ملف الطالب)!

أداة الاختبار (أيقونات مودل =) ()

- تستخدم أداة الاختبار لعمل الاختبارات على الانترنت ، والتي يمكن أن تتكون من أنواع مختلفة من الأسئلة ، هذه الاختبارات يمكن أن تكون متاحة دائماً مثل المهام (أي أن الطالب يقرر متى وكيف يعمل الاختبار ، وأحياناً يمكن أن يأخذ الاختبار أكثر من مرة) ، أو يمكن أن تكون متاحة فقط خلال فترة زمنية معينة يتم فيها مراقبة الاختبار من قبل المدرس .
- عندما يخضع الطالب للامتحان ، ينبغي عليه التحقق من الرد الآلي حول صحة عمله ويكون ذلك بشكل تلقائي (ولكن لا يتوفر ذلك في حالة أسئلة المقالة) .

أداة الدرس (أيقونات مودل =) ()

- يمكن استخدام أداة الدرس لفهم النص أو للتعلم عن طريق التجربة والخطأ ، وسوف يقدم الطلاب المواد التعليمية ، مثل النصوص والصور والصوت والفيديو الذي يرتبط بسؤال ، إذا كانت إجابة الطالب على السؤال صحيحة فإنه سينتقل إلى الجزء التالي ، أما إذا كانت الإجابة غير صحيحة ، فإنه سيعود إلى مادة الدرس أو صفحة معلومات إضافية.
- علماً بأن معظم الدروس والاختبارات تصحح تلقائياً ، ولذا ينبغي أن يؤخذ العمل على محمل الجد.

أداة الويكي (أيقونات مودل =) ()

- عبارة عن أداة للعمل الجماعي ، وهي تسمح للطلاب بالعمل مع المدرس أو مع رفاقه لإنشاء الوثائق ، مثل التقارير أو أوراق المشروع ، كما يمكن إنشاء مجموعات من الصفحات ، مع صور والمرقات.



أداة ورشة العمل (أيقونات مودل) = (📌)

- تتطلب هذه الأداة المشاركة الفعالة من جانب الطلبة ، لأنها تسهم في التعليق على أعمال الطلاب وتقييم أعمال الآخرين وفقاً للمعايير التي حددها المعلم ، كما أن تقييمات الطلاب تعتمد على نفس التقييمات التي يستخدمها المدرس لطلاب الصف .

أداة الاختيار (أيقونات مودل) = (⊗)

- تستخدم أداة الاختيار لطرح قضية معينة مع إجابات متعددة ، ولا تحتوي على أي درجات أو رد تلقائي .

المسرد (أيقونات مودل) = (⚙)

- يمكن استخدام مسرد لمرض قائمة من النقاط الصعبة أو الكلمات الجديدة التي تتعلق بموضوع المقرر الدراسي مع شرح لهذه النقاط ، مثل وصلات إلى مصادر للمعلومات الخارجية الممكنة ، وفي بعض المقررات ، يتوقع من الطلاب إضافة بعض الكلمات إلى هذه القائمة ، وهذه البنود يمكن تقييمها وتعليق الآخرون عليها .
- مدخلات المسرد يمكن ربطها تلقائياً إلى صفحة في نفس المقرر الدراسي ، كما يمكنك أن تحصل تسميات لكلمات المسرد بالتفكير عليها.
- أداة المسرد يمكن أن تستخدم أيضاً في إيجاد مكان من أجل بتحميل وتنزيل الملفات التي يمكن التعليق عليها من قبل الآخرون.

أداة قاعدة البيانات (أيقونات مودل) = (📊)

- هذا النشاط يسمح للطلاب بإدخال البيانات في شكل يقرره مدرس المقرر الدراسي ، هذه المدخلات يمكن تخزينها ، البحث عنها أو التعليق عليها .. إلخ ، كما أنها يمكن أن تكون نص أو صورة أو غيرها من أنواع المعلومات الأخرى .

أداة المحادثة (أيقونات مودل) = (💬)

- يتضمن مودل أداة محادثة بسيطة تسمح بتبادل النصوص بين الطلاب بشكل حقيقي ، كما يعمل الآن في الإصدارات الحديثة لمودل بعمل أداة محادثة صوتية وفيديو .



أداة الاستبيان (أيقونات مودل) = (📄)

- وهي تهدف إلى وضع أسئلة للعموم للحصول على آرائهم حول نقطة أو موضوع معين ، هناك تعليمات تفصيلية يمكن الاطلاع عليها في جزء آخر من هذا الدليل.

أداة السكورم (أيقونات مودل) = (📊)

- سكورم عبارة عن خزمة أو كتلة من المواد الدراسية (أنشآت وفقا لمعيار سكورم) .

أداة البريد (أيقونات مودل) = (✉)

- وتهدف إلى إنشاء بريد خاص بالطلاب أو المدرس ، هناك تعليمات تفصيلية يمكن الاطلاع عليها في جزء آخر من هذا الدليل.

🔗 أدوات المنتدى

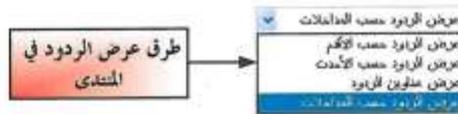
- تعتبر الأداة الأكثر أهمية ومركزية بالنسبة لجميع المقررات الدراسية في مودل ، وهي مرنة جدا ويمكن للمعلمين ربط المدخلات الموجودة في مسرد والوسائط المتعددة وغيرها من خلال المنتدى ، لذلك فهي تتطلب وصفا مفصلا :

🔗 أداة المنتدى

- يعمل المنتدى في مودل مثل أي منتدى آخر في أنه يتيح للمستخدمين وظيفة إضافة النصوص و التعليقات (غالبا) للرد على بعضهم البعض! وتستخدم المنتديات لتوفير المعلومات (استخدام ثابت) أو في توليد المعرفة الاجتماعية كوسيلة لزيادة الثقافة من خلال المناقشات (استخدام متحرك) ، ويمكنكم الدخول إلى المنتدى من خلال الضغط على رابط المنتدى في مودل :



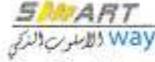
- عندما تنقر على عنوان الموضوع سوف يفتح لك الموضوع و يمكن للمستعملين اختيار طرق عرض بالشكل مختلفة ، و من الأفضل عرض كمية كبيرة من الرسائل في الموضوع الواحد :



- فيما يلي عرض رسالة بسيطة في مودل :



- الخيارات في آخر الرسالة تتضمن ظهور اسم المرسل لتمتلك من الرد على رسالته ، وفي حال استخدمت وظيفة البحث من أجل البحث عن رسائل المنتدى ، ستلاحظ وجود رابط " انظر هذه الرسالة في سياق الكلام " مما يسمح لك الانتقال من نتائج البحث إلى المناقشة في نفس المكان الذي أرسلت منه الرسالة.



- خيار التعديل متاح لك لمدة 30 دقيقة بعد إرسال الرسالة ، وهي تتيح للمستخدمين إجراء التصحيح إذا لزم الأمر ، وعند انضمامك إلى المنتدى ، سوف يتم إرسال نسخة من المضائق إلى بريدك الإلكتروني ، كما أن هناك أمر آخر للمدرس يشمل على عملية التقسيم، وهي تتيح للمدرس فصل جزء من النقاش ونقله إلى محادثة أخرى.
- كذلك خيار الحذف الذي يمكن الطالب من حذف الرسائل ويمكنه رؤيته فقط من خلال صندوق رسائله ، كما أن المعلم أيضاً يمكنه حذف الرسائل المرسلة من قبل الآخرين ، علماً بأن الرسائل لا يمكن حذفها ، طالما لا إجابات قد نشرت فيها .
- عندما تزيد كتابة موضوع مناقشة جديد ، أو الرد على الرسالة الحالية ، سوف يفتح لك محرر النصوص في مودل ، الذي يعتبر نظام متقدم لتحرير النصوص وذلك يسهل على جميع المستخدمين كتابة الرسائل الجديدة في المنتدى أو تحريرها .
- محرر النصوص يتكون من شريط يتضمن داخله الكثير من الأزرار مثل معالج الكلمات ، معالج الوظائف، وتستخدم نافذة التحرير هذه في المنتديات ، ولكن أيضاً تستخدم في الأدوات الأخرى ، المجلة ، الحوار وأداة الويكي .

التقييم

- يمكن للمعلم أن يقرر استخدام منتدى لعمل نشاط معين ، يتطلب من الطلاب إرفاق ملف عبر رسالته.
- التقييم أو التقدير سيكون وفقاً للجدول الذي اختاره المعلم ، ومعايير التقييم هذه موضحة تحت زر المساعدة ، ليسلنى لك اختيار المعيار الذي تريد.

محرر النصوص في مودل

- يستخدم مودل محرر نصوص HTML داخلي، الذي يستخدم عند إنشاء أدوات النشاط في بعض الأنشطة وكذلك (مثل منتدى الرسائل وصفحات الويكي ، مثلاً) ، لذا فمن المهم تعلم كيفية استخدام المحرر من قبل المبتدئين.
- عند الرد على رسالة المنتدى ، المحرر يظهر كالآتي :



- علما بأن محرر النصوص المتقدم ، يعمل فقط في مستكشف الانترنت و متصفح mozilla firefox ، وإنما كنت تستخدم متصفح آخر ، سيتاح لك محرر نصوص بسيط (وهذا أيضاً موضع أدناه).

كيفية استخدام محرر النص المتقدم

- محرر النص المتقدم يتضمن شريط الأدوات التالي :



- مهام شريط الأدوات كما يلي :

خيارات الخط ، وحجم ونوع الخط	Trebuchet	1 (8 pt)	Heading 1
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SMART
way
الابحار الذكي

خيارات عرض ، خط مائل ، خط وسط للنص ، خط أسفل .	
خيارات الحرف بر و ا في الكتابة .	
وظائف النسخ و القص و اللصق للنصوص .	
رجوع و تقدم آخر عمل	
خيارات مختلفة لضبط موضع النص .	
الخيار في ان يختار ما اذا كان بدء الطباعة من اليمين أو اليسار لتسهيل التعامل مع اللغة العربية أو الإنكليزية.	
تعداد نقطي ورقمي .	
المسافة البادئة (يمكن أن تطبق أيضا على القوائم)	
لون النص وتظليل النص.	
الخط الألقبي ، خيار التثبيت (خلق وصلات داخل صفحة واحدة) ، وربط تحرير (الوصلات الداخلية والخارجية انظر هنا) وإزالة الربط وملح الربط التلقائي (يقصد وقف كلمة لها صلة بالمسرد).	
محرر إدراج صورة (انظر هنا)	
خيارات إدراج جدول	
إضافة 😊 أو رموز خاصة	
بحث واستبدال الكلمات في النص	
خيار HTML متناوب بين HTML, WYSIWYG	



<p>خيار توسيع حجم المحرر ، بحيث يفتح في نافذة مستقلة ، هذا أيضا يفتح خيارات متطورة لاستخدام الجداول!</p>	
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- علما أن الطالب يمكنه الربط مع الملفات الخارجية والصور (أي على الانترنت) ، وليس إلى الملفات الداخلية (المحملة في مجلد ملفات الدورات الدراسية) مثل المعلمين.
- إذا كان الطالب يرغب في إضافة الصورة إلى منتدى أو رسالة مسرد (غير الإرسامات) ، فإنه يمكن تحميله كمرفق ، ستجد الصورة تلقائياً يظهر داخل إطار الرسالة وروابط تلقائية إلى المسرد أو الأدوات الأخرى في مقررات تنشأ دون تدخل المستخدم .

محرر الروابط

عندما يختار المعلم جزء من النص ويضغط على زر إدراج رابط سوف يفتح له المحرر الآتي :

محرر الصور

- لإدراج صورة في محرر النصوص ، ضع المؤشر في المكان الذي تريد إدراج الصورة ، لكل الصور الصغيرة التي بالإمكان إدراجها بين النصوص ، أما في حالة الصور الكبيرة يجب إدراج الصورة في بداية الفقرة ، أما في حالة الصور الكبيرة جدا (ملا الصفحة) يجب أن يكون إدراج الصورة في مكان الفقرة كاملا ، وعند النقر على أيقونة الصور سوف يعرض لك المحرر التالي :



المحرر البسيط

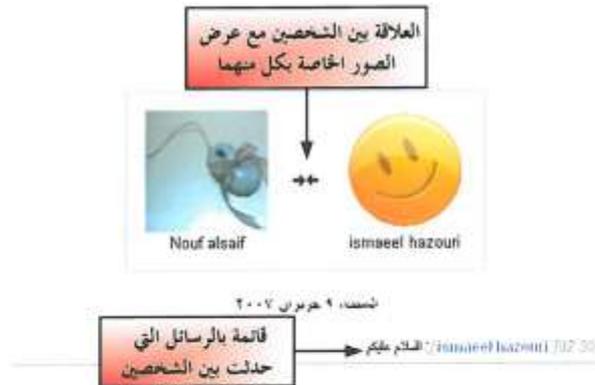
- بعض المتصفحات ، مثل Netscape and Opera ، لا يمكنها عرض محرر النصوص ، لذلك عند عرض محرر النصوص يعرض محرر بسيط بدون شريط الأدوات المتقدم .
- ومن الممكن أن يعرض للنص بطريقة مشابهة لمحرر النصوص المتقدم ، يمكن معرفة الكثير عن ذلك عند الضغط على زر المساعدة في المحرر .

الرسائل

- أداة تسمح بإرسال الرسائل لمستخدمين معينين في المقرر الدراسي (يمكن للمستخدمين الحصول على إشعار رسائل جديدة إلى بريدهم الإلكتروني) ، كما أنه لا يكون هناك خيارات لإرفاق ملفات.
- الدخول إلى الرسائل يعرض لك هذا الشكل :



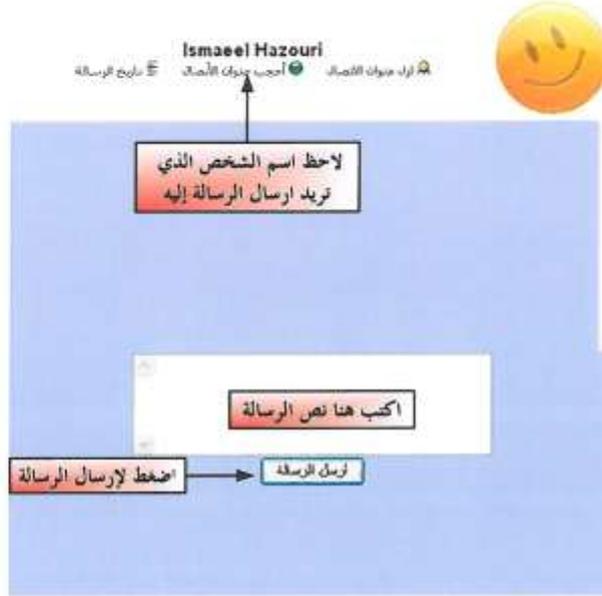
وفي حالة رغبتك في معرفة تاريخ الرسالة وتفصيل أكثر اضغط على رابط التاريخ ليعرض لك الشكل التالي :



The screenshot displays the 'SMART way' webmail interface. At the top, there are navigation tabs for 'إعدادات' (Settings), 'بحث' (Search), and 'معايير اتصال' (Connection Settings). The 'بحث' tab is active, showing a search box with the placeholder text 'ابحث عن شخص معين' (Search for a specific person). Below the search box is a 'بحث' (Search) button and a checkbox for 'هذا في مخزني لائمية' (This is in my private mailbox). Below this is another search box with the placeholder text 'اكتب كلمة للبحث في الرسائل' (Enter a word to search in messages). Below this search box is a 'بحث' (Search) button and a checkbox for 'تصفح الرسائل من المستخدمين' (Browse messages from users). Below this is a section titled 'خيارات عديدة للبحث' (Many search options) with four radio button options: 'هذا البريد المرسل لي' (This email is sent to me), 'هذا البريد المرسل مني' (This email is sent from me), 'كل البريد التي مررته في أو مني' (All emails I passed through or from me), and 'كل الرسائل من جميع المستخدمين' (All messages from all users). Below this section are navigation tabs for 'إعدادات' (Settings), 'بحث' (Search), and 'معايير اتصال' (Connection Settings). The 'إعدادات' tab is active, showing a list of settings with checkboxes: 'أريد أن تلقى الرسائل التي قلها لعدد من رسائل بريدك (يوجد انك قد خلطتكم تحتاج الى POP3)' (I want to receive messages that I said to a number of your messages (you may have mixed up your POP3)), 'السماح لجميع الرسائل الجديدة الواردة من نفس المصدر في نفس اللغة فقط' (Allow only new messages from the same source in the same language), 'إمكانة سهولة في وصول رسالة بريدك' (Ease of access to your message), 'استخدم صيغة RichText HTML (متصفح IE 5.5 أو أعلى)' (Use RichText HTML format (Internet Explorer 5.5 or higher)), 'أرسل الرسائل عبر البريد الإلكتروني عندما تكون غير متعلق بالبريد' (Send messages via email when you are not connected to the internet), 'وأكثر من:' (And more:), 'عنوان البريد الإلكتروني:' (Email address:), and 'تصفح:' (Browse:). At the bottom, there are two buttons: 'اضغط لإعداداتي' (Click to my settings) and 'اضغط للتحفظ' (Click to save).



- وفي حال رغبتك في إرسال رسالة معينة لشخص ما اضغط على اسم المستخدم في قائمة اتصالاتك ليعرض لك هذه الخافذة :



ونتيجة لذلك ، سوف يظهر للمتلقي في صندوق رسائله وصول رسالة جديدة كما في الشكل :



الكتل

ادوات معينة في صفحات مودل كذلك فإن صفحات المقررات يمكن أن تحدث في شكل كتل ، وهي تقع في الشريط الجانبي على الصفحة ، عدد الكتل المتوفرة كبير ، ولكن لا يوجد مقررات تتوفر بها كل هذه الأشرطة ، الكتل التالية هي التي على الأرجح أن تظهر في المقررات التالية :



٣- الكتل القياسية

الأشخاص

- هذه الكتلة تعطي لمحة عامة لجميع المستخدمين في المقرر الدراسي عن بعض تفاصيلها ، ويمكنك أن ترى أكثر بالنقر على اسم المستخدم أو الصورة.

الرسائل

- كتلة الرسائل تتيح للمستخدمين إرسال رسائل أخرى في كل مودل وليس من الضروري أن تكون للمستخدمين في نفس المقرر الدراسي ، وهناك تعليمات مفصلة في استخدام كتل الرسائل في مواضع أخرى من هذا الدليل.

المستخدمون المتواجدون

- وهذه الكتلة تبين المستخدم المتواجد في المقرر (مقيدة إذا أردت أن تبعث إلى المستخدمين رسالة أو محادثة).

الأنشطة

- هذه الكتلة تعطي لمحة عامة عن مختلف الموارد والوحدات للشطة المستخدمة في المقرر مع وصف لها ، على سبيل المثال ، عند النقر على "مهام" تعرض جميع المهام المتاحة في هذا المقرر ، مع المواعيد والدرجات (إن وجدت).

البحث في المنتديات

- في المقررات التي تحتوي على العديد من مناقشات المنتدى ، كتلة البحث يمكن أن تساعدك في مواقع الرسائل التي تحتوي على كلمات أو عبارات معينة ، أما في المقررات التي لا تحتوي على كثير من نقاشات المنتدى ستكون هذه الكتل مختلفة أحيانا.

الإدارة

- كتل الإدارة تحتوي روابط لصفحة درجات الطلاب وقوائم الدرجات التي حصلت عليها لمختلف الأنشطة والخيارات لتحرير صورهم وكلمة السر.

تصنيف المناهج الدراسية

- هذه الكتلة تتضمن قائمة بتصنيفات الموجودة في مودل والتي يندرج تحتها المقررات الدراسية المختلفة .



آخر الأخبار

- كتلة آخر الأخبار تتضمن قوائم الرسائل المرسلة من قبل المعلمين حول آخر الأخبار في المنتدى.

الأحداث القادمة

- كتلة الأحداث القادمة تعمل على تنبيهك بكل الأحداث المقبلة والتي تكون في الجدول الزمني للمقرر ، مثل مواعيد المهام .

الأنشطة الحديثة

- كتلة الأنشطة الحديثة تعطي لمحة عامة عما فعله المستخدمين في آخر مرة قام فيها بالدخول إلى مقرر معين ، مثلا ماذا كتب في المنتدى أو تحرير الرسائل أو صفحات الويكي .

الكتل الغير قياسية

المقررات الدراسية

- هذه الكتلة تتضمن قوائم المقررات التي قمت بالدخول إليها وروابط نظرات عامة حول قائمة المقررات كذلك المقررات التي يمكنك التسجيل فيها.

مدخل مسردي عشوائي

- يتم إضافة هذه الكتلة من (كتل) ، و يمكن تواجدها هذه الكتلة أكثر من مرة على خلاف باقي الكتل .
- المسرد (glossary) عبارة عن نشاط (يضاف ضمن منطقة المحتويات) و يسمح بعمل قائمة من التعريفات على شكل قاموس أو موسوعة ، و كتلة مدخل مسرد عشوائي تسمح بعرض أحد المدخلات العشوائية من أحد أنشطة المسرد ، مثلا "حكمة اليوم" أو صورة عشوائية من مجموعة صور مخزنة بمسرد الصور ، و سبب كلمة عشوائية لأن عرض ذلك المدخل يتغير مع كل دخول جديد للصفحة أو مع كل refresh للصفحة .

الجدول الزمني

- الجدول الزمني في مودل يظهر في الصفحة الأولى وكذلك في صفحتك في مودل ، كذلك في صفحة المقرر الدراسي . بعد تسجيلك ، الجدول الزمني في صفحتك يعرض لك التواريخ المستحقة وبعض الأحداث الأخرى في جميع المقررات الدراسية التي قمت بالتسجيل فيها ، عادة يكون قائمة بالأحداث ذات الصلة بنفس المقرر الدراسي .

SMART way الأسلوب الذكي

- في مودل منخلات الجدول الزمني يمكن أن تتولد تلقائياً ، على سبيل المثال ، عندما يحدد المدرس الموعد المقرر للمهام ، هذا التحديد تلقائياً يتحول إلى موعد في الجدول الزمني بهذه المهمة ، ومن الممكن أيضاً أن تسجل الأحداث الجديدة يدوياً.

- جميع المستخدمين يمكنهم إنشاء الأحداث تظهر بـ (اللون الأزرق) ، والمدرسون يمكنهم إنشاء مجموعة من الأحداث تظهر بـ (اللون الأحمر) أحداث النورات الدراسية تظهر بـ (اللون الأحمر) ، بينما يمكن للمديرين إنشاء الأحداث العالمية تظهر بـ (اللون الأخضر).



- يمكن إنشاء دليل الأحداث عن طريق الضغط على رابط حدث جديد في مربع الأحداث المقبلة ، أو زر حدث جديد في صفحة الجدول الزمني .

- عند إنشاء حدث جديد يدوياً ، تؤكد أن يكون اسم الحدث قصير ، واضح ودقيق ، قدم المعلومات المطلوبة في رسالة النص (علماً بأن المعلم يمكنه الوصول إلى هذا السياق إذا لزم الأمر) كما هو موضح في الصورة التالية

The image shows the SMART Way software interface. On the left, there are three calendar views for the years 2007, 2008, and 2009. On the right, a task flow diagram is displayed. The diagram starts with a box labeled 'ادخل هنا اسم الحدث' (Enter event name here). This leads to a box 'اكتب هنا باختيار عن الحدث الذي تريد' (Write here by selecting the event you want). This then leads to a box 'اختر التاريخ الذي تريد وحدد الوقت' (Select the date you want and set the time). From here, the flow branches into two paths: one leading to 'حدد التكلفة الزمنية (أو) وقت بذلك' (Set the time cost (or) time by that) and another leading to 'اخفظ هنا لحفظ التغييرات' (Save here to save changes). The interface also includes a search bar at the top and various navigation icons.

- كما يمكن للمستخدم أن ينتقل بين المقررات من خلال صفحة الجدول الزمني.

المجموعات

- في مودل المجموعات تحدد حسب مستوى المقرر ، ويمكن تطبيق المجموعات من قبل المعلم على المقررات ، بل وعلى بعض الكتل (مثل كتل المشاركين وكتل البريد السريع) .
- وأكثرها شيوعاً هي استخدامها مع المنتدى ونماذج الويكي للعمل الجماعي ، ولكن يمكن أيضاً للمدرسين تطبيقها على غيرها من الأدوات لمجرد الحصول على النتائج الفردية لكل مجموعة لتسهيل بشكل عام.
- ويمكن للطلاب أن يكون عضواً في أكثر من مجموعة في نفس الوقت خاصة إذا كان لا يعرف أعضاء الفريق الآخر ، علاوة على ذلك ، إذا كنت عضواً في أكثر من فريق واحد ، فسوف يكون هناك قائمة من المجموعات في أعلى الصفحة التي تمكنك اختيار المجموعة التي ترغب في إضافة عملك لديها.

التوصيات

توصيات لمستخدم PC

موقع 300 ميغاهرتز أو أكثر

- ❖ نظام التشغيل: ويندوز 98 أو أعلى ، ماكنتوش ، لينكس .
- ❖ المتصفح : مستكشف الانترنت S.S أو أعلى ، mozilla firefox
- ❖ الفيديو : quicktime Player



توصيات للطلاب

- ❖ الكمبيوتر لا يتعلم إنما الأشخاص هم الذين يتعلمون (أي الحاسوب هي مجرد أداة لمساعدتك ، ولكن أنت من يجب أن يتعلم الجهد وتحمل المسؤولية لتعلمك).
- ❖ التمسك بالالتزام بالدراسة.
- ❖ استخدام مهارات إدارة الوقت وتحديد الأولويات والجدول الزمني .
- ❖ احترام حقوق التأليف والنشر المتعلقة بالأمن.
- ❖ لا تخشى تجربة أشياء جديدة ، واستخدام أزرار المساعدة حيثما كان ذلك متاحا.

توصيات للمعلمين

- ❖ الكمبيوتر لا يعلم الأشخاص إنما أنت من تعلمهم (أي الحاسوب هي مجرد أداة يمكنك استخدامها في التعليم ، ولكن المضمون والنهج التربوي جميعا تعتمد عليك).
- ❖ التعويض عن النقص في الاتصال وجها لوجه ، متاحة على الإنترنت.
- ❖ إعطاء الردود السريعة على المهام.
- ❖ لا تخشى تجربة أشياء جديدة ، واستخدام أزرار المساعدة حيثما كان ذلك متاحا.

تم إعداد هذه المادة من قبل فريق التعليم الإلكتروني في مؤسسة الأسلوب الذكي



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نتشئ أن تعم الفائدة على جميع مستخدمي نظام مودل العربي

والسلام عليكم ورحمة الله وبركاته