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**The Effects of Proficiency in English as a Foreign Language,  
Gender and Writing Beliefs on the Writing Processes and Products  
of Undergraduate Omani Students**

**by**

**Zulaikha Al-Saadi**

Thesis for the degree of Doctor of Philosophy

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## **ABSTRACT**

FACULTY OF SOCIAL AND HUMAN SCIENCES

### Education

Thesis for the degree of Doctor of Philosophy

#### **The Effects of Proficiency in English as a Foreign Language, Gender and Writing Beliefs on the Writing Processes and Products of Undergraduate Omani Students**

Zualikha Talib Al-Saadi

The ability to write comprehensible and well-structured text is extremely important in academic and professional contexts. Identifying the factors that affect the effectiveness of academic writing is also an important first step in improving the efficiency of teaching writing, particularly in foreign language contexts. Drawing upon cognitive writing process theory and research, this study set out to investigate some of the factors accounting for differences in the writing performance of 77 undergraduate Omani writers studying an English Language Teaching Program. In particular, the study aimed to explore the influence of proficiency in English as a foreign language, gender and writing beliefs on the first language (Arabic) and foreign Language (English) writing processes and text quality of undergraduate Omani writers. The study also attempted to test whether variation in text quality could be explained in relation to writing processes.

In order to achieve these aims, the participants were asked to produce two argumentative texts, one in Arabic and one in English. Language of writing and writing topics were counterbalanced. The participants' English Language proficiency was assessed using the Oxford Placement Test. Keystroke logging was used as the main instrument to record, observe and analyse the participants' writing processes. This was complemented by the participants' responses to an immediate recall questionnaire administered immediately after completion of the writing tasks. The Writing Beliefs Survey was used to identify writers' writing beliefs about the writing process. The quality of their written texts was assessed by two independent assessors.

The results showed that writers produced better text quality when writing in Arabic in comparison to English. When writing in Arabic, writers also wrote more fluently, revised and paused less, and required less time to complete the writing task. A key feature of this difference was that when writing in Arabic, writers were able to produce language in larger bursts than in English. Writers with greater English language proficiency were also able to produce relatively larger bursts when writing in English.

Generally, English language proficiency played an important role in writers' English writing process and product. High English language proficiency was associated with better text quality, and more importantly, influenced writing processes, (including planning, revision, and writer's awareness towards their audiences). Low English language proficiency reduced the extent to which initial planning focused on text organization and the audience and disrupted writers' ability to carry out more global revisions. Interestingly, the results also indicated that English language proficiency was associated with Arabic writing as well. This suggests that performance on the English language test may reflect general language ability and motivation as well as English language knowledge itself.

The study also found that females were linguistically more competent than males in English language and more motivated towards writing than males in both languages. This enabled them to produce better text quality and to cope with the writing process demands more successfully than males. Effects of writing beliefs were less clear cut. Although the study suggested that Omani writers' writing beliefs were consistent with those found in previous research, there was little evidence that these were associated with text quality and writing process in Arabic, contrary to previous research. However, there was evidence that writers' beliefs about audience and writing as a recursive process in English were related to both writing process and text quality.

The thesis concluded by providing teachers of English as a foreign language with some implications about how to deal with their students' writing issues resulted from their less well developed proficiency in English as a foreign language and lack of motivation. Besides pedagogical implications, the study also offered theoretical and methodological implications and suggested a number of recommendations for future research.

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# **DECLARATION OF AUTHORSHIP**

I, Zulaikha Talib Al-Saadi [please print name]

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

## **The Effects of Proficiency in English as a Foreign Language, Gender and Writing Beliefs on the Writing Processes and Products of Undergraduate Omani Students**

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. [Delete as appropriate] None of this work has been published before submission[or] Parts of this work have been published as: [please list references below]:

Signed: Zulaikha.....

Date: 23/10/2018



# Definitions and Abbreviations

## Definitions

### **First language**

It refers to individual's native or first language.

### **Introspective methods**

These methods provoke individuals to reflect on their mental processes as they solve a problem or perform a task (Gass & Alison, 2000). The present study used one type of introspective methods, namely, Immediate Recall Questionnaire.

### **Keystroke logging**

It is a word processor program with normal text editing functions. This program enables researchers to observe and analyze online writing process through cursor movements, keyboard presses, scrolling, pauses and the time for such activities (M. Abdel Latif, 2008; Spelman Miller, 2000). The study used Inputlog 7.0.0.11 downloaded from [www.inputlog.net](http://www.inputlog.net).

### **Language proficiency/Linguistic Knowledge/Language knowledge**

These three terms have been used interchangeably in writing research to refer to a person's language knowledge, e.g., grammar.

### **Long term memory**

It "contains the writers' knowledge of vocabulary, grammar, audience, topic knowledge, and even the writers' biography" (Hayes, 2009, p. 68).

### **P-burst**

It refers to strings of language that end with a pause (Chenoweth & Hayes, 2001).

### **R-burst**

It refers to strings of words that end with a revision (Chenoweth & Hayes, 2001).

### **Think-aloud protocol technique**

It involves writers articulating their thoughts while writing.

### **Working memory**

It is "the temporary storage of information that is being processed in any range of cognitive task" (Baddeley, 1986, p. 43).

### **Written fluency**

In this study, fluency is conceptualized in terms of the mean length of P-bursts that are produced during writing (characters), number of words written per minute, the length of the final text (in words).

### **Written product**

It refers to the essay or text written by writers.

# Abbreviations

EFL English as a Foreign Language

ELT English Language Teaching

ESL English as a Second Language

FL Foreign Language

FP Foundation Program

IBA International Business Administration

IRQ Immediate Recall Questionnaire

IT Information Technology

IWB Implicit Writing Beliefs

L1 First language

L2 Second language

MoHE Ministry of Higher Education

PINZ Polytechnics International New Zealand

OPT Oxford Placement Test

WBS Writing Beliefs Survey



# Chapter 1: Introduction

## 1.1 Introduction

This chapter offers a background overview of the current study. It begins by highlighting the importance of writing in higher education and introduces some of the research questions related to this. Then, a brief overview about the status of English language in Oman is provided. This is followed by explaining the importance of writing and writing instruction in Omani schools and higher education with specific reference to Rustaq College of Applied Sciences, where the present study took place. Then the rationale, significance and the contributions of the current study are introduced. Finally, the study's aims and main questions are presented.

### 1.1.1 A note on the Terminology

#### 1.1.1.1 Second Language (L2)/Foreign Language (FL)

Although these two terms have been used interchangeably in language research, a distinction between the two should be made. Foreign language (FL) is where a language is taught at school as a subject and can be used as a means of instruction in some higher education institutions but it is not the language of the community that the individual belongs to. For example, English is taught at schools and is the medium of instruction in the majority of the higher education institutions in Oman, but the Omani society does not use English as a means of communication in its daily life. On the other hand, second language (L2) “is a language that a learner masters the second best, after his first language” (Punchihetti, 2013, p. 5). Second language is regularly used by the community where the individual belongs to. Accordingly, an individual is more familiar with and much better in using, a second language than a foreign language. However, research in this area –writing process– has tended to vary and mix between L2 and FL. For example, some researchers used L2 but they actually referred to FL (e.g., Chenoweth & Hayes, 2001; Miller, Lingren, & Sullivan, 2008). In this thesis I used FL as English is considered a foreign language in Oman. However, when discussing previous research I used the term they used.

## 1.2 The Importance of Writing in Higher Education

Reading and writing are the most important academic practices in helping students to understand and develop their knowledge about their disciplines (Lea and Street, 1998). University literacy practices depend to a large extent on formal written language (Thesen, 2001). Geiser and Studley (2002) stressed the importance of writing skills at the tertiary level by stating that the ability to write an extended text is one of the best predictors of success in the course and of coping with university life. Similarly, Leki and Carson (1994) related academic success to writing since the assessment of many disciplinary courses is done through different forms of written texts (e.g., reports, essay exam, research papers, essays, and short answers). Writing is also crucial for disciplinary teachers to evaluate students' progress, achievement, success and failure (Hyland, 2006).

In the same vein, Hounsell (1997) stated that essay-writing has a central place in higher education because it serves two main functions: it is an assessment tool and a mode of learning. Hounsell (1997) believed that coursework essays provide reliable records of the students' achievements and progress. This is because coursework essays, compared to exams, enable students to look at a wide range of resources and reflect on their academic work. For example, essay writing encourages students to make sense of the topic and communicate their ideas within a framework of formal and organized statements. Hounsell (1997) argued that as a learning activity, the process of essay writing is considered more complex than reading and listening and its outcome can reflect what the students have learnt. Therefore, being able to write well is important for achieving academic success.

Furthermore, Krause (2001) argued that writing helps students to integrate into the university community. The author explained that students bring different set of experiences and perceptions about the university context, learning process and assessment which make integration into the university context a quite complex task. Krause (2001) contended that completing the first writing assignment may help students to integrate academically into the academic life if it is done in a healthy and supportive learning environment. Krause (2001) argued that writing presents new challenges and demands and requires individuals to learn new literacy skills and practices such as

developing arguments, being critical, and mastering library search. According to this argument, accomplishing the first writing assignment is a good opportunity for students to understand and know the university and their disciplinary demands and practices. This helps to shape their educational experience and to integrate successfully in the academic community.

Moreover, writing is viewed as an important means for learning. Emig (1977) believed that "Writing represents a unique mode of learning" (p. 122). Hyland (2006) stated that academic discipline knowledge is better acquired and presented through writing and reading. Writing is the most appropriate method by which students can enhance their learning process. This could be because the writing process promotes students' cognitive skills like analysis and synthesis (Bacha 2002). Likewise, Ellis (2004) confirmed the significance of writing in helping students to engage with the knowledge of their disciplinary courses and to better understand the knowledge of these courses. Ellis (2004) claimed that writing provides unique opportunities for students to translate their ideas into written form and then to reflect on their understanding. This in turn helps disciplinary teachers to track and evaluate their students' understanding of the courses through writing. Similarly, Manchón and Roca de Larios (2007b) argued that writing promotes second language learning process. They explained that during the course of writing, L2 writers involve in solving linguistic problems and this has the potential of improving second language skills.

The above discussion indicates the essential role of academic writing in higher education institutions as many literacy practices depend on students' ability to write. Writing is a complex task even for skilled, native language speaking writers since it involves a wide range of cognitive, affective and socio-cultural domains (Schoonen et al., 2003; Wolfersberger, 2003). One might imagine that this would be even more challenging for foreign language (FL) writers who have to handle the writing process's demands along with FL processing issues (Schoonen et al., 2003). El Mortaji (2010) stated that "A better understanding of the foreign language writing process of learners is the first step towards understanding their problems and designing effective materials accordingly" (p. 7). Consequently, research that explores different issues of writing is of great value in informing teachers of how students' writing needs can be best met.

Abdel Latif (2011) in his review of 80 writing studies that were carried out in the Arab Gulf, concluded that writing research in this area “is quantitatively and qualitatively still lagging behind similar research conducted in some parts of the world such as Western Europe, North America and South-East Asia” (p. 10). He suggested that more writing research needs to be done in the Arab Gulf area using a variety of methods and to address research areas that have been overlooked. The writing process is considered to be one of the writing research aspects that has not been addressed insightfully in either the Arab Gulf area or in the Arab world in general (Abdel Latif, 2011; El Mortaji, 2010).

Furthermore, teaching FL writing effectively requires an understanding of the factors that affect students’ cognitive processes and products (Abdel Latif, 2009a). Writing research has highlighted some explanatory variables that affect FL writing process and products such as: FL proficiency, writing proficiency level, genre and topic knowledge, writing instruction, and writing beliefs and affect....etc. However, previous research has come up with inconsistent findings regarding these explanatory variables. For example, the role of FL proficiency has been constantly reported and discussed in FL writing research; however, few studies have been carried out to explore the nature of the interaction between this factor and the writing processes and product. As a matter of fact, these few studies have reported contradictory findings. Some studies (e.g., Cumming, 1989; Victori, 1999) did not find a strong relationship between FL proficiency and FL writing process or products, while others (e.g., Abdel Latif, 2009a; Al Ghamdi, 2010) reported that FL composition and text quality were dependent on FL proficiency (see 2.7.2 for more detail). Therefore, the current study is an attempt to fill in some of these gaps by investigating the L1 (Arabic) and FL (English) writing processes and final output of undergraduate Omani writers studying an English Language Teaching (ELT) program and the factors that might influence them. In particular, the current research considered the effects of FL proficiency, gender and writing beliefs on L1 and FL writing processes and products.

## 1.3 The Context of the Study

### 1.3.1 The Status of English Language in Oman

Al-Issa and Al-Bulushi (2012) stated that English language teaching is quite a new enterprise in the Sultanate of Oman. They maintained that Oman has acknowledged the importance of English as an international language and as a tool for achieving various purposes since 1970 when his majesty Sultan Qaboos Bin Said began his rule of the country. English has been the only official foreign language in Oman since then. Different domains like education, higher education, tourism, media and business have institutionalized English (Ali Al-Issa & Al-Bulushi, 2012). Oman has viewed English as an important part of its development and an essential key to integrate with the wider community and modern world (Al-Issa & Al-Bulushi 2012; Al-Mahrooqi 2012a). Al-Issa (2007, pp. 199-200) stated that “Oman needs English—the only official foreign language in the country—as fundamental tool for ‘modernization’, ‘nationalization’, and the acquisition of science and technology”.

English is also the only means of communication between Omanis and expatriates/foreigners who are working, living in or visiting Oman (AL-Jadidi, 2009). Moreover, graduates with a good command of English are highly valued and easily get jobs in private sector and oil companies where English is the only medium of communication (AL-Jadidi, 2009). Oman has also recognized the importance of English as the language of science and technology. Therefore, English has been an essential part of the Omani government schools' curriculum and it is the only foreign language taught at the government schools since 1970 (Ali Al-Issa & Al-Bulushi, 2012). Additionally, AL-Jadidi (2009) argued that English has become an important aspect of Omanization, the government plan to gradually replace the expatriate labour force with Omanis. Thus, a good command of English is an important requirement for undergraduate education and employment (AL-Jadidi, 2009). Oman has realized that English is not only the dominant language of science, research and technology in the 21<sup>st</sup> century, but it is an essential means for the country to integrate and engage with the international academic community (Al-Mahrooqi 2012b). Therefore, the Omani government has allocated “huge budgets and resources for its implementation through education” (Ali Al-Issa & Al-Bulushi, 2012, p. 141).

### **1.3.2 English Language in Omani Schools**

AL-Jadidi (2009) stated that the growing economic and global position of English language is highly reflected in the Omani government policies and plans. Therefore, the Omani government has placed a huge emphasis on teaching English to Omanis in order to equip them to face the 21<sup>st</sup> century demands and the changing global economy (Al-Badwawi, 2011; AL-Jadidi, 2009). English is taught as a compulsory subject from grade one to grade 12 in Omani public schools. The total amount of English instruction is about 1200 hours (Al-Badwawi, 2011).

In spite of the government's efforts to increase students' awareness about the importance of English and their English language proficiency level, Omani students continue leaving schools with insufficient English language proficiency to enable them to pursue their undergraduate study (Al-Mahrooqi, 2012a). Al-Issa and Al-Bulushi (2012) in their critical study about English language teaching reform in Oman reported that most of the students who are enrolled in private and public higher education institutions lack the competencies to use English appropriately in all four skills, reading, speaking, writing and listening, through different social, work, personal and academic situations. They stated that the same applies to students granted scholarships to study in English speaking countries or non-Arabic speaking countries. Al-Issa and Al-Bulushi (2012) maintained that in spite of spending 12 years learning English at schools, the vast majority of these students were first enrolled in Foundation Programme (FP) to learn English to enable them to cope with their academic study. Similarly, Al-Mahrooqi (2012b) in her study of undergraduate Omani students found that many Omani college graduates lack sufficient English and communication skills that enable them to join the private sector which is dominated by expatriates. A number of factors have been identified to count for this low English proficiency level of Omani colleges students. For example, Al-Mahrooqi (2012b), studied 100 tertiary education students' perspectives of their low English proficiency in Oman using personal reports and qualitative questionnaire. The participants in her study attributed their low English proficiency level to a number of factors including: unqualified and unmotivated teachers, inadequate curriculum in school and college, students' low motivation and interest in learning English, limited exposure to

English outside classroom, lack of encouragement from parents and friends and lack of practicing English outside the classroom.

### **1.3.3 The Current Study's Site/Rustaq College of Applied Sciences**

Rustaq College of Applied Sciences is run by the Ministry of Higher Education (MoHE). It is a state-sector college that offers free education to secondary school graduates based on students' grades in secondary school and college capacity. It was established in 1987 along with another five colleges across the Sultanate. In 1994, these colleges became colleges of Education. Then in 2007, these colleges were converted to applied sciences colleges by the Royal Decree 62/2007. Being admitted to one of these colleges has a good social value for students and their families as there is a huge demand for places provided by higher education institutions in Oman (Al-Hajri, 2013). Al-Hajri, (2013) mentioned that converting these educational colleges to applied sciences colleges was based on a labour market needs analysis carried out by Polytechnics International New Zealand (PINZ) for the MoHE in 2006. As a result of PINZ's report, a number of academic programmes were recommended to be offered by these colleges including International Business Administration (IBA), Information Technology (IT) and Design programmes. Since then, the curriculum and part of the assessments are provided by New Zealand Tertiary Education Consortium. English language was chosen to be the language of instruction in all the six applied sciences colleges in Oman (Al-Hajri, 2014). Al-Hajri (2013) contended that choosing English as the language of instruction in these colleges can be explained in the light of globalization. Al Shemli (2009, p. 10) argued that "the main effects of globalization in the Sultanate of Oman is the need to diversify the economy and raise standards; and the concomitant pressure to supply skilled graduates for rapidly changing economic conditions" (cited in Al-Hajri, 2013, p. 12). Therefore, improving students' English proficiency level is an essential factor for their academic success in these colleges.

Rustaq College of Applied Sciences offers three programs: IT, IBA and ELT. Students who are admitted to Rustaq College are required to achieve certain level of English language proficiency before starting their academic study. Thus, in most cases students are enrolled into the Foundation Program as it is the case with most students who are admitted to higher education in Oman

(Al-Hajri, 2013). Al-Lamki (1998) mentioned that about 80% of Omani students are first required to study and pass the FP before starting their academic studies. The general aim of the FP is to equip the students with an adequate level of English language proficiency, along with the computer and statistical skills that are necessary for their academic study (Al-Hajri, 2013). This indicates that most Omani students lack adequate English language proficiency when they start their academic courses.

#### **1.3.4 Writing Instructions at Schools and Applied Sciences Colleges in Oman**

The writing part of the English curriculum, particularly in schools, is actually based on a product oriented approach in which writing instruction is limited to introducing students to good models of short written texts (around 200–250 words) asking them to practice writing similar texts, and then providing feedback about how effectively they manage to imitate the model texts. From my professional experience in teaching writing at these colleges, I noticed that most of the students end up memorizing the model texts in order to write it in the exams. This suggests that students may not be aware of the significance of different aspects of the writing process, such as planning and revising. This also indicates that students might fail to realize the importance of writing as a communicative and social tool that requires considering the purpose of writing and the audience. This also suggests that critical thinking skills like analysis and synthesis are not promoted during school. Students cannot be blamed in this case; rather writing instruction needs to be more authentic, and to focus on training students to apply authentic writing processes. Teachers should play a more effective role in helping students to develop and use critical thinking skills.

At Rustaq College, writing and reading are given more weight in the students' timetable suggesting that these two skills are of great value to students' academic accomplishment (Al-Badwawi, 2011). Students in the FP are assigned eight hours of writing instructions per week, compared to six hours of reading, three hours of listening and three hours of speaking (MOHE, 2005). Writing also occupies the biggest part of student's assessment. For example, 30% of the midterm, and 30% of the final exam marks go to writing in the General English Skills course in the FP. It also contributes 50% of the assessment in the

Academic English Skills course in the FP (MOHE, 2011). The number of hours and weight given to writing indicate its importance in preparing students for their academic study in the College.

During the FP, students are expected to acquire different writing competencies. These include: the ability to write different types of coherent and organized texts and extended reports, take notes, plan before writing, revise and edit, proofread written text, and use the American Psychological Association (APA) referencing style (Al-Badwawi, 2011). According to the course specifications document of the FP (MOHE, 2011, p. 19), by the end of the FP, students are expected to be able to achieve the following outcomes: (these are just some of the learning objectives for writing courses in the FP):

- “Write readily comprehensible texts of 200–250 words (so texts with sufficient control over grammar, sufficient range of vocabulary and sufficient organization to convey the intended message without strain on the reader).”
- “Write 150–200 words different types of texts, e.g. argumentative, compare and contrast, narrative and cause and effects texts.”
- “Write a short report (around 300 words).”
- “Produce a written report of a minimum of 500 words showing evidence of research, note-taking, review and revision of work, paraphrasing, summarizing, use of quotations and use of references.”
- “Understand the importance of planning before writing.”
- “Go through a process of noting down ideas, drafting, checking.”
- “Use mind-maps to brainstorm content for writing.”
- “Cite sources according to the APA system.”
- “Plan and execute a piece of writing by moving through a series of process stages.”

These outcomes reflect the efforts made to prepare students for their tertiary study. They also indicate that writing modules in the FP take into account the writing process as well as the final product of writing. However, actual writing instruction at the college focuses mainly on instructing students in writing English essays of different genres. For example, the main focus of writing textbooks and instruction is on how to write a topic sentence or a thesis statement, and on developing five paragraphs essays. Little focus is given to planning, revision and audience's needs.

Al-Badwawi (2011) in her study of first year students' perceptions and practice of academic writing at the Colleges of Applied Sciences in Oman, found that students' transition to their first academic year at the college is not an easy process. She reported that a number of factors contribute to make the transition more complex including students' English language proficiency, writing experiences and students' own characteristics. She found that first year students faced difficulties with their disciplinary writing demands because of the inconsistency between the writing instruction in the FP and the requirements for writing in Year One. The students in her study admitted that they lacked the essential research skills to write an essay when they first started their first year, although these skills are clearly listed on the FP's learning outcomes. Her findings suggested that students and teachers were not satisfied with the FP preparation regarding writing instruction. Writing demands in the first year differ enormously from writing demands in the FP with regard to information source, length of the text, preferred genre and disciplinary variation. This suggests that there is a need to shed light on the writing process of the students at the college in order to develop writing instruction.

Although writing has a heavy emphasis at Rustaq College, as the above discussion indicates, to date very little research on writing has been carried out in Oman. Furthermore, these studies have typically focused on issues related to the linguistic features of the written product (Emery, 1997; Mahmoud, 2005), or on students' perceptions of their writing experience (Al-Badwawi, 2011; Jabur, 2008), rather than the writing process. In addition, writing in L1 is completely overlooked in both school and tertiary levels. The present study attempts to fill in these gaps by investigating factors such as English language proficiency, gender and writing beliefs that might influence undergraduate

Omani students' L1 and FL writing processes in terms of planning, fluency, revisions, writers' awareness of their role and audiences and text quality.

## **1.4 Rationale of the Study**

The ability to write understandable text is extremely valuable as it determines students' success at the university as established earlier in this chapter. In applied sciences colleges in Oman, writing in English is crucial and a prerequisite for students not just because English is the medium of instruction and communication at the College, but also because students are required to pass their written exam. Therefore, it is important to obtain a real picture of undergraduate Omani students' English writing process. Depending entirely on studies carried out outside this context could be inadequate because one context varies from another in terms of pedagogy, motivation, purpose, attitudes, and beliefs towards writing (Al haysony, 2008). Thus, exploring the English writing process of undergraduate Omani students and the variables influencing them is important to shed light on the English writing process and product in this particular context. This is particularly important as the writing process of undergraduate Omani students in English as a foreign language (EFL) has never been investigated before.

Since most of the Omani undergraduate students in applied sciences colleges come from Arabic medium of instruction schools, they face tertiary education demands in their academic study (Al-Badwawi, 2011). Al-Badwawi (2011) argued that freshmen usually take their writing practices and beliefs from school to the university. She explained that this could be because of a desire to ease the transition process into the tertiary level. Therefore, comparing L1 and FL writing processes may help to understand the nature of FL writing, which in turn helps to develop theories, research and practices in FL writing context.

The paradigm shift of writing research from product oriented to process oriented has changed the focus of writing. For example, instead of exploring "what' writers write", researchers have became more interested in "how' writers write" (El Mortaji, 2010, p. 7). This is based on the belief that studying the writing process reveals more insights into the nature and the complexity of writing and consequently helps in improving the writing teaching materials and curriculum in order to meet students' needs (Zamel, 1982, 1983).

Despite this fundamental shift in writing research from the product-oriented to process-oriented approaches, most of writing research in the Arab world still focuses on either the final written product or on evaluating the effectiveness of some teaching methods in improving the quality of the written text (El Mortaji, 2010). The process based research in the Arab world has been limited to one aspect of writing, such as planning (Alhaisoni, 2012b), revision (Alhaisoni, 2012a) or using L1 in FL writing (Alam, 1993). Furthermore, very few studies have compared Arabic (L1) and English (FL) (e.g., Al haysony, 2008; El Mortaji, 2010; El-Aswad, 2002). However, these studies are limited in a number of aspects such as the small number of participants, and in depending on think-aloud protocols as a main insight for data collection. This suggests that more process-based research comparing Arabic and English compositions is needed taking in to account the limitations of the previous research. For example, including bigger sample size and using more non-interruptive data collection tool such as keystroke logging should be considered in process-oriented research.

The most cited writing process models of L1 (Bereiter & Scardamalia, 1987; Hayes & Flower, 1980) have been widely used in FL context. Practitioners have been advised to implement and adapt practices from L1 writing (Silva, 1993). This indicates that L1 and FL writing processes are assumed to be rather similar. In the broad sense, this could be true. Writers have been found to employ same basic writing elements, involving planning, formulation and revising regardless of the language used for writing (Chenoweth & Hayes, 2001; Jones & Tetroe, 1987; Skibniewski, 1988). However, practitioners also need to understand the nature of the FL writing process before adopting and/or adapting L1 writing models or practices. For instance, Silva (1993) believes that comparing L1 and FL writing may give more insights about FL writing process. Thus, comparing L1 and FL writing processes helps in developing a comprehensive description of the similarities and differences between L1 and FL writing processes. This also helps in understanding the nature of FL writing, which in turn helps in developing theories, research and practices in FL writing context.

The role of FL proficiency in the FL writing process and product has been highlighted by some cognitive writing process models e.g., Chenoweth and Hayes (2001) and Hayes (1996). However, research on the role of FL

proficiency has reported inconsistent findings (see section 2.7.2.2). This indicates that more research needs to be carried out to explore the effect of FL proficiency on FL writing process and product.

Furthermore, considering writers' writing beliefs is of great value because such beliefs reflect the additional motivational processes that may influence the writing process and text quality (Baaijen, Galbraith, & de Glopper, 2014; White & Bruning, 2005). Little research has studied writing beliefs and their association with the writing process and text quality (Baaijen et al., 2014; Sanders-Reio, Alexander, Reio, & Newman, 2014; White & Bruning, 2005). Drawing conclusions about the influence of writing beliefs on writing processes and text quality based on this small number of studies could be problematic. In fact, these studies, which focused on L1 writing process only, have reported inconsistent relationships of writing beliefs with writing processes and text quality (see section 2.7.3 for more details about writing beliefs).

Based on the above, the current study was an attempt to fill in some of the previous research gaps using a quantitative approach as the main method of inquiry and utilizing keystroke logging (Inputlog), immediate recall questionnaire (IRQ), a writing beliefs survey (WBS) and text assessment as the main techniques for data collection. The excessive use of think-aloud protocols to record and observe writing processes in most of the previous research has been an important methodological limitation. Think aloud protocols could interfere with the writers' thinking process while they are writing (Wang, 2003) and hence may cast doubt on the validity of the findings. This may be particularly important for comparison of L1 and FL as it involves a switch between L1 (for the protocols) and FL (for the text), and may affect the balance between L1 and FL use during writing (Barbier, Jullien, & Provence, 2009). Therefore, this study used keystrokes logging to record and observe the writing processes without any interference with the writing process. IRQ was administered immediately after the writing sessions in order for the students to reflect on their writing process and this enabled to obtain further insights about their processes.

## 1.5 Significance and the Contributions of the Study

Abdel Latif (2009a) stated, "Research on Arab ESL/EFL students' writing processes is still in its infancy and there remain much to be explored about that process" (p. 2). Therefore, this study is one of the few attempts in exploring the Arabic and English writing processes of Arab students in the Arab world. In addition, this study is of a particular significance in the Omani context as there has not been any empirical study that has investigated Arabic and English cognitive processes of Omani undergraduate students. By exploring the EFL writing process of undergraduate Omani students, the present study contributed to the literature of the EFL writing. It also provided insights about the factors influencing the EFL writing process and product (e.g., EFL proficiency, gender and writing beliefs). In order to understand the nature of EFL writing, L1 and EFL comparison research is needed with participants from different backgrounds, with different EFL proficiency levels (Al haysony, 2008). Moreover, as it has been pointed out in the above section (and discussed in more details in section 2.7.2.2) that studies have had contradictory findings in terms of the role of FL proficiency on FL writing process. This suggests that more research with bigger sample size and in different context is needed to make a conclusive conclusion about the potential role of FL proficiency in FL writing.

Considering that gender difference has been exclusively limited to children in L1 writing process on the one hand and the scarcity of FL writing process research on gender difference on the other hand contributes to the originality of this research (see section 2.7.5). Gender difference in FL context with adult writers is worth investigating. This helps to understand how males and females approach their writing and if any gender might experience any kind of writing difficulties. This is highly valuable as it enables teachers to consider these difficulties and assist individuals to overcome them. In addition, research that investigated the effects of the writing beliefs on the writing process and text quality is scarce. Thus, by exploring undergraduate Omani students' writing beliefs, this study provided basic information about how these beliefs might influence the students' L1 and FL writing processes and products.

Furthermore, exploring FL writing contributes to FL writing pedagogy. The comparison between L1 and FL writing processes helped to shed light on the

problematic aspects that students employ during the course of writing. The study also informed the writing teachers about students' writing processes, strategies and concerns. Highlighting the factors that influence writing, particularly FL writing, process and text quality, is highly valuable in understanding how these factors contribute to writing. These might provide useful information needed for any initiative in developing writing instruction. The study also offered some recommendations that can be implemented to improve the writing instructional practices. Additionally, the study is of great value for teachers and researchers to investigate and understand different students' approaches to writing and to identify the problematic issues that FL students encounter while writing.

## **1.6 Research Aim and Questions**

The study intended to explore the influence of the proficiency in English as a foreign language, gender and writing beliefs on the undergraduate Omani students' L1 and FL writing processes and text quality. The study addressed the following questions:

1. How does the text quality of undergraduate Omani students in FL compare to that of L1 and does this vary across English language proficiency and gender?
2. To what extent translation process of undergraduate Omani students is more efficient in L1 than FL and does this vary depending on writers' FL proficiency and gender?
3. How does efficiency in translation process of undergraduate Omani students relate to their text quality in L1 and FL?
4. To what extent writing sub-processes of undergraduate Omani students (e.g., planning and revision) differ across L1 and FL and are these differences moderated by FL proficiency and gender?
5. To what extent variation in the undergraduate Omani students' text quality could be explained in terms of their writing processes?
6. What are the relative strength of undergraduate Omani students' different writing beliefs and how do these compare with those found in previous research by Sanders-Reio et al. (2014)?

7. How do undergraduate Omani students' writing beliefs vary across languages of writing (L1 and FL), FL proficiency and gender?
8. How do undergraduate Omani students' writing beliefs account for variation in L1 and FL writing processes and text quality?

# Chapter 2: Literature Review

## 2.1 Introduction

Archibald and Jeffery (2000) specified that current research into writing can be categorized as involving four main areas of investigation. The first area is the process of writing which involves modelling the cognitive writing processes, studying the writing strategies and tracking the changes in the cognitive operations among individuals over time. The second area is concerned with studying the writing product, for example, text analysis. The third area involves studying the context of writing including social construction, genre analysis, individuals' knowledge, needs and motivation. The fourth area of research is about teaching writing, which is concerned with areas like learning processes, assessment, learning strategies and classroom procedures.

Archibald and Jeffery (2000) emphasized that these areas of research are not independent of each other, rather they are related to each other very closely. Therefore, developing a comprehensive model of writing needs to integrate the process, product and the social aspect, as well as considering teaching these different aspects in both L1, L2 or FL (Archibald & Jeffery, 2000).

Studying the writing process has been the main focus of FL writing research in the last four decades or so (Grabe & Kaplan, 1996; Roca deLarios, Murphy, & Marin, 2002; Silva, 1993). The current study is mostly concerned with the first area of writing research as it investigated the factors that influence L1 and FL writing processes and text quality of ELT undergraduate Omani students. More specifically, the study focused on three main variables, FL language proficiency, gender and writing beliefs that might have their potential effects on ELT undergraduate Omani students' L1 and FL cognitive writing processes and text quality. This chapter sets the theoretical framework for the current study. Models of cognitive writing process are introduced. The concepts of individual differences and cognitive overload are presented. In addition, the role of FL proficiency, gender and writing beliefs in the writing process are discussed. Furthermore, an overview of research into L1 and FL writing processes, upon which the current study is based, is presented and evaluated.

## 2.2 From Product to Process

Galbraith and Rijlaarsdam (1999), in their paper about theoretical background about teaching and learning writing, stated that teaching writing has changed radically since the 1970s. They maintained that before the 1970s, teaching writing was basically informed by a product-oriented approach where the main focus was the final product of writing. They explained that according to this approach, writing is a process of translating preconceived ideas into words according to a set of rules about the form of a good text. In this sense, teaching writing involved introducing students to good models of text, teaching them the characteristics of good text and giving them feedback about how well they managed to imitate the exemplary model texts and apply these characteristics. Accordingly, learning how to write involved learning how to translate language into written forms, learning grammatical rules, spelling and the effective rules of a good writing style (Galbraith & Rijlaarsdam, 1999). However, the task of writing is not as simple as this approach views it. This is not to deny the importance of the final product of any writing task, but to emphasize that writing is a very complex activity where different aspects, like cognitive, affective and social aspects, should also be considered when developing writing instructions and theories.

The product oriented approach and its practices which were related to teaching writing were questioned by several authors in the 1970s. The studies of Emig (1967) and Britton, Burgess, Martin, McLeod, and Rosen (1975) were initial attempts to go beyond the product-oriented approach. For instance, Britton et al. (1975) highlighted the importance of understanding the underlying process of writing rather than focusing only on the features of a good text. Rohman (1965) identified the different processes that take place during the course of writing. However, Rahman's model of writing (1965), which consists of three stages: pre-write/write/re-write, views writing as a sequential act where a set of fixed stages are implemented. Emig (1967) brought to attention the recursive nature of the writing process where different processes take place simultaneously.

## 2.3 Early Cognitive Process Models of Writing

Hayes and Flower (1980) stated that psychological research on problem solving actually inspired the early research on writing as a cognitive process. They argued that the protocol analysis, which was developed by cognitive psychologists to identify the processes of problem-solving activities, was used as a powerful tool to analyse and identify writing. Based on psychological research on problem solving and students' think aloud protocols Flower and Hayes (1981a) and Hayes and Flower (1980) proposed a cognitive writing process model (see Hayes & Flower, 1980, p. 11). They viewed writing as a problem solving activity in which ideas are actively generated and tailored to satisfy a set of rhetorical goals. Their model includes three main components: the task environment, writing processes and the writer's long term memory. The task environment includes aspects that are outside the writer such as the topic (rhetorical problem); the writers' audience; and the text produced so far. The second component of the model is the writer's long term memory, where knowledge about topic, audience and genre is stored. The third component is the cognitive writing processes. Their model distinguishes between three basic cognitive processes: planning, in which ideas and goals are generated and organized; translation, where ideas are translated into written words; and revision, where the text is edited. These processes are controlled by the monitor which plays an important role in deciding when enough content is produced, when to generate ideas and when revision is necessary (Galbraith, 2009b).

A number of features distinguish Hayes and Flower's (1980) cognitive model from the traditional product oriented model. First, the basic elements of writing (planning, translating and reviewing) refer to different mental activities in their model rather than stages in writing as in the product-oriented model. Second, their model emphasized the recursive relationships between the different elements and processes of writing in the sense that planning, translating and reviewing can happen at any moment during the course of writing (Spelman Miller et al., 2008). For example, revision may lead to the generation of new ideas which may in turn lead to further translation, or ideas which have been generated may require revision before they are translated, and so forth. Third, the course of writing is a goal directed process where writers create their own goals by constructing high-level goals and supporting

goals (El Mortaji, 2010). El Mortaji, (2010) explained that these goals represent writers' developing sense of purpose.

Flower and Hayes (1981a) argued that the keystone of their proposed cognitive process theory is that writing is a goal-directed process. They stated that rhetorical goals are what controlled the whole writing process. According to their model, writers start writing by first identifying the rhetorical problem and then, based on the rhetorical situation, the writers' knowledge about the writing task, audience and genre, they construct rhetorical goals that guide them through the course of writing. Flower and Hayes (1981a) believed that these rhetorical goals enable the writer to retrieve the appropriate content, develop elaborate plans, continue modifying the content through the task of writing and revise extensively. Consequently, ideas should be tailored to satisfy these goals and this distinguishes expert from novice writer (Galbraith, 2009a). Flower and Hayes (1980a, 1981a) concluded that the way individuals identify and construct the rhetorical problem and rhetorical goals varies from one person to another. Galbraith (2009a) explained that novice writers tend to construct less developed and more low-level goals which lead them to translate their preconceived ideas into words without much consideration towards their audience and genre. He maintained that novices' main concerns are writing the information they have about the topic, finishing the sentences and correcting their grammar and spelling. By contrast, expert writers develop a set of rhetorical goals to meet the needs of their audience and genre and based on these goals ideas are generated and modified (Flower & Hayes, 1980a, 1981a). This suggests that expert writers have a much clearer image of the rhetorical situation and they are creative in problem solving (Grabe & Kaplan, 1996). It can be concluded that goal-oriented theory was the dominant view of the early cognitive writing model.

The popularity of Hayes and Flower's (1980) cognitive writing model in L1 and FL writing research stems from a number of factors. First of all, the model can be applied to any piece of writing regardless of the language of writing (L1, L2, or FL) and the expertise of the writer (novice or expert). For example, a body of research has shown that L1 and FL writing processes can be described in terms of the same basic processes of planning, formulating and reviewing (e.g., Edelsky, 1982; El-Aswad, 2002; Jones & Tetroe, 1987; Pennington & So, 1993; Silva, 1993; Skibniewski, 1988; Thorson, 2000). Second, their model

conceptualizes writing process rather than writing ability (Abdel Latif, 2009a). It has been found that skilled and less skilled writers apply the same basic processes of planning, formulating and reviewing (e.g., Raimes, 1985; Sasaki, 2002). However, differences in organizing and managing these processes across languages and writing expertise have been reported by a body of research as will be discussed later in this chapter.

### **2.3.1 Criticism of Hayes and Flower's (1980) Cognitive Writing Process Model**

Although Hayes and Flower's (1980) model has provided L1 and FL writing research with very important insights about the cognitive writing process (Archibald & Jeffery, 2000; Grabe & Kaplan, 1996; Roca deLarios et al., 2002; Spelman Miller et al., 2008; Zimmerman, 2000), it has been criticized on a number of levels. Methodologically, it has been considered rather limited as it was constructed on a qualitative base only by analysing think-aloud protocols of a small number of writers. Bereiter and Scardamalia (1987) argued that building a cognitive writing model needs to be based on the findings of experimental and longitudinal research in which cognitive processes can be put in action rather than relying exclusively on think-aloud protocols (more about the limitations of think aloud technique is provided in 3.5.2.1). In the same vein, Zimmerman (2000) criticized Hayes and Flower's (1980) model of having "rather deductive and hypothetical character. i.e. it has a comparatively small empirical basis" (p. 74). Their model was built based on studying a small number of writers. Zimmerman (2000) also argued that their data was basically based on quite competent L1 writers. Zimmerman (2000) believed that the first phase of building a new model should be based on "a wider range of writing competence" (p. 74). Another criticism to Hayes and Flower's (1980) model is that it focuses on some sub-processes more than others (Zimmerman, 2000). For example, planning and revision processes were given much more attention than translation process (which then was given more emphasis in Chenoweth and Hayes's (2001) model, see 2.7.2.1). Furthermore, El Mortaji (2010) pointed out that Hayes and Flower's (1980) neglected a number of aspects which might affect writing such as writing affect (a component which was added later in Hayes's (1996) revised model, see 2.3.2). Another important aspect, at least for the current research's purpose, that was overlooked in Hayes and Flower's (1980) early model of writing is the role of language knowledge in writing

(which was added in Hayes's (1996) revised model, see 2.3.2). For instance, their model did not take into account how limitations in language proficiency might influence the orchestration of the writing processes, presumably, because it was mainly based on L1 writing where language proficiency might not be an issue.

Despite these criticisms, the writing model proposed by Hayes and Flower (1980) is the most influential model in L1 and FL writing contexts (Archibald & Jeffery, 2000; El Mortaji, 2010; Kellogg, 1996; Miller et al., 2008; Roca de Larios, Marín, & Murphy, 2001). El Mortaji (2010) maintained that Hayes and Flower's (1980) findings should be credited because their model is one of the first attempts to model the cognitive writing process. She stated that their model "provides a new perception of the writing process and direct our attention to important factors interacting with that process" (El Mortaji, 2010, p. 7). Their model is of a particular significance to the present study that uses their cognitive writing model as the basis for studying the effect of FL proficiency, gender and writing beliefs on L1 and FL writing processes.

### **2.3.2 Hayes' (1996) Revision of the Hayes and Flower's (1980) Cognitive Writing Process Model**

Hayes (1996) offered a revised version of the Hayes and Flower's (1980) model, based on his realization that "writing depends on an appropriate combination of cognitive, affective, social and physical conditions if it is to happen at all" (p. 5). Thus, Hayes (1996) added extra ingredients to the new model, for example, he incorporated the social and the affective aspects as well as the cognitive aspect (see Hayes, 1996, p. 4). The revised model consists of two main parts: the task environment and the individual. The task environment includes two sub-components: 1) the social environment, which includes components of audience and the social-cultural aspects of the context, where writing takes place, and 2) the physical environment, which includes the text produced so far and the writing medium, whether the text is written by pen and paper, or computer-based device such as word processor. The writing process and the long-term memory were combined to form the individual component which also includes motivation and the writer's working memory. The individual component consists of four sub-components: 1) the cognitive processes which have been reorganized and relabelled; 2) a working memory component, which

replaces the monitor in the old version; 3) long-term memory (LTM), where knowledge about topic, audience and language is stored; and 4) motivation and affect were added to reflect the impact of affective factors on writing.

Three major aspects distinguish the revised model from the old one. First, it emphasizes the central role of working memory in writing. According to the old version of the model, the monitor decides when enough content is retrieved and when revision and planning should be carried out. Hayes (1996) realized that these kinds of decisions are influenced by the short term memory as this memory is limited in terms of how much information can be processed at one time. For example, it has been found that planning prior to writing reduces the load on working memory, and allows writers to approach writing more easily and effectively (Kellogg, 1988). Second, motivation and affect aspects were included as a central aspect of composition. Third, the cognitive processes have been relabelled to reflect more current use (Hayes, 1996). Thus, planning becomes reflection, translating becomes text generation and reviewing is replaced with text interpretation. In spite of these differences the revised model still looks like the old to some extent, although it was designed differently. For example, the revised version still includes the basic elements of writing such as the main sup-processes: planning, formulation and revision. It also includes knowledge about topic and audience. An important feature of this model which is related to the current study is the inclusion of language knowledge as one factor within the long term memory. Including language knowledge can be explained in terms of the growing realization of the important of text production process (translation) and its effects on cognitive load as language knowledge affects this process (see section 2.7.2).

The essential insights of Flower and Hayes's (1981a), Hayes and Flower's (1980) and Hayes's (1996) models have been confirmed by numerous well-established studies in L1 and FL writing fields. For example, El-Aswad (2002) studied L1 (Arabic) and FL (English) writing processes of 12 undergraduate Libyan students. He found that writers used the same writing processes (planing, formulation (translation), revision) when writing in both languages (L1 and FL). However, El-Aswad (2002) reported that differences in applying these processes vary across L1 and FL. For example, he found that revision in L1 focused on organization and content while it focused on grammar and vocabulary in FL. Furthermore, enough evidences have been provided to

suggest that the patterns of writing processes that occurred during writing might vary both between and within writers depending on a number of factors (that form the main components of the model) such as writing task (Révész, Kourtali, & Mazgutova, 2017), linguistic knowledge (Abdel Latif, 2009a; Al Ghamdi, 2010; Roca de Larios, Manchón, Murphy, & Marín, 2008), and disability (Wengelin, 2007). For example, Wengelin (2007) compared the writing process of a group of dyslexic writers with that of a group of normal writers. The study revealed that the spelling problems of writers with dyslexia influenced their writing processes negatively as they paused quite frequently and tended to carry out more spelling related revisions compared to the normal writers' writing process. Wengelin (2007) explained this by stating that "the effort of encoding written words takes cognitive capacity from other processes" (p. 80). This might suggest that when cognitive capacity is consumed by one cognitive process (encoding in the case of Wengelin's (2007) study) other processes might be left unattended (more about the concept of cognitive overload is provided in 2.7.1.2). Furthermore, Hayes (2004) found that reading the text produced so far might trigger planning and/or revision as writers might discover inconsistencies in the text produced so far and this might activate generating new ideas and/or revising the existing ones.

Adopting the process oriented perspective into writing; the above models were used as the general framework for the present study. This study investigated the effects of language of writing (L1 vs. FL), English language proficiency, gender and writing beliefs on writing processes and text quality of undergraduate Omani writers. Although previous research has examined the relationships between writers' FL proficiency and FL writing processes and products, much remains to be explored (Abdel Latif, 2009a). Gender difference has been rarely explored in writing process research, particularly with adults in FL context. It is worthwhile investigating how males and females approach their writing. Furthermore, writing beliefs have been identified in Hayes' (1996) model as important factor that affect the writing process. The concept of writing beliefs has been explored from different perspectives in writing research, e.g., self-efficacy beliefs, which refers to individual's beliefs about their writing skills (Abdel Latif, 2009a). However, the present study used a relatively new writing beliefs construct namely, Implicit Writing Beliefs (IWB) introduced first by White and Bruning (2005) which was later expanded by Baaijen et al. (2014) and Sanders-Reio et al. (2014). The current study

explored how writers' implicit beliefs interact with their L1 and FL writing processes and the quality of the texts produced (more details about IWB is provided in 2.7.3).

## **2.4 Bereiter and Scardamalia's (1987) Model of Knowledge-Telling and Knowledge-Transforming**

Bereiter and Scardamalia (1987) used think-aloud protocols of children and expert writers to compare novice and competent writers' writing processes. Their proposed models of knowledge-telling and knowledge-transforming have been commonly used to capture the differences between novice and expert writers in the way they approach the writing activity. According to them, the knowledge-telling model best characterizes children and less skilled-novice-writers. This model suggests that writing is a matter of transcribing the writers' knowledge about the topic into text as it is retrieved from memory in response to the task prompt or topic (Galbraith, 2009a). Therefore, less skilled writers usually do not spend much time making initial plans (written or mental) and they generate their content while writing rather than planning in advance. Knowledge-telling involves more dispositional goals, where the writers' main goals are to convert their preconceived ideas into written language without much consideration of the rhetorical problem (Al amargot & Fayol, 2009; Galbraith, 1996; Grabe & Kaplan, 1996). This is because less skilled writers and children need to keep the task "relatively uncomplicated if they are to be successful" (Grabe & Kaplan, 1996, p. 119). Furthermore, knowledge-teller writers are less likely to revise extensively in a way that involves reorganizing the content (global revision) because they want to simplify the writing task. Consequently, they tend to revise more (locally) on the language level (e.g., spelling and grammar) rather than rhetorical level (content). Although knowledge-tellers' text may cover the relevant materials, it fails to present the writers' point of view or show evidence of their reflections on the ideas (Galbraith, 1999). This is because they do not view writing as a communicative act. As a matter of fact, McCutchen (2011) argued that applying reflective thinking and constructing rhetorical goals place heavy demands on working memory. Thus, McCutchen (2011) assumed that knowledge-telling could be an effective strategy to reduce the load on working memory and to manage and simplify the complexity of writing.

By contrast, Bereiter and Scardamalia (1987) believed that expert writers tend to implement a knowledge-transforming model. According to this model, a set of rhetorical goals are generated first, in response to the writing topic, discourse or genre, to control ideas' retrieval, the content and the writing process in general (Galbraith, 2009b). Bereiter and Scardamalia (1987) maintained that unlike novices, whose texts are a direct reflection of their retrieved ideas, experts tend to evaluate and adjust their ideas to satisfy their communicative goals. Galbraith (2009a, 2009b) explained that the key difference between novices and experts is that experts consciously identify and analyse the rhetorical problem and accordingly a set of rhetorical goals are generated. In other words, the way individuals define the writing task is what distinguishes skilled from less-skilled writers. Bereiter and Scardamalia (1987) argued that knowledge-transformers spend more time on initial planning, and revise their writing more globally (at the content level). Galbraith (1996) assumed that knowledge-transformers are more likely to develop their understanding of the topic they write about through the course of writing. He explained that this is because the knowledge-transforming strategy entails active problem solving strategies. In this sense, the ideas' retrieval is not a direct reflection of writers' preconceived ideas rather these ideas are evaluated and modified constantly during the course of writing to satisfy a set of communicative goals and to assess whether the text works as an effective communicative tool (Galbraith, 1999). Knowledge-transformers accomplish the writing task in a way that reflects their own thoughts in the text (Galbraith, 1999). Al amargot and Fayol (2009) described knowledge-transforming strategy as being costly in terms of cognitive resources. They explained that this strategy requires writers to constantly shift their focus between the rhetorical problem, the conceptual content of the text and its linguistic forms until they feel they have achieved their intended communicative goals.

Bereiter and Scardamalia's (1987) crucial features of of knowledge-telling and knowledge-transforming models have been confirmed by a number of studies. For example, Sasaki (2000) studied the EFL writing process of expert and novice Japanese writers. She found that expert writers spent more time making global plans before starting to write, compared to novice writers. Sasaki (2000) also reported that novices tended to pause more than experts during writing (see 2.8.1 for more details about Sasaki's (2000) study).

It can be concluded that Hayes and Flower (1980) actually established the basic units for writing. They also found that writers differ in applying these basic elements which consequently affect the quality of their text. For example, as explained previously, novices spend less time in planning unlike experts who spend longer time to plan and identify the rhetorical problem and set communicative goals. Bereiter and Scardamalia (1987) summarized these differences between novices and experts in terms of the knowledge-telling and knowledge-transforming models. Their models agree with Hayes and Flower's model (1980s) on the basic processes of writing (planning, formulating and revising) and also on the differences between novice and expert writers in approaching the writing task.

This initial overview of Bereiter and Scardamalia's (1987) models is useful for the present inquiry from two perspectives. First, according to Bereiter and Scardamalia's (1987) models, five aspects distinguish skilled from less skilled writers; these are: (i) their definition of the writing task, (ii) planning strategies, (iii) revision strategies, (iv) writers' audience awareness, and (v) writers' role in writing. Interestingly, these aspects have been frequently used in comparing L1 and FL writing processes. For instance, a number of studies compared writers' planning process (e.g., Akyel, 1994; Jones & Tetroe, 1987; Manchón & Roca de Larios, 2007a) revision process (e.g., Stevenson, Schoonen, & de Groot, 2006; Thorson, 2000), and writers' awareness of their readers (e.g., Victori, 1999) across L1 and FL writing. This implies that writers' development in writing proficiency can be observed in such behaviours. Furthermore, longitudinal studies that were conducted to track FL writers' writing proficiency development generally have used these aspects (e.g., Al Ghandi, 2010; Sasaki, 2000). The current study explored whether these aspects vary across language of writing (L1 vs. FL), FL proficiency, gender and writing beliefs. Second, the model proposed by Bereiter and Scardamalia (1987) informed this study when discussing the concept of implicit writing. The main concepts of these beliefs represent many strategies described in knowledge-telling and knowledge-transforming models of writing (see section 2.7.3).

It is worth mentioning that other writing process models have been proposed (e.g., Grabe & Kaplan, 1996; Zimmerman, 2000). For example, Zimmerman (2000) proposed a writing process model based on studying the FL writing process of German students. His model actually places more emphasis on

formulation process which is equivalent to Hayes and Flower's (1980) translation process. Zimmerman (2000) argued that this process is more important than planning and revision in FL and should get more attention. Zimmerman (2000) focused on "tentative formulation" which refers to the use of the word written in the text exactly as it is uttered (p. 87). Zimmerman's (2000) model focuses mainly on "repeated tentative formulation" which is slightly modified before being accepted and written and "simplified tentative formulation" which is immediately accepted and written. Zimmerman (2000) also added some sub-processes that take place during formulation such as evalution, rejection and acceptance. According to Zimmers' (2000) model, writing occurs through tentative formulation that is first evaluated. After evaluation, the tentative formulation will be either accepted or rejected. The rejected tentative formulation will be then modified. However, Zimmerman (2000) did not take into account other aspects that might affect writing like writers' knowledge, topic and audience which have been considered by previous writing models (e.g., Bereiter & Scardamalia, 1987; Hayes & Flower, 1980). Although, Zimmerman's (2000) model provides more details for how formulation process functions, it overlooks planning and revision processes, thus it was not used as a framework for the current study.

## 2.5 FL Writing Process Model

El Mortaji, (2010) argued that FL research (e.g., hypothesis, questions, models and methodology) has been dependent on L1 research and findings. Thus, a complete and comprehensive theory about FL writing process has not been developed yet "due to the overgeneralizations of findings on L1 writing that have been applied to ESL/EFL composing processes" (El Mortaji, 2010, p. 7). Roca deL arios et al. (2002) in their critical examination of L2 writing process research, pointed out that the Hayes and Flower's (1980) model of writing is with no doubt the most influential model in L1 and FL writing processes research. FL writing process models have tended to be either comparisons of L1 models or extensions of L1 models (Archibald & Jeffery, 2000). As with other L1 models of writing process, most of FL writing models include the three basic writing processes, planning, translation/formulation and reviewing, but they tend to pay more attention to the formulation process (see Chenoweth & Hayes, 2001; Zimmerman, 2000).

Roca de Larios, Manchón, and Murphy (2006) indicated that early cognitive studies in writing basically overlooked the language production (formulation process) aspect during writing (the process of converting conceptual thoughts into language). These studies rather focused on planning and revision, and how they are organized and performed across languages (L1 and FL) or across writers (skilled and less skilled) (e.g., Bereiter & Scardamalia, 1987; Friedlander, 1990; Hayes & Flower, 1980; Jones & Tetroe, 1987; Raimes, 1985). Chenoweth and Hayes (2001), using think-aloud protocols of 13 students writing in L1 (English) and FL (French and German), proposed a model that describes an overall process of writing and the translating process in L1 and FL writing (see Chenoweth & Hayes, 2003, p. 113). According to their model the proposer is responsible for planning, goals-setting and sending the idea package to the translator. The translator creates language strings based on the ideas received from the proposer. Then, the language strings are evaluated by the reviser/evaluator. If they are accepted; they are passed to the transcriber to put them into written words. The reviser can be called recursively for change at any point during the writing process. For example, it can be called for change in idea generation or text transcription (more details about this model is provided in 2.7.2.1). Their model informs the current enquiry when discussing the role of FL proficiency in the writing process.

The above FL writing process model includes the general elements of writing (planning, formulation and revising) as proposed by Hayes and Flower (1980). The model focuses more on the formulation process as it is more effortful in FL writing (Chenoweth & Hayes, 2001). This raises important questions about the mechanism of this process and why FL writers find it difficult and effortful and how it interferes with other processes. One of the best explanations that has regularly been used to attribute the difficulties FL writers encounter through the act of writing is the limited capacity of the working memory. This has been also used to explain the limitations of FL writing performance in general and translation process in particular.

## 2.6 Hayes (2012) Model

Hayes (2012b) most recent version of his model of the writing process (see Hayes, 2012b, p. 371) still characterizes writing as a goal-directed problem-solving process (see also Hayes, 2012a), for a similar updated account of the

model). However, the basic processes of writing are no longer thought of as “planning”, “translation” and “revision” as they were in the original Hayes and Flower (1980) model. Indeed, planning and revision are not referred to explicitly in the Hayes (2012b) model at all. Instead, the basic processes of writing, as presented in the central layer of the model are specified as: (i) proposing or generating ideas (*proposer*); (ii) translating ideas into words (*translator*); (iii) transcribing these words into written form (*transcriber*); and (iv) evaluating the output of each of these processes (*evaluator*). This, therefore, characterizes the basic processes of writing in terms of Chenoweth and Hayes (2003) model of text production.

Planning and revising are now treated as complex activities depending on the application of control processes (shown in the top layer of the model, see Hayes, 2012b, p. 371) to the basic operations of generating, translating, transcribing and evaluating. This change in the model is partly motivated by the fact that planning and revision are not separate from translation but instead involve all four of the processes. For example, planning does not just involve generating ideas, setting goals and evaluating them but also involves translation and transcription processes to create a written plan. Hayes (2012b) believes that including planning as a separate process in the model “would duplicate an activity that can already be performed by the writing model” (p. 376). Similarly, revising involves not just evaluating a written text, but also planning a solution for problems identified in the text, translating this solution into language, and then transcribing the proposed language either as new text or to replace existing text (Hayes, 2012b). The main effect of this change, however, is that, although planning and revision are still recognized as important activities in writing, they are no longer treated as fixed components of a general writing process but rather as flexible activities which take different forms depending on how control processes (including goals and motivation) are applied to the basic operations and on the cognitive resources available (the bottom layer of the model, particularly working memory, see Hayes, 2012b, p. 371).

The second major change to the original model is that there is no longer any reference to a monitor. Hayes (2012b) explains that this is because of the way that the monitor had been misinterpreted by readers as representing a master

process that controlled all other processes. As Hayes (2012b, p. 373) explains however:

“Actually, our intention for the monitor was much more modest. It was designed to account for individual differences among writers. Some writers tended to do all their planning before they began to write, and others interleaved planning with writing. The monitor represented the writer’s predisposition to sequence the writing processes in a particular way. It was not intended to control how those processes were carried out.”

In the new version of the model, these differences in the way that writers prefer to sequence writing processes are thought of as being stored in long-term memory and only play a part in the overall writing process when they are retrieved from long-term memory (specified in the resource level) and combined with goals and motivation at the control level. An important implication of this change is that individual differences are conceived more broadly— not just as different configurations of the monitor but as differences across a range of aspects, including working memory capacity, language ability and self-regulation, which can be combined to have a range of effects on the basic writing processes and how they are combined.

In addition to the different characterization of the basic processes of writing and the removal of the monitor, Hayes' (2012b) model reflects a number of other important changes. First, the addition of working memory as a resource “repairs an obvious oversight in the original model” (Hayes, 2012b, p. 370) and makes it more explicit that the concept of cognitive overload can be explained as conflicting demands between writing processes within working memory (see Hayes, 1996; Kellogg, 1996; Torrance & Galbraith, 2006). Second, motivation was not addressed in the original model of Hayes and Flower (1980s), but was included in Hayes' (1996). Hayes (2012b) argues that motivation is intimately involved in a number of aspects of the writing process, including individuals' willingness to write, how long they can engage in writing and editing, and how much they are concerned about the quality of their writing. Third, the original model of Hayes and Flower's (1980s) overlooked the transcription process because it was mainly based on observing writing process of adult writers whose transcription skills are highly automated, so transcription process would not significantly affect other processes. However, a considerable amount of research has shown that transcription process, including spelling and motor

skills, can interfere with other cognitive processes (Bourdin & Fayol, 1996; Hayes & Chenoweth, 2006; Hayes, 2012b; McCutchen, 2000). This strongly suggests that transcription is an important basic component of the writing process which: (i) affects how the overall writing process is controlled (control level), and (ii) competes with other processes for limited cognitive resources (resource level).

These changes to the model have some important implications for writing in FL. First, they highlight that writing in FL will affect not just how writers translate their ideas into FL but also how they transcribe these into written forms. A fluent FL speaker may nevertheless still struggle with text production if their knowledge of spelling in the FL is less well developed. Second, and more importantly, the fact that translation or text production is no longer treated as one of three separate basic writing processes but rather is essentially the basic writing process, highlights that writing in FL is likely to affect many aspects of the writing process. Writing in FL does not just affect ease of translation leaving the separate planning and revision processes unaffected, but, because both planning and revision incorporate the text production process, these activities should also be strongly affected when writing in FL.

## 2.7 Individual Differences

Recently, more attention has been given to individual differences in writing. Individual differences were an important component of Hayes' (1996) revised model of cognitive writing process, and as we have just seen, the shrinking in the number of the basic processes that are considered general to the writing process in Hayes' (2012b) model, leaves more scope for individual differences in how planning and revision are carried out.

Three main constructs have traditionally been used to conceptualize individual differences. These are cognitive (e.g. working memory and language aptitude), affective (e.g., beliefs), and personal related factors (Dornyei, 2010; Dornyei, 2005; Kormos, 2012). Although the role of individual differences, such as working memory capacity, motivation, and self-efficacy beliefs, have been studied in L1 writing research (Pajares, 2003), little is known about the effects of these differences on L2 writing process and text quality (Kormos, 2012).

Writing is a dynamic process that requires managing simultaneously a number of cognitive and linguistic processes and resources (Flower & Hayes, 1980b; Hayes, 1996, 2012a, 2012b; Kormos, 2012; Olive, 2004). Therefore, one would expect that learners with different motivation, cognitive and linguistic abilities would differ in how they coordinate and orchestrate these processes (Kormos, 2012). Kormos (2012) has argued that every single writing process, e.g., planning, translation and revising, might be influenced by cognitive variables, such as working memory capacity, language aptitude, and motivation. These will be discussed in more details in the following sections.

Individuals with different cognitive abilities might approach their writing process with varying degrees of efficiency (Kormos, 2012). For instance, a number of empirical studies have revealed that transcription skills, such as spelling and handwriting, compete with other writing processes for cognitive resources (Hayes, 2012a, 2012b; Hayes & Chenoweth, 2006). For example, children might not focus on generating content and organizing their text due to limitations in their transcription abilities; however, as transcription skills become more automated over the early school years, “more resources should become available for the other processes, such as idea generation and translation” (Hayes, 2012b, p. 384). This suggests that processes that have not been adequately automatized are more likely to cause cognitive overload. Consequently, individuals’ efficiency and speed in performing writing processes vary depending on their working memory capacity (Kormos, 2012).

Carroll (1981, p. 105) proposed four components of language aptitude. These are: (i) *phonetic coding ability*, which refers to “the ability to identify distinct sounds, to form associations between those sounds and symbols representing them, and to retain these associations”; (ii) *grammatical sensitivity ability*, which refers to “the ability to recognize the grammatical functions of words (or other linguistic entities) in sentence structure”; (iii) *rote learning ability*, which is the ability to learn associations between sounds and meaning rapidly and efficiently and to retain these associations”; and (iv) *inductive language learning ability*, which is “the ability to infer or induce the rules governing a set of language materials, given samples of language materials that permit such inferences” (cited in Dornyei, 2010, p. 249). Language aptitude tests, such as the Modern Language Aptitude Test (MLAT) (Carroll & Sapon, 1959) were developed and widely used to measure learners’ language aptitude on these

four components. Language aptitude, as a cognitive factor, influences writing processes that involve linguistic processing and draw on linguistic resources available in the long-term memory (Dornyei, 2005; Kormos, 2012). Research has shown that writers with higher language abilities handle the translation process, where ideas are translated into language, more effectively than writers with lower level of language abilities (Abdel Latif, 2009b, 2013; Chenoweth & Hayes, 2001; Manchón, Roca de Larios, & Murphy, 2009; Roca de Larios et al., 2006). Due to the lack of automatized linguistic knowledge, FL writing is more effortful and requires more linguistic attention (DeKeyser, 2007; Schoonen et al., 2003; Stevenson et al., 2006). Consequently, FL writers are more likely found to focus on linguistic issues, such as spelling and vocabulary, leaving other higher processes, such as content revision, unattended (Schoonen et al., 2003; Stevenson et al., 2006; Whalen & Menard, 1995).

There are a range of higher-level differences that have been associated with differences in writing performance. Perhaps two of the most important are motivation (De Smedt et al., 2017; Hayes, 2012b; Frank Pajares & Valiante, 2001; Troia, Harbaugh, Shankland, Wolbers, & Lawrence, 2013) and gender (Beard & Burrell, 2010; Berninger & Fuller, 1992; Olinghouse, 2008; Troia et al., 2013; Williams & Larkin, 2013). Typically, however, factors like these have been treated correlationally: motivational differences or gender differences have been associated with differences in writing performance but the processes by which these differences have their effects have been given relatively little discussion. It is important therefore to examine the cognitive factors and processes which mediate the effects of such variables on the written product. For example, the broad general construct of motivation needs to be analysed more closely into its different aspects. One potentially important aspect influencing how motivation is realised in the writing process is individual differences in writing beliefs. These are likely to affect the way the writing process is carried out by influencing writers' definition of the writing task (Baaijen et al., 2014). Task definition or writing schemas are assumed to be stored in long-term memory, and have been highlighted in Hayes' (1996, 2012a, 2012b) revised models of the writing process. They are assumed to have a particularly strong influence on how the basic writing processes are combined and the goals towards which they are directed. Similarly, the relationships that have been observed between gender and writing performance have not been linked directly to writing processes. A key question

here is how, and in what way, gender differences are mediated by cognitive, linguistic and motivational factors, and how these are, in turn mediated by differences in cognitive processing?

It is important to point out that individual difference variables are intimately related and dynamically interacting with each other rather than viewing them as entirely independent of each other (Dornyei, 2010; Kormos, 2012). For instance, limited linguistic knowledge, language aptitude, has been found to influence the efficiency of working memory in executing writing processes (Chenoweth & Hayes, 2001), and differences in language skill are typically also associated with differences in working memory capacity. Similarly, children and less proficient FL writers have been found to experience greater difficulty in effectively combining different elements of the writing process because the process of translation is cognitively demanding, which reduces the resources available for higher-level processes such content planning, revision and taking the audience into account (Bereiter & Scardamalia, 1981; Manchón & Roca de Larios, 2007a; Schoonen et al., 2003; Whalen & Menard, 1995).

### **2.7.1 Working Memory**

As writing involves retrieving, processing and managing knowledge from working memory, the role of working memory has started to draw the attention of researchers in the field of cognitive writing research. Working memory uses “the knowledge and experiences stored in long-term memory” and it works as a temporary store and as a limited capacity for processing information during cognitive tasks (Kellogg, 1996, p. 57).

#### **2.7.1.1 Model of Working Memory**

Kellogg (1996) presented a model of working memory which was then revised in (1999) and (2001). Kellogg (1996) pointed out the limitation of working memory capacity and the fact that the writing process imposes large demands on the working memory. Kellogg (1996) identified three parts in the working memory. These are the visuo-spatial sketchpad (which stores visual and spatial information), the phonological loop (which stores verbal information), and the central executive (which manages the previous two parts among other things). His model identified three processes that operate in conjunction with these three parts of the working memory. The first process is formulation that

requires planning and translating ideas into text. The second process is execution where a text is written either by hand or word processor. The third one is the monitoring process, which involves reading, evaluating, editing and revising the text. Kellogg (1996, 1999, 2001) assumed that specific components of working memory are required for particular writing processes but not for others. For instance, Kellogg's (1996) model presumes that planning and editing make use of the spatial working memory, but not the verbal memory. For instance, planning involves visualizing images, organizing ideas and diagrams; thus, it makes use of the resources available in the visuo-spatial component of working memory. By contrast, translating and reading mainly require access to the phonological loop and central executive but not the spatial memory. Kellogg (1996) indicated that formulation (planning and translating) places the heaviest demands on working memory, as it requires resources from all working memory components, as shown in figure 2-1. In theory, thinking through what an individual tries to say is a difficult task that imposes heavy demands on the limited capacity of working memory (Kellogg, 1996).

Basic processes	Working memory component		
	Spatial	Central executive	verbal
Planning	✓	✓	
Translating		✓	✓
Programing		✓	
Executing			
Reading		✓	✓
Editing	✓		

**Figure 2-1: Kellogg's (1999) model of working memory in writing modified from Hayes (2006, p. 30)**

Olive (2004) summarized the importance of working memory in writing process in terms of three main perspectives. First, it temporarily stores transient information that created during the process of writing. For instance, writers may need to keep in mind an idea that they just thought about while they transcribe a sentence. It also provides temporary stores for syntactic, semantic, lexical and orthographic information to be used during any moment of composition. Second, working memory is involved in coordinating and managing the writing processes. Third, it is involved in building the writers' multidimensional representation of the text during the course of writing. For example, writers compare the text they produce with mental representation of the text they intended to write both in linguistic and semantic dimensions.

#### **2.7.1.2 Demands on Working Memory (Cognitive Load)**

Torrance and Galbraith (2006) indicated that performing two cognitive tasks at the same time is sometimes believed to result in degraded performance of one or both tasks. For example, trying to read and hold a conversation at the same time mostly results in poor comprehension or poor communication. When it comes to writing, writers juggle with several cognitive demands simultaneously. Flower and Hayes (1980b, p. 33) stated that "As a dynamic process, writing is the act of dealing with an excessive number of simultaneous demands or constraints... a writer in the act is a thinker on full-time cognitive overload". Writing requires activating and shifting between several writing processes which require access to the limited capacity of working memory (Olive, 2004). This suggests that writing is a complex task that requires a high level of cognitive effort and involves a heavy demand on the resources of the limited capacity of working memory system. The idea of cognitive overload arose from the fact that different cognitive processes compete with each other as they draw on the same resources pool (Bourdin & Fayol, 2002; Galbraith, 2009a; Hayes, 2006). For example, Chenoweth and Hayes (2003) found that the number of grammatical and spelling mistakes increased when writers were asked to repeat a single syllable while writing. This indicates that repetition of the syllable shares some resources with the writing process' components that are responsible for text generation. This also implies that one writing component or process may interfere with the performance of another.

The interactive nature of the writing process places huge demands on the capacity of working memory. This could be because of the nature of the

cognitive capacity as “a fluid resources that is shared among some or all mental processes” (Torrance & Galbraith, 2006, p. 69). The ways writing sub-processes are activated, managed and processed in the course of writing without exceeding the capacity of working memory vary in terms of writers’ knowledge and skills and in terms of writing types (Olive, 2004). For instance, Passerault and Dinet (2000) found that writers’ writing fluency was slowed down when writing a descriptive text compared to argumentative text. They explained that the composition of descriptive text requires more mental imaginary efforts than the argumentative text.

A series of experiments conducted by Bourdin and Fayol (1996, 1994, 2002) to compare written and oral recall of children and adults groups, suggest that low level writing activities (spelling and handwriting) can constrain retention of the word lists in memory. For example, Bourdin and Fayol (1994) asked second and fourth grade children and undergraduate students to recall a series of words in oral or written mode. The authors reported that children recalled fewer words when they responded in a written mode than when they responded orally. No differences were reported in adult performance in the two modes. The authors interpreted their findings in terms of cognitive load. They assumed that the elementary processes involved in writing (graphic transcription and orthographic) are more automated in university students than primary school children. Therefore, such processes may not cause much cognitive load and consequently would not impair word-retrieval with adults. However, Bourdin and Fayol (2002) found adults performed worse in written production compared to oral production when the complexity of the recall task increased. The authors concluded, “the cost of managing written production is not always negligible in well-educated adults” (p.17). This suggests that even when lower processes involved in writing (e.g., handwriting and spelling) are highly automated, they can still negatively affect memory retrieval. This general line of research suggests that the lower level processes involved in writing can impose cognitive cost in writing even if they are well practiced and automated. It also implies that automatizing such activities may reduce cognitive overload and consequently free resources in working memory to perform higher level processes like idea retrieval.

The limited capacity of working memory can explain some of the limitations of writing proficiency L1 and FL writers may encounter. The extra demands of

writing in FL writing may reduce the resources available for higher level thinking processes. McCutchen (2000) assumed a causal relation between writing performance and working memory. She reported that increasing working memory load leads to a reduction in the quality of the text. She pointed out that a good command of encoding skills such as spelling and inscription reduces the load on the working memory.

Torrance and Galbraith (2006) proposed some strategies that may help to develop writing maturation. For example, they suggested that developing automaticity in low-level processes such as handwriting and spelling through practice would reduce cognitive overload. They also argued that following some strategies such as pre-planning, rough drafting and notes taking, reduce cognitive load. For example, Kellogg (1988) found that outlining (structured notes) reduced, to some extent, the attentional overload and led to better quality of texts. He argued that this positive effect of outline is due to its role in enabling the writers to concentrate more on formulation process. However, Torrance and Galbraith (2006) concluded, "No matter how skilled we are at managing the writing process, there is an irreducible core of potential conflicts and writing will always be a struggle to reconcile competing demands" (p. 78).

The main implication of the concept of cognitive overload, one may conclude, is that the chance of cognitive overload is higher in the case of FL writing due to less well developed level of FL proficiency as FL writers need to deal with language problems along with writing process demands. This may indicate that being linguistically competent in FL plays an important role to ease writing process. This is specifically applied by Stevenson et al.'s (2006) "Inhibition Hypothesis" which postulates that the linguistic demands involved in L2 writing might consume cognitive resources and consequently inhibit writers' attention to focus on high-level thinking skills such content generation and content revisions. The concept of cognitive overload informs this study in terms of the importance of language proficiency in reducing cognitive overload and freeing working memory resources to perform higher level activities such as reflective thinking and considering audience.

### **2.7.2 Linguistic Proficiency**

Cognitive models of writing have acknowledged the roles of skills and knowledge stored in long term memory in facilitating writing. Language

knowledge is an important element that eases writing performance. Schoonen et al. (2003) emphasized that writers need to have a certain amount of vocabulary and grammatical knowledge in order to express their message. They also argued that writers need to have “metacognitive knowledge” which reflects their knowledge about what a good text consists of, and the effective strategies to deal with writing process constraints (Schoonen et al., 2003, p. 168). Limited lexical and grammatical resources reduce writers’ capabilities to express their ideas properly (Grabe & Kaplan, 1996; Schoonen et al., 2003). A number of researchers have argued that writing skills development depends on increasing linguistic processes and knowledge required in text production (e.g., Abdel Latif, 2009a; Al amargot & Fayol, 2009; Al Ghadbi, 2010; Chenoweth & Hayes, 2001; Manchón & Roca de Larios, 2007a; Roca de Larios et al., 2008). This argument has been supported by a body of empirical research. For example, Chenoweth and Hayes (2001) in their study of 13 English writers studying French and German as FL, found that even two semesters of French and Germany instructions had positive effects on their participants’ FL writing fluency (measured by number of words written). Their study reported that FL writers in their fifth FL semester wrote longer texts compared to those in the third semester.

Linguistic representation was overlooked in the early model of the writing process (e.g., Hayes & Flower, 1980). Linguistic elements were incorporated in later models of the writing process in which the linguistic representation was recognized in both long-term memory and working memory (e.g., Chenoweth & Hayes, 2001; Hayes, 1996; Kellogg, 1996).

### **2.7.2.1 Chenoweth and Hayes’s (2001) Model**

Chenoweth and Hayes’ (2001) model is important when discussing the importance of linguistic knowledge and processes on writing (see Chenoweth & Hayes, 2003, p. 113). According to their model, the internal part of the process level includes a proposer, a translator, a reviser and a transcriber. The proposer acts as a pre-linguistic source that produces ideas to be expressed. Putting these thoughts into strings of language with correct word order and grammar is the translator’s task. The transcriber converts the articulatory buffer into written language. Writers need to access linguistic and/or metacognitive knowledge (available in the long-term memory) when they convert their ideas into language and when they transcribe the language

strings into written language. Chenoweth and Hayes's (2001) model assumes that written language is typically produced in bursts or strings of sentences, as proposed by Kaufer, Hayes, and Flower (1986), rather than complete sentences. Chenoweth and Hayes (2001) distinguished between *P-bursts*, which refer to strings of language ending with a pause followed by written words, and *R-bursts*, which refer to strings of language followed by revision. They claimed that the length of the *P-bursts* (measured by number of words) depends on the capacity of the translator to handle language which basically depends on the writers' language proficiency. Chenoweth and Hayes (2001) reported that writers produced longer *P-bursts* when they wrote in L1 compared to FL. They also found that less linguistically proficient FL writers produced shorter *P-bursts* compared to writers with higher FL proficiency (linguistic proficiency was measured by the number of academic semesters of FL instruction). Chenoweth and Hayes (2001) concluded that the length of *P-bursts* increases as the writer's language proficiency increases.

Translating and transcribing processes signal some differences between L1 and FL writing processes as both processes entail linguistic facilities (Al Ghamdi, 2010). L1 writers attend these two processes effortlessly and automatically. By contrast, FL writers encounter challenges as these two processes impose more cognitive overload in FL writing because of the writers' limited language competence in FL. Chenoweth and Hayes (2001) maintained that the limitation of the linguistic resources resulted in less fluent text, shorter-*P-bursts* and some errors in the generated strings.

The model of Chenoweth and Hayes (2001) indicates that L1 and FL writers use the same basic processes of writing and that language proficiency affects the ways these processes are performed. Their study reported that an increase in language proficiency reflects individuals' abilities to easily access and retrieve lexical resources and to deal with complex grammatical structures. This consequently enables writers to produce longer *P-bursts*. For example, Chenoweth and Hayes (2001) found a significant difference in the average length of *P-bursts* between third semester and fifth semester students when writing in FL. They reported that the average length of *P-bursts* (in words) for third semester students was 1.97 compared to 2.93 for the fifth semester students when writing in FL (third semester students were described as linguistically less proficient FL students than fifth semester's students).

An important theme that can be inferred from Chenoweth and Hayes's (2001) study is that language proficiency plays an important role in reducing or increasing the cognitive overload while writing. Being a competent language user reduces cognitive overload as L1 writers can naturally and effortlessly get access to such knowledge while translating their ideas into strings of sentences (Al Ghamdi, 2010). Automatic access to lower-level knowledge skills (e.g., spelling) may take little of writers' working memory capacity; consequently, sufficient working memory capacity is available for higher-level processes, such as text organization, to take place (Schoonen et al., 2003). FL writing is assumed to be more complicated as writers have to deal with the language demands and writing process simultaneously (Al Ghamdi, 2010; Schoonen et al., 2003). Their limited linguistic proficiency can restrict them from expressing their ideas and can constrain them from performing higher-level of problem solving activities (Manchón & Roca de Larios, 2007a; Schoonen et al., 2003).

Idea retrieval may be affected by language proficiency. As explained previously, the experiments conducted by Bourdin and Fayol (1994, 1996, 2002) with L1 writers, suggest that knowledge retrieval can be impaired because of the competing demands on working memory made by the low-level processes involved in spelling and handwriting. One would assume that writing in FL is more challenging as the lack of linguistic knowledge in FL may increase these demands and so further impairs knowledge retrieval. Furthermore, FL writers may find it difficult to put their ideas into written language, as they are involved in a number of language activities such as searching for words and correct grammar structures. For example, Jones and Tetroe (1987), based on their think-aloud study of 6 graduate Spanish writers' L1 and L2 (English) writing processes, found that these writers planned more at the language level and they failed to keep track of their plans. They explained their findings by stating that

"there is some decrease in performance simply due to the fact that it is in a second language, that working in unfamiliar language does take up cognitive capacity that would be used for other tasks, such as monitoring and revising the plan, in first language composing."

(Jones & Tetroe, 1987, p. 53)

Schoonen et al. (2003) assumed that L2 writers are more engaged in “lower-order” problems such as searching for appropriate lexical items and grammatical structures. Schoonen et al. (2003) using structural equation modelling in their longitudinal study of 281 Dutch students’ writing performances in L1 and L2 (English), concluded that “L2 writing is more dependent on L2 linguistic knowledge and processing speed than is L1 writing” (p. 193). Their findings indicated that L2 linguistic knowledge (assessed by vocabulary and grammatical knowledge), plays an important role in L2 writing and L2 writers were more involved in solving language problems when writing in L2 than writing in L1.

Whalen and Menard (1995) used think-aloud protocols to study the writing processes of Canadian students studying French as L2. They reported that writers’ limited L2 proficiency constrained them to plan and revise relatively more at the language level than at the textual and pragmatic level when writing in French. Their participants tended to revise more frequently at the linguistic level in both L1 and L2. However, revisions in L2 were more about spelling and morphemes compared to phrase and sentence level in L1 revisions. This shows that FL proficiency has a major impact on how the writing process is carried out.

This general line of research suggests that linguistic concerns in FL overload the working memory; as a result, the FL writing process becomes less fluent compared to the L1 writing. In addition, linguistic proficiency in FL seems to have strong effects on higher levels aspects of writing such as planning and revision. It can be concluded that FL proficiency seems to be an important indicator of the writers’ FL writing process.

McCutchen (2011) stated that two processes should be considered when discussing the importance of language processes in writing. The first process is text generation which involves content selection, lexical retrieval and syntactic processing. The second one is transcription, which involves the physical acts of writing, including handwriting, typing and spelling. Olive, Kellogg and Piolat (2002) found that transcription imposes higher demands on working memory resources for children than adults. This suggests that transcription limits working memory capacity in performing other aspects of writing (Olive et al., 2002). This could be because children have not yet fully automated transcription and this may hinder them from performing higher-

level writing processes (e.g., text structure). This indicates that automatic access to language knowledge may result in effective use of the limited capacity of the working memory and this in turn may result in a good text quality. The fact that writers perform better in L1 writing than in FL writing is evidence that automatic access to language resources reduces the working memory load and leads to better writing performance and texts (e.g., Whalen & Menard 1995; Chenoweth & Hayes 2001).

Schmidt (1992) distinguished between two types of language processing, controlled, and automatic. Automatic processing differs from controlled processing in a number of aspects including speed and memory capacity. According to Schmidt (1992), as language proficiency increases, as a result of practice, a shift from controlled to automatic process takes place. Considering Schmidt's (1992) theory in writing, acquiring more language proficiency results in more automatic and faster retrieval of the language resources needed in writing, with less demands on limited working memory capacity. Language proficiency appears to be an important factor that affects the management and organization of writing sub-processes (e.g., planning, translating and revision). Thus, it is relevant to discuss research findings on the effect of FL proficiency on FL writing process and product and this is discussed in the next section.

#### **2.7.2.2 Research on the Relationship between FL Proficiency and FL Writing Processes and Text Quality**

Several writing researchers have investigated the effect of FL proficiency on FL writing. However, these studies have reported contradictory findings. Some research has reported relatively small effects of FL proficiency on writers' writing. For example, Raimes (1985) analysed think-aloud protocols of 8 unskilled students writing in English (as L2) and compared them to the L1 writing process as it has been described in the literature. She found no significant correlation between the language proficiency level (measured by Michigan Test of English Proficiency) and L2 writing process. Raimes (1985) reported that acquiring high language proficiency level in L2 would not necessarily guarantee being a good writer in L2. Raimes (1985) concluded that writing proficiency (assessed by a holistic evaluation essay of the City University of New York Writing Assessment Test and the students' responses to a background questionnaire about their writing experiences in English) seemed to be an important indicator of her participants' writing process. Similar

findings were also reported by Cumming (1989) who used think-aloud protocols and assessed the written texts of 23 Canadian students to study the effect of L2 (English) language proficiency (assessed by oral proficiency and effective communication) and writing expertise on text quality, writing processes and problem-solving activities. Cumming (1989) concluded that L2 proficiency is an important factor that influenced the overall quality of L2 written texts, but language proficiency does not seem to affect the L2 writing process (e.g., taking decisions), or problem-solving behaviours. Furthermore, Victori (1999) in her study of four Spanish students, reported that proficiency in English as a FL has no effects on the students written quality. These findings are aligned with Bosher's (1998) conclusion that L2 writers "who have similar overall language proficiency scores and writing sample scores, may not be at the same stage developmentally in their writing" and might bring different strategies to the writing task (p. 222). However, it is worth noting that most of these studies were conducted with L2 writers where the effect of L2 proficiency might not be obvious, as their L2 proficiency is good. One would assume that the effect of FL proficiency would be more apparent in FL writing. The relationship between language proficiency and writing process and product is quite complicated. For example, the problem with the above studies is in distinguishing the effect of language proficiency on text quality (e.g., better vocabulary and grammar) and through its effect on making the writing process easier, except for Cumming's (1989) study.

On the other hand, several studies found a positive relationship between FL proficiency level and FL writing processes, strategies and text quality. Manchón and her colleagues reported major effects of language proficiency in English as a FL on their Spanish students' writing (Manchón et al., 2009; Manchón & Roca de Larios, 2007a; Roca de Larios et al., 2006; Roca de Larios et al., 2008, 2001). For example, Roca de Larios et al. (2008) used protocol analysis to investigate the effects of FL proficiency level (assessed by Oxford Placement Test) on the time devoted to writing sub-processes. They divided the writing process into seven different activities (reading the prompt, task conceptualization, planning, formulation, evaluation, revision, metacommments) to compare the time spent on each activity by three different EFL proficiency groups. They found that the less proficient group devoted 81% of their time on FL formulation process compared to the higher proficiency group who only spent 62% of their time on formulation. They also reported that the high

proficiency group spent more time on planning (13%) compared to the less proficiency group who spent only 1% of their time on planning. Roca de Larios et al. (2008) concluded that higher FL proficiency enables writers to keep a more balanced allocation of processing time to different writing behaviours.

Furthermore, positive effects of FL proficiency on text quality have been reported by a number of studies (e.g., Abdel Latif, 2009a; Al Ghamdi, 2010; Sasaki, 2004). For instance, Sasaki (2004) followed 11 Japanese University students over a 3–5 year period to study the effects of FL proficiency (measured by Secondary Level English Proficiency Test) on their FL writing behaviours and texts. Based on written texts, videotaped writing behaviours, and stimulated-recall protocols, Sasaki (2004) concluded that as FL proficiency increases, the students are able to write longer text, spend more time on planning, stop relying on L1 to translate their ideas, and produce a text of much better quality. However, Sasaki (2004) mentioned that her participants received FL writing instruction and after the instructions, she found that her participants' writing performance, e.g., in terms of planning and text quality, improved. Thus, the improvement in her participants' text quality and writing processes could be explained in terms of writing instruction rather than FL proficiency.

These contradictory findings, reported above can be attributed to variations in the purposes and the methodologies of these studies. For example, Roca de Larios et al.'s (2008) main aim was to explore the effects of writers' FL proficiency level on the time devoted to different writing processes using think aloud protocols. On the other hand, Raimes's (1985) main purpose was to examine unskilled L2 writers by comparing their writing processes and products to their L1 counterparts using think aloud protocols. Another reason for the inconsistency of the previous studies' findings could be due to the varied ways linguistic proficiency in FL was assessed. For example, some studies assumed that being registered on a certain academic level presumed a certain proficiency level in FL (Chenoweth & Hayes, 2001). Other studies used standardized, but different tests to assess FL proficiency, for example: Comprehensible English Language Test –CELТ– (Sasaki, 2000); Michigan Test of English Language Proficiency –METLP– (Raimes, 1985); and the Oxford Placement Test –OPT– (Julio Roca de Larios et al., 2008). It could be also due to the small sample sizes used in most of the previous studies. For example,

Bosher (1998) and Raimes (1985) reached their conclusions based on studying 3 and 8 participants respectively. Such small sample sizes make it very difficult to quantify the relationships between FL proficiency, writing processes and text quality. Furthermore, difference in the context could be one reason for these contradictory findings. As I explained earlier in this section that some studies, particularly studies that did not report clear effect of Language proficiency on writing process, were mostly conducted in L2 contexts where writers' linguistic proficiency in L2 is quite good. Thus, observing the effect of L2 proficiency on L2 writing would not be as obvious as the effect of FL proficiency on FL writing where writers' FL proficiency is less efficient compared to L2 writers' language proficiency.

Proficiency in FL by itself, however, might not be sufficient to explain the development of FL writing. Factors such as gender and writers' beliefs should also be considered. Therefore, the present study attempted to fill some of these knowledge gaps by using the Oxford Placement Test (OTP) to assess undergraduate Omani students' proficiency in English as a FL in order to investigate the associations between their FL proficiency, their writing processes and text quality.

### **2.7.3 Implicit Writing Beliefs**

People' perceptions about what a certain task requires affect the way they approach the task (Baaijen et al., 2014). This is true about writing where the writer's performance is influenced by the beliefs they have about attaining the task and what the task requires (White & Bruning, 2005). The concept of writing beliefs was initiated from social learning theory which claims that personal and motivational aspects interact with cognitive and behavioural factors to determine individuals' behaviours (Bandura, 1986). Accordingly, motivational factors such as beliefs may affect the way individuals demonstrate their knowledge. The concept of students' beliefs has recently started to get more attention as it plays an important role in students' achievements and performance (Villalon, Mateos, & Cuevas, 2015). In the field of writing, Bereiter and Scardamalia (1987) and Hayes (1996) acknowledged the importance of beliefs in writing. For example, beliefs were explicitly incorporated in Hayes' (1996) model of the writing process. Hayes (1996) assumed that beliefs affect the way writers approach the writing task. A range of empirical research has

shown that implicit writing beliefs are systematically correlated to the text quality (Baaijen et al., 2014; Sanders-Reio et al., 2014; White & Bruning, 2005).

In the field of education, White and Bruning (2005) claimed that identifying students' writing beliefs is of great value in teaching writing because writing is an important skill in students' conceptual and linguistic development.

Therefore, identifying writing beliefs and relating them to writing process and text quality is very important in order to "apply knowledge of implicit beliefs to writing behaviour that occurs in the writing classroom and in the mind of the student writer" (White & Bruning, 2005, p. 169). Furthermore, raising teachers' awareness of such beliefs helps to identify and understand the additional motivational factors that might affect how students approach the writing task. Consequently, teachers may help students to regulate such beliefs through the course of writing. Teachers can also improve students' writing beliefs if the students lack the positive beliefs that guide them to engage cognitively and positively in the writing process (White & Bruning, 2005).

### **2.7.3.1 The Development of Implicit Writing Beliefs Scales**

#### **2.7.3.1.1 White and Bruning's (2005) Writing Beliefs Inventory**

White and Bruning (2005) extended the reading beliefs inventory created by Schraw and Bruning (1996, 1999) to the process of writing. Based on transactional and transmissional implicit beliefs about reading, White and Bruning (2005) developed two sub-scales: transactional and transmissional scales about writing beliefs. Transactional beliefs are beliefs that "writing is an emotional experience which involves the development of understanding as the text is built" (Baaijen et al., 2014, p. 5). According to White and Bruning (2005), writers with high transactional beliefs demonstrate high cognitive engagement during writing because they see writing as a way to express their own experience and feeling. Thus, these writers integrate their own voice during writing which results in a developed text with more improved ideas and understanding (White & Bruning, 2005). Baaijen et al. (2014) claimed that writers with high transactional beliefs are more likely to expand their understanding about the topic that they write about. White and Bruning's (2005) transactional scale includes statements like: "writing is a process involving a lot of emotion", "writing helps me understand better what I am

writing about”, and “I always feel I can improve my writing if I could revise it just once more”.

On the other hand, writers with high transmissional beliefs demonstrate low cognitive engagement because they see writing as a way of presenting information from authoritative resources, thus, their written text does not reflect their own views (White & Bruning, 2005). White and Bruning's (2005) transmissional scale includes statements like: “I try to quote authorities as often as possible in my writing assignments”, “writing's main purposes is to give other people information”, and “the key to successful writing is reporting accurately what authorities think”.

#### **2.7.3.1.2 Sanders-Reio et al.'s (2014) Writing Beliefs Survey (WBS)**

Sanders-Reio et al. (2014) extended the writing beliefs inventory developed by White and Bruning (2005) and proposed what they called the Writing Beliefs Survey (WBS). Sanders-Reio et al.'s (2014) proposed model consists of four scales instead of two. Two additional dimensions (audience orientation and recursive process) were added to the transactional and transmissional dimensions in constructing their writing beliefs model which consists of 31 items. Sanders-Reio et al.'s (2014) writing beliefs model was informed by Kellogg's (2008) cognitive model of writing development. Building on Bereiter and Scardamalia (1987) two models of knowledge-telling and knowledge-transforming, Kellogg (2008) added a third stage called knowledge-crafting which describes expert writers. Kellogg (2008) assumed that in knowledge-crafting stage, writers take into account their own representation of the text (their points of view), the text representation (task' requirements) and the readers' representation (considering the readers' point of view) (Kellogg, 2008; Sanders-Reio et al., 2014). However, Kellogg (2008) did not assume that these stages are discrete; rather he described these representations as being on a continuum. For example, knowledge-tellers may have some sense of their audiences, but such representations are unclear and the dominant representation is still the text's representation.

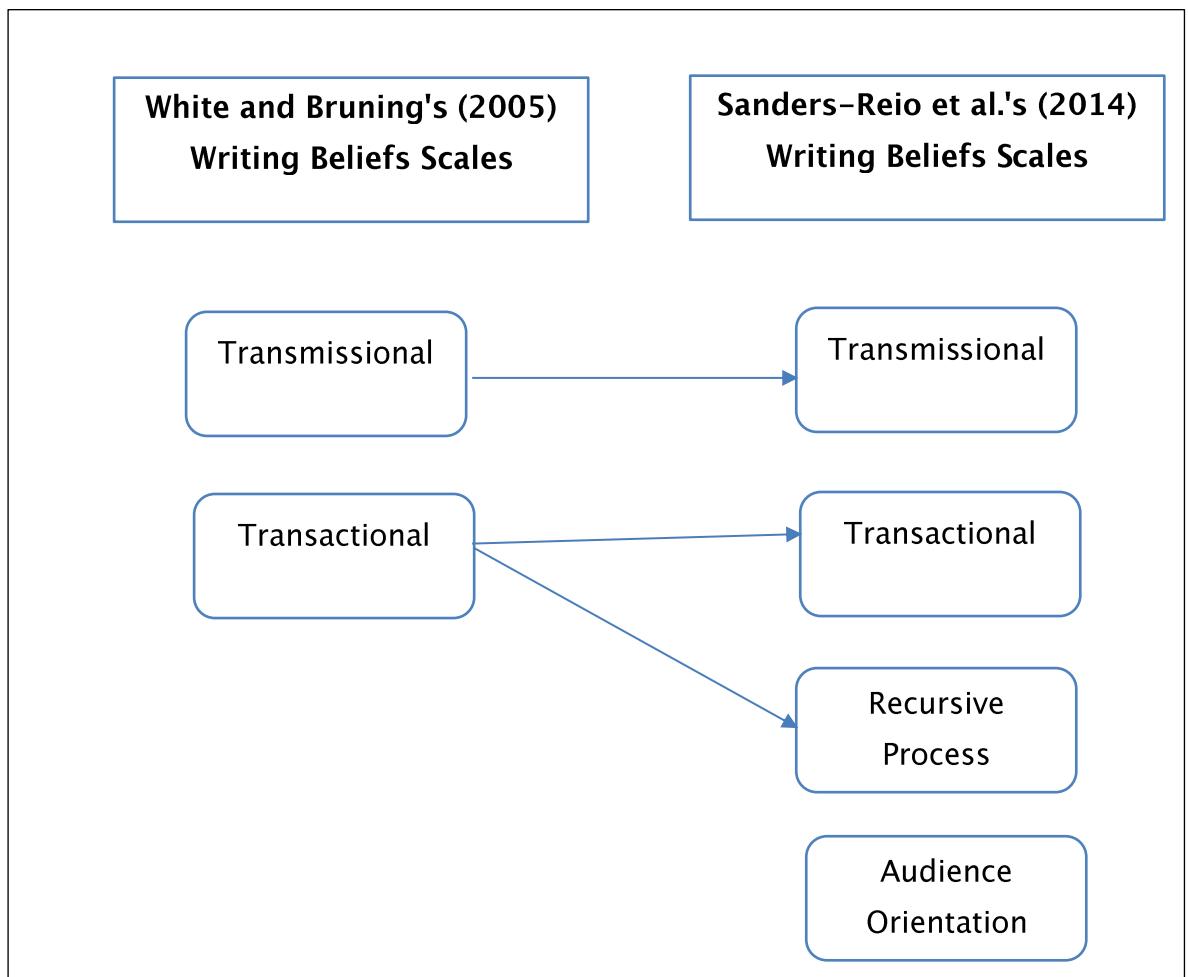
Sanders-Reio et al.'s (2014) first scale (transmissional beliefs) best describes knowledge-tellers, as writers are concerned to transform information from authoritative sources without much cognitive engagement with the text and their own representation is absent. By contrast, the second scale (transactional

beliefs) can be seen as knowledge-transforming act as writers are emotionally involved in the text and they reflect upon their thoughts. The third scale (recursive process) is also aligned with Kellogg's (2008) second stage of knowledge-transforming as writing in this stage involves going through various stages of revising and rethinking in order to deepen writers' understanding. The fourth scale (audience orientation) best describes writers in the knowledge-crafting stage as writers in this stage are believed to adapt their message to suit their readers' needs.

It is important to point out that the transactional beliefs scale proposed by White and Bruning (2005) actually combined the main concepts of transactional and recursive beliefs scales of Sanders-Reio et al.'s (2014) WBS. Although Sanders-Reio and her colleagues (2014) assumed that transactional and recursive process scales are more aligned with knowledge-transforming, they preferred to treat them as two separate scales by adding extra items in both scales. For example, Sanders-Reio et al.'s (2014) recursive scale includes items like "the key to good writing is revising" and "good writing involves editing many times". These items reflect the recursive nature of writing which is represented in White and Bruning's (2005) transactional scale. Furthermore, Sanders-Reio et al. (2014) added some items like "writing helps new ideas to emerge" and "writers need to immerse themselves in their writing" in their transactional scale besides some White and Bruning's (2005) transactional scale items. Figure 2-2 shows the differences between White and Bruning's (2005) and Sanders-Reio et al.'s (2014) scales.

#### **2.7.3.2 The Relations between Writing Beliefs and Text Quality and Writing Processes**

The writing beliefs inventory developed by White and Bruning (2005) provided some insights into the level of the writers' engagement during writing. For example, their study revealed that writers with high transactional beliefs produced better text quality than writers who hold low transactional beliefs. Baaijen et al. (2014) replicated White and Bruning's (2005) finding, and in addition showed that writers with high transactional beliefs were also more likely to report a development in their understanding of the topic than writers with low transactional beliefs.



**Figure 2–2: The differences between White and Bruning's (2005) and Sanders-Reio et al.'s (2014) scales**

According to White and Bruning (2005), writers' beliefs affect the level of writers' engagement with the writing process. Accordingly, writers with high transactional beliefs produce better text quality and develop their understanding because they are highly engaged in the writing process compared to writers' with low transactional beliefs who are cognitively less engaged in the writing process. The idea of engagement in this context is best explained in light of Bereiter and Scardamalia's (1987) models of knowledge-telling and knowledge-transforming where knowledge-telling is equivalent to transmissional beliefs while knowledge-transforming represents transactional beliefs. Baaijen et al. (2014) stated that the key difference between the two models is the writers' ability to create a set of rhetorical goals with respect to the readers and to use these goals as guidance through the course of writing.

In this sense, knowledge-tellers' main concern is to retrieve the necessary information and present it into a written text without much consideration of audiences. By contrast, knowledge-transformers' main strategy is to create a set of rhetorical goals that guide them to retrieve the content and modify it through the course of writing to satisfy their communicative goals and their audiences (Baaijen et al., 2014).

Baaijen et al. (2014) explained the development of understanding and the high quality text of writers who hold high transactional beliefs in light of Galbraith (1999, 2009a) dual-process model. According to Galbraith's (1999, 2009a) model, two different processes involve in writing. The first one is a problem solving process where the content is retrieved, organized and evaluated in working memory to satisfy a set of rhetorical goals that guide and control the text production. However, Galbraith (1999, 2009a) believed that this process by itself does not lead to develop writers' understanding of the topic as this process suggests that writers' understanding about the topic is clear as writers stick to the goals they have established. The second process is text production, which Galbraith (1999, 2009a) characterized as a knowledge constituting process, where the content is synthesized and writers articulate their understanding of the topic as they write and revise the text. According to Galbraith's (1999, 2009a) model, the two processes contribute to the overall quality of the text. For example, the problem solving process ensures that the retrieved content is organized, evaluated and modified to meet the readers' needs. The text production process ensures that the text's content demonstrates and articulates the writers' understanding of the topic (Baaijen et al., 2014). Therefore, writers with high transactional beliefs develop their understanding through revision. By contrast, writers with high transmssional beliefs do not develop their understanding as they are only concerned to translate their preconceived ideas into words without articulating their understanding about the topic they write about (Baaijen et al., 2014).

Sanders-Reio et al. (2014) also found that writing beliefs can predict writers' writing performance. For example, their study revealed that audience orientation and recursive process scales are positively related to the quality of writers' text. They also reported that transmissional beliefs are negatively related to writing performance. However, Sanders-Reio and her colleagues (2014) acknowledged that the relationships between writing beliefs and

writers' performance is relatively modest. Unlike White and Bruning's (2005) and Baaijen et al.'s (2014) studies, however, Sanders-Reio et al. (2014) found that transactional beliefs are negatively related to writers' performance. This could be because Sanders-Reio et al. (2014) conceptualized writing beliefs differently from White and Bruning (2005) and Baaijen et al. (2014). For example, Sanders-Reio et al. (2014) treated the recursive process and the transactional beliefs separately compared to White and Bruning (2005) and Baaijen et al. (2014) who viewed them as one scale. It is possible that combining transactional and recursive process beliefs in one scale may hide the effects. However, the recurring finding in these three studies is that the transmissional beliefs are negatively related to writing quality. As explained previously, writers who hold transmissional beliefs are assumed to be cognitively less engaged in the writing process. This may result in undeveloped ideas that only reflect writers' preconceived information without much engagement in modifying their information to satisfy the communicative goals and consequently this results in a poor text.

A number of implications can be drawn from this research on writing beliefs. First, research on implicit writing beliefs has informed us that writers' writing beliefs influence the writing process and the quality of the written text. One may infer that writers might approach the writing task differently not just because of the limited capacity of their working memory or limited language proficiency, but also because of their implicit beliefs about what writing should be. Therefore, writing beliefs need to be considered in writing research in order to assess their influence on writing process and product. Second, the above overview shows that only three studies investigated the concept of implicit writing beliefs and its effects on L1 writing process and product. This suggests that more research should be carried out to study this concept in different contexts, e.g., in an Arab world context. Third, the above overview shows that implicit writing beliefs were only investigated in L1 writing context but not in FL contexts. It could be that implicit writing beliefs vary across languages (L1 and FL). Thus, this study was an attempt to uncover these gaps by using the WBS proposed by Sanders-Reio et al. (2014) to find out if undergraduate Omani students' writing beliefs vary across languages (L1 vs. FL), gender and writers' FL proficiency. It also investigated if these beliefs account for variation in L1 and FL writing processes and text quality.

The current study used the WBS proposed by Sanders-Reio et al. (2014). There are a number of reasons for using Sanders-Reio et al.'s (2014) scale. First, it is the most recent writing beliefs scale. Second, the reliability of the four subscales, which ranges from 0.65 to 0.85, is relatively higher than the reliability of the subscales proposed by White and Bruning (2005), who reported that the reliability of the items of transmissional and transactional scales was 0.73. Third, Sanders-Reio et al.'s (2014) model includes a subscale about writers awareness of their readers, a scale that is overlooked in White and Bruning's (2005) model. Writers' awareness of their audience is one of the variables that was investigated in the current study. It also has been used in the early cognitive model of writing (e.g., Bereiter & Scardamalia, 1987; Hayes & Flower, 1980) as an important factor in distinguishing skilled and less skilled writers.

#### **2.7.4 Audience Awareness**

Hayes (1996) pointed out that "Writing is primarily a social activity" (p. 5). The claim that writing is a social act is based on two main reasons: 1) individuals write to communicate with others, and 2) writing takes place in a social setting. Hayes (1996) claimed that what people write, how they write and to whom they write are shaped by social conventions and by people's background of social interaction. The social aspect of writing is presented in Hayes' (1996) revised model by including audience and topic specification in the task environment and by including audience and genre knowledge in the long term memory (see Hayes, 1996, p. 4). Hayes (1996) claimed that writers might write differently to familiar audiences than unfamiliar audiences. This indicates that considering audiences' expectations and knowledge plays a role in shaping writing process. For instance, it has been observed that expert writers find it difficult to write for novices as writers have to consider the appropriateness of the text features for their audience before writing it down (Hayes, 1996). Although the concept of writers' audience awareness has been identified as one of the important indicators that distinguishes skilled from less-skilled writers (Bereiter & Scardamalia, 1987; Flower, 1979), little research has been carried out to explore this aspect and its influence on writing processes and texts in both L1 and FL.

It is believed that writers' consideration of their readers influences the way they go about completing their writing task (Hayes, 1996). For example, Victori (1999) who compared the FL (English) writing process and strategies of two good and two less experienced FL Spanish writers, stated that the good writers paid attention to their readers, and this was reflected on the way they modified their content and presented different arguments depending on their target readers. Interestingly, Victori (1999) reported that one of her less experienced writers also reported being sensitive to the audience by using complex vocabulary to meet her audience's expectations, as the addressed reader had some kind of authority. Victori (1999) concluded that in academic contexts in general, and in an FL context in particular, considering audiences "is not perceived as a realistic goal" because students usually address the same reader, namely their teacher, in their writing (Victori, 1999, p. 544). Victori (1999) argued that when students hold such a belief, the linguistic accuracy of the text becomes a more important goal for them than the content of the text and their opinions. Teachers' concern about the text's linguistic features such as form and vocabulary is usually reflected in the feedback the students receive about their written text (Horowitz, 1986; Victori, 1999).

Audience awareness is believed to add an extra burden on the working memory (Al Ghamdi, 2010). Therefore, writers may choose to disregard readers until they have explored the content (Flower, 1979). Al Ghamdi (2010) maintained that in the case of FL, writers do not consider their audience "because the working memory is already burdened with attention to L2 language problems" (p. 20).

Hayes (1996) also pointed to the effect of culture on writing. It is relevant to the present inquiry to discuss cultural differences between English and Arabic in terms of readers' and writers' responsibility in the communication act. Hinds (1987) described English as a writer-responsible language while Arabic as a reader-responsible language. This means that in a writers-responsible language, writers are primarily responsible for effective communication during the act of writing. This suggests that writers should set clear communicative goals and communicate these goals effectively and clearly through the course of writing in order for readers to understand the message. By contrast, in a reader-responsible language, effective communication is the readers' task, as the reader should work out how to understand the message (Hinds, 1987).

These cultural differences in the degree of readers' and writers' responsibility are believed to affect the way individuals write in terms of ambiguity, clarity and discourse organization (El-Aswad, 2002). This general line of research suggests that writers might ignore taking their reader into account, or might not be aware of considering their reader while writing, due to several factors such as culture, working memory overload and educational context (Al Ghamdi, 2010; El-Aswad, 2002; Flower, 1979; Victori, 1999).

### **2.7.5 Gender Differences in Writing Process and Text Quality**

An important issue that has been hugely overlooked in FL writing process, in particular, and it deserves some kind of consideration in cognitive writing process research is gender differences. Having said that, however, gender has been recognised as a large factor in education. This study focused only on the effect of gender in cognitive writing process. Previous research in L1 writing, particularly with children, has provided some evidence that females perform better than males in many aspects of writing, particularly in the UK and America (Berninger & Fuller, 1992; Malecki & Jewell, 2003; Frank Pajares & Valiante, 2001).

As within the cognitive writing perspective, studies have revealed that gender is an important predictor of writing performance of children as well as adults, typically favouring females (Beard & Burrell, 2010; Berninger & Fuller, 1992; Castro & Limpo, 2018; Olinghouse, 2008; Troia et al., 2013; Williams & Larkin, 2013). For example, Olinghouse (2008) studied the predictors of third grade students' narrative writing fluency and quality. She found that girls were more fluent in writing, as measured by the total number of written words with a time limit, and produced better text in comparison to boys. Similarly, Berninger, Fuller, and Whitaker (1996) revealed that writing fluency and producing better text quality were associated more with girls. However, in contrast to Olinghouse's (2008) study that revealed that gender remained significant in predicting text quality, in favour of girls, even when compositional fluency was controlled for, Berninger et al. (1996) did not reach a similar conclusion. Their studies provided enough evidence to suggest that when writing fluency was statistically controlled, gender difference became insignificant. The significant relationship between text quality and the mastery of lower- level transcription skills, e.g., spelling, is consistent in the literature (Adams, Simmons, & Willis,

2015; McCutchen, 1996, 2000). Girls master these skills earlier and more effectively than boys (Adams et al., 2015; McCutchen, 1996). This might explain their superiority in fluency as well as text quality.

In the same vein, Verhoeven and Van Hell (2008) reported that girls, whose age was 10 years, wrote longer text and used a variety of lexical items as opposed to boys, in the similar age. Similarly Beard and Burrell (2010), who investigated writing attainment of year 5 children (9–10 years old) in narrative and persuasive tasks using standardised test (including rating criteria such as: spelling, vocabulary, grammar, purpose and organisation), also reported significant advantage for girls. Babayigit (2015) studied English speaking L1 and FL children (about 9 years old) writing. She found that girls outperformed boys in text length, spelling, written vocabulary and text quality in both languages. Although Babayigit (2015) did not find a significant interaction between language and gender, her study suggests that there was a consistent trend indicating that gender differences was larger in FL, in favour of girls.

On the other hand, a number of studies did not report gender difference, particularly in terms of text quality (e.g., Jones & Myhill, 2007; Spelman Miller et al., 2008; Williams & Larkin, 2013). For example, although Williams and Larkin's (2013) study on school children, whose age ranged from 8–11 years, revealed that girls outperformed boys in compositional fluency and text length, their study did not reveal a significant gender gap in terms of the quality of the text produced. Likewise, Jones and Myhill (2007) studied adolescents (13–16 years old) and found very limited evidence to suggest that girls produced better text than boys. Similarly, Spelman Miller et al. (2008) in her longitudinal study of 17 Swedish high school students (14 years old), revealed no significant effect of gender in FL (English) writing process, e.g., writing fluency, text length, time on task, revision, pause time, pause length, as well as text quality.

Different accounts have been offered to explain these contradictory findings. For example, Jones (2012) in her review of the studies of gender differences suggested that the mismatch between teachers' expectations and boys performance and writing style might negatively affect boys' attainment in the national writing tests. Furthermore, the discrepancies in the performance within each gender group might also lead to variation in the findings (Jones & Myhill, 2007). Gender difference in beliefs and motivation towards writing

could also explain the inconsistency of the findings (De Smedt et al., 2017; Frank Pajares & Valiante, 2001; Troia et al., 2013). Research has shown the potential role of attitudes and motivation in explaining the disparity in gender writing (e.g., De Smedt et al., 2017; Pajares & Valiante, 2001). For example, Pajares and Valiante (2001) and Pajares, Miller, and Johnson (1999) in their study of middle school students, 8–10 years, found that girls hold stronger writing self-efficacy beliefs—individuals' confidence about their own writing skills—and scored higher in writing task as opposed to boys. Whereas, boys tended to be more apprehensive about their writing skills and the writing task. They also revealed that self-efficacy is a significant predictor of writing performance and text quality.

In brief, gender has a peculiar status as it has been discussed quite frequently in writing research but the literature is quite mixed in this regard. As can be inferred from the above review that girls are better than boys in many aspects of writing. Beside the cognitive factors, attitudes and motivation towards writing and writers' own beliefs about their writing skills also account for gender gap. The above studies are consistently suggesting that gender difference is more apparent with younger age. Studies with older students seemed to suggest that there is limited evidence for gender difference. The above review also shows that most of the gender differences in writing was exclusively limited to L1 writing with school students, mostly in America and UK. Gender difference has been rarely studied in FL cognitive writing context with adult writers. Previous research has indicated that gender difference in writing might not be an issue with older students. However, the case might be different in FL adult learners since their linguistic skills in FL are less good. One potential difference between genders is language abilities as girls have been found to be linguistically better than boys (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Hyde & Linn, 1988; Özçalışkan & Goldin-Meadow, 2010). However, research on writing typically has not explicitly dealt with this (language ability and gender differences) as a major issue. As explained in section 2.7 the way in which gender differences are mediated by linguistic, cognitive and motivational factors has been given little discussion in cognitive writing research. For this reason, the current study did not consider a detailed review of how gender might play a role on cognitive writing.

This study aimed to fill in these knowledge gaps by exploring gender differences in L1 and FL writing with adult writers. In this sense, this study was exploratory in nature as it attempted to explore if gender differences exist in L1 and FL cognitive writing processes of adult learners and what accounts for this gender difference, e.g., FL proficiency and/or writing beliefs. By investigating gender difference in writing, the current study aimed to improve our understanding of gender differences in writing process, text quality and writing beliefs. More specifically, it contributed to the limited literature that has overlooked the factors that account for gender difference with adult writers in FL writing.

## **2.8 Overview of L1 and FL Writing Processes Research**

Process oriented research into FL writing has examined part of or the entire process of FL writing. Of particular interest for the current study is L1 and FL writing processes research related to the variables and aspects that are explored in the current study. The next sections highlight the following areas: 1) planning, 2) pause behaviours, 3) fluency, 4) revision, and 5) the process-product relation. An overview of the L1 and EFL writing processes of Arab students is also provided. Finally, implications of the reviewed literature and the research questions are introduced.

### **2.8.1 Planning Process**

The planning process is one of the areas that has drawn the attention of L1 and FL writing process research. According to Flower and Hayes (1981a), planning is the process where “writers form an internal representation of the knowledge that will be used in writing” (p. 372). This representation is not restricted to language, but could also be held as visual codes (e.g., an image). In addition, this knowledge could be very abstract, for example, a single key word could represent a whole network of ideas. Writers may engage in a number of sub-processes during the planning stage like generating and organizing ideas and goal setting (Flower & Hayes, 1981a). It has been established that the type and the amount of planning depends on the expertise of writers (Bereiter & Scardamalia, 1987; Hayes & Flower, 1980). For example, it has been found that expert writers spend more time making an initial plan for the whole text than less skilled writers (Sasaki, 2000, 2002; Victori, 1999).

However, it is not very clear from the previous research “who benefits from what type of planning and when”(Manchón & Roca de Larios, 2007a, p. 556). This could be because planning has been investigated from different perspectives. For example, while some scholars have focused on the use of L1 in FL planning (Akyel, 1994; van Weijen, van den Bergh, Rijlaarsdam, & Sanders, 2009), others have focused on the amount of time devoted to planning in terms of the total composition time (Manchón & Roca de Larios, 2007a), and others on the influence of outlining on the quality of the text (Ellis & Yuan, 2004; Kellogg, 1988).

A few researchers have made a distinction between advanced planners, who make an initial overall plan before they start writing, and emergent planners, who start writing as soon as they read the writing assignment as a way to find their focus and then create their plan during the course of writing (Manchón & Roca de Larios, 2007a). This kind of distinction is particularly important in FL writing as one would expect that linguistic knowledge in FL might have different effects for different types of planners. According to the cognitive overload theory and the influence of FL proficiency in writing, one might expect that FL writers would tend to devote more time making an initial plan before they start writing anything, e.g., to engage in more advance planning. One might also expect that FL writers would avoid planning during the course of composition (emergent planning), because translating and transcribing processes compete for the limited resources in the working memory while writing, thus planning during writing imposes more cognitive overload (Kellogg, 1988). Therefore, using an emergent planning strategy would be expected to compete with translating and transcribing processes during writing. In this sense, one expects that pre-task planning is an effective strategy in reducing the demands placed on the working memory as it allows writers to devote more working memory capacity to translation and transcription processes. This was found to contributes positively to writing fluency (Johnson, Mercado, & Acevedo, 2012) and writing fluency and final text's grammatical complexity (Ellis & Yuan, 2004).

L1 and FL writing research has shown that making an outline before putting pen to paper has positive effects on writing. For example, Kellogg (1988), in his study about the effect of outlining in L1 writing found significant advantages for outlining in terms of text quality. Ellis and Yuan (2004) also

found positive effects of pre-task planning on FL writers' fluency (number of syllabus per minute) and grammatical complexity (range of grammatical structures used).

Although Manchón and Roca de Larios (2007a) distinguished between advance and emergent planners, their study did not reveal significant effect of FL proficiency or language of composition (L1 vs. FL) on the writers in terms of applying one type of planning over another. However, they did report that using advance planning and emergent planning varied across individuals regardless of their FL proficiency and the language of writing. In a similar vein, Victori (1999) reported that the two skilled writers in her study showed a concern for the overall organization of the text. However, she found that these skilled writers employed different types of planning, with one of them using advance planning and the other one using emergent planning. Victori's (1999) study did not provide evidence about the influence of FL proficiency on the type of planning writers employed.

In another study, Sasaki (2000) used a cross-sectional and longitudinal study design to study the FL (English) writing process and product of four expert Japanese writers (those who regularly write academic papers in English) and eight novice writers (enrolled on an initial course in EFL writing instruction) both before and after instruction. Sasaki (2000) found that expert writers spent more time (20.5% of the total writing time) making a global plan before starting to write, compared to novice writers who devoted only 12.4% of the total writing time to pre-planning. She also reported that novice writers tended to pause more frequently than experts during writing. She pointed out that novice writers tended to stop and think of what to write next each time they finished writing one coherent chunk, whereas skilled writers paused less frequently during writing. Bereiter and Scardamalia (1987) identified the "what to write next" strategy as one of the features of novice writers' planning. The important thing about Sasaki's (2000) study is that she made a distinction between two types of planning (global and local) and found that these types of planning can be used to distinguish skilled and less skilled writers. According to her, global planning is "planning detailed, overall organization of the composition" which takes place before starting to write. On the other hand, the "what to write next" strategy involves more local planning (Sasaki, 2000, p. 278). Based on analyses of think-aloud protocols, Sasaki (2000) found that

expert writers used global planning (8.7%) more than novices (.04%). By contrast, novices employed more local planning (22.6%) than experts (11.5%). This means that experts devoted more time to plan both the overall content of the text and the way to express it effectively to meet the task requirements. Similar findings were also reported by Victori (1999). However, after six months of writing process instruction, novices, in Sasaki's (2000) study, spent relatively longer time making global plans. Sasaki's (2000) findings therefore provided empirical evidence to distinguish between skilled and novice writers in terms of planning in FL writing. However, her findings contradict the expectation made at the beginning of this section that FL writers would be more likely to make an overall plan before starting writing and would avoid planning during the course of writing.

Sasaki's (2000) findings can be explained in terms of Bereiter and Scardamalia's (1987) models of knowledge-telling and knowledge-transforming. It is possible that the skilled writers in her study used a knowledge-transforming strategy, while the novices used a knowledge-telling strategy. Thus, using global planning or local planning was not influenced by the FL proficiency, but by the writing strategy each group employed. This can be supported by Sasaki's (2000) findings that, after 6 months of FL writing instruction focusing on planning, novice writers started to employ more global planning. This means that the type of writing instruction the writers received affect the way they planned.

Overall, similarities and differences between L1 and FL in terms of planning process have been reported. For example, FL writers have been found to organize ideas (Skibniewski, 1988) and made overall organization before and during the formulation process in a similar way in both L1 and FL compositions (Jones & Tetroe, 1987; Manchón & De Larios, 2007; Sasaki & Hirose, 1996). Differences in planning behaviours in L1 and FL have also been reported. It has been found that planning behaviour in both languages can be qualitatively similar, but the amount of planning in FL is less than planning in L1 (Jones & Tetroe, 1987). For instance, the number of goals generated in FL tends to be less than L1 (Manchón & Roca de Larios, 2007a). In addition, it has been found that FL writers can experience difficulties in using and maintaining the goals and ideas that generated during the planning phase when engaged in the formulation stage (Manchón & Roca de Larios, 2007a; Moragne e Silva, 1989;

Skibniewski, 1988). These differences can be explained in terms of the potential effect of FL proficiency constraints as limited linguistic resources restrict writers' abilities to plan. It also influences the amount of time spent on planning, the quality of planning and writers' ability to follow their initial plans through writing (Manchón & Roca de Larios, 2007a; Moragne e Silva, 1989).

Manchón and Roca de Larios, (2007a) argued that writing research still lacks a well-established account of the nature of planning in general and of how planning behaviour varies across languages (L1 vs. FL). They also pointed to the importance of further investigating on the effects of writers' level of FL proficiency on the distribution of planning throughout the writing process. In addition to FL proficiency, other variables such as gender and writing beliefs need to be taken into account. It could be that individuals use different planning behaviours (advance or emergent) not because of the language of writing or their degree of linguistic proficiency in FL but because of the writing beliefs they hold. This study investigated the planning process of undergraduate Omani writers in L1 and FL writing. In particular, the study explored the amount of planning done before (advance) and during writing (emergent) and what concerns writers more during advance planning (e.g., content, text length, audience, language...etc) and if these vary across languages (L1 vs. FL), FL proficiency, gender and writing beliefs. The study actually focused on the two types of planning mentioned earlier in this section (advanced and emergent planning) as previous research was not clear about the effects of FL proficiency and language of writing on whether one type of planning is preferred over another. The study also looked at if amount and type of planning and individuals' concerns during planning account for differences in text quality. This aspect has received little attention in cognitive writing process research.

### 2.8.2 Pauses

Matsuhashi (1981) defined pauses as "moments of physical inactivity during writing" (p. 114). Research, taking the temporal perspective of language production, has established that pauses that occur during language production activity (e.g., writing or speaking) serve as windows for the underlying processes, which include conceptualization, taking decisions and controlling the message (Chanquoy, Foulin, & Fayol, 1996; Schilperoord,

1996). During the course of writing, writers constantly plan, formulate and revise. These processes can be tracked through pauses and revisions the writers make during their writing (Lingren & Sullivan, 2006). In fact, a relationship has been established between pausing in writing and planning. It has been argued that pauses in language production provide "observable and measurable cues as to where and how long writers halt in order to plan and decide upon what to write next," (Schilperoord, 1996, p. 21). This claim has been supported by a range of empirical studies.

For instance, Chanquoy et al. (1996) used five different text units, namely: paragraph, sentence, clause, phrase, and word to compare the pause lengths in the texts of ten university students. Their analysis indicated a correlation between the duration of pauses and the level of the text unit. In other words, they found that long pauses were positively associated with the initial locations of higher text units (paragraphs, sentences, and clauses). Conversely, short pauses were positively correlated with lower level unit (phrases and words). Their conclusion that "The cost of the processing carried out for each level varied according to the position of the unit in the hierarchy of units" suggests that the larger the unit produced, the more complex processing is required (Chanquoy et al., 1996, p. 42). Similar findings were also reported by Schilperoord (1996) who revealed that pauses' proportion and length are affected by the location of the language units, especially paragraph and sentence units.

The introduction of keystroke logging as a tool to collect writing process data has opened up opportunities to study the duration, distribution, and location of pauses within the written text more accurately. For example, Spelman Miller (2000) in her comparison study of L1 and FL writing processes, used the discourse perspective to relate the duration of the pause with its location. She tried to explore if pause' frequency, location and duration vary across writing topics. Her general conclusion was that writing topic has no significant effect on the frequency, duration and the location of pauses. Furthermore, her study replicated some findings reported by the previous study (e.g., Chanquoy et al., 1996), which indicated that pause length increases as the level of text unit increases. For instance, the shortest pauses occurred at word levels while the longest pauses occurred at clause and sentence levels. However, she found that FL writers tended to make longer pauses at all syntactic levels in general,

and at sentence and clause levels in particular. However, no significant differences were found between the frequencies of pauses in relation to these syntactic levels across the two languages (Spelman Miller, 2000).

Schilperoord (1996) assumed that pauses' length and location reflect two types of planning. First, long pauses reflect "globally oriented macro-planning" of the larger units in the text such as paragraphs; "macro-planning" refers to goal setting and general semantic selection. On the other hand, short pauses reflects "locally oriented micro-planning", which refers to the syntactic and lexical processes involved in language production (Schilperoord, 1996).

Flower and Hayes (1981b) explored the relationship between pausing and planning processes. They proposed two hypotheses to explain this relationship. The first hypothesis was that writers "pause in order to generate or plan what they are going to say next" (p. 230). Their second hypothesis was that when writers pause for significantly longer time "they pause in order to carry out more global rhetorical planning or problem solving which is not necessarily connected to any immediate utterances of piece of text" (p. 230). In their protocol analysis of the location and duration of the pauses made by one less skilled writer and three skilled writers, they found that writers tended to pause for a short time when they plan their next word or phrase and for a long time when they plan larger unit in the text (e.g., paragraph). Similar findings were also reported by Matsuhashi (1981).

It has been established that global planning (macroplanning) is a distinctive feature of good writing. By contrast, children and less-skilled writers have been found to use more local planning (microplanning) while composing (Bereiter & Scardamalia, 1981; Flower & Hayes, 1981b; Sasaki, 2000). Bereiter and Scardamalia (1981) indicated that children learn to write by developing their planning strategies from sentence level planning (local planning) to whole text planning (global planning). In fact, less skilled writers and FL writers have been found to pause frequently at the sentence level. On the other hand, more skilled writers have been found to make longer pauses before they begin to write (Sasaki, 2000, 2004). This suggests that pause location and duration might reflect writer's writing proficiency.

Research on pauses has suggested that studying pauses during writing may provide important insights about the underlying writing processes. However,

this aspect has received relatively little attention in L1 writing research in general (Spelman Miller, 2006), and in FL writing in particular, with a few exceptions (e.g., Al Gharni, 2010; Spelman Miller, 2000). Furthermore, most of the previous research has suggested that pauses reflect two types of planning, micro-planning or macro-planning. However, other factors that might cause pauses should also be considered. For example, Spelman Miller, (2006) pointed out that pauses could be due to a number of factors that are not related to the writing task such as interruption and responding to distractions. In this sense, variables such as FL proficiency level and writing beliefs that might affect the frequency, location and duration of pauses should be considered and investigated. Research on pausing informs this study by distinguishing between advance and emergent planners as initial pausing (before starting to write) best describes the advance planner while pauses during writing best describe the emergent planner.

### **2.8.3 Fluency**

Writing fluency is an essential indicator of writing competence and development because it can inform practitioners about the problems and difficulties that writers may have in their writing (Abdel Latif, 2009b; Lindgren, Miller, & Sullivan, 2008). Research in cognitive writing process has shown that FL writers are generally less fluent than their L1 counterparts (Chenoweth & Hayes, 2001; Waes & Leijten, 2015). Compared to speaking and reading fluency, writing fluency has been conceptualized in much more varied ways in the literature (Abdel Latif, 2013; van Waes & Leijten, 2015). The fact that some writing studies (e.g., Al Gharni, 2010; Chenoweth & Hayes, 2001; Johnson et al., 2012; Ong & Zhang, 2010; Sasaki, 2000; Spelman Miller et al., 2008) used more than one measurement to assess writing fluency is evidence that the writing fluency concept has been vaguely defined. For example, Johnson et al. (2012) used the total number of words written and the average sentence length to judge their participants writing fluency.

The definitional confusion about this construct could be due to the various product-based and process-based indicators that have been used to measure writing fluency (Abdel Latif, 2013; Abdel Latif, 2009b; van Waes & Leijten, 2015). The product-based measures, are related to the written text, include measures such as number of words, clauses, sentences, and average number

of words per clause and sentence. Some studies also used the number of words in the final text, number of words correctly spelled, number of written sentences and number of letter sequences to measure writing fluency (Ellis & Yuan, 2004; Johnson et al., 2012; Peng, Wang, & Lu, 2018). Using rate of production (number of words written per minute), also called composition rate, as an indicator for written fluency has occasionally been used in writing research (Al Ghamedi, 2010; Chenoweth & Hayes, 2001; Sasaki, 2000). By contrast, the process-based measures are more about the underlying writing process, e.g., translation process, and include measures like pauses rate and durations (Al Ghamedi, 2010; Medimorec & Risko, 2017)

Writing fluency measures are actually drawn from spoken fluency measures as both writing and speaking are considered productive language skills. Four different measures were identified by Skehan (2003) to assess speaking fluency. These measures are: 1) breakdown fluency e.g., pauses, 2) repair fluency e.g., reformulation, repetitions and substitutions, 3) speech rate e.g., number of words produced per minute; and 4) length of bursts produced between pauses. These measures have been used to address the issue of writers' fluency in writing, for example, pauses (e.g., Bosher, 1998), bursts (e.g., Abdel Latif, 2009a), composing rate (e.g., Sasaki, 2000; Spelman Miller et al., 2008), changes made to the texts (e.g., Knoch, 2007). For example, Spelman Miller et al. (2008) in their longitudinal study of 14 high school students found that the rate of production (calculated by the number of characteristics produced per minute) increased as their FL learning experience increased.

Chenoweth and Hayes (2001) believed that using these text-based indicators to measure written fluency may be effective indicators of writing development but they are inadequate when studying the fluency of the underlying writing process. In spite of their disagreement with text-based fluency measurements, they used composing rate as one of the writing fluency indicators in their study. Their study of 13 undergraduate students, revealed that compared to L1 writing, the average words produced per minutes were fewer in case of FL writing.

Abdel Latif (2009b, 2013) pointed out to the inadequacy of product-based measures of writing fluency, because such measures do not reflect the flow of the writing process of the writers. He explained that text length might vary

depending on a number of factors such as writers' "pre-task decision" about the number of words and paragraph to include in the text, their knowledge about the writing topic and their attitude towards writing (Abdel Latif, 2009b, p. 534). Abdel Latif (2009a), based on his study of thirty ELT undergraduate Egyptian students, using English tests score, think-aloud protocols, retrospective interviews and text assessment, reported that composing rate correlated negatively with the students' FL proficiency and text quality. Moreover, his analysis showed that the correlations between text quantity (number of words written) and the writers' FL proficiency and text quality were not significant. His study also revealed that composition rate depended on a number of factors such as writers' knowledge and familiarity with the writing topic and overall writers' writing strategies, e.g., their plan of how many pages, lines, or sentences to write.

Abdel Latif (2009b, 2013) also argued that dividing the quantity of the text produced by the time spent on producing the text to judge writing fluency is questionable. He explained that some skilled writers may produce fewer words per minute not because they are not fluent but rather they apply a more reflective style in their writing. Abdel Latif described these writers as "monitor overuses" (2009b, p. 534). Abdel Latif (2013) concluded that using text-based measures are more likely to reflect aspects of the written text rather than the writing processes involved in composing the texts fluently.

Process-based indicators such as pauses (e.g., Bosher, 1998) and bursts length (e.g., van Waes & Leijten, 2015) have also been utilized on the assumption that they are more directly related to the underlying process of writing than text-based measures. However, even these measures do not necessarily have a straightforward interpretation. This is because pauses may reflect different writing processes. For example, Baaijen, Galbraith and de Clopper (2012) argued that pauses might reflect planning for the next units of language, reflecting on and revising the produced or the planned units of language or rereading the text produced so far. These explained that these mental activities may vary depending on the individual's writing strategies. For example, fluency in writing has been associated with producing less and short pauses. However, writers might pause longer not because their writing fluency is less efficient but because they applied more reflective writing style as argued

Abdel Latif (2009b), so they pause longer to plan and revise the language they want to write before putting pen to paper.

Language bursts might reflect an initial formulation of thought a writers' attempt to improve the text produced previously (Baaijen et al., 2012). Average length of bursts has been adopted to assess writing fluency. Chenoweth and Hayes (2001, 2003) argued that using the length of P-bursts (clean language segments that end with pauses of 2 seconds or more) which reflect "the quantity of material that can be formulated in one planning episode" (Galbraith & Baaijen, 2015, p. 7), are important indicators of the translator's capacity and writers' differences in handling language knowledge. Chenoweth and Hayes (2001, 2003) and Hayes and Chenoweth (2006) reported that P-bursts were considerably longer in L1 compared to FL writing. Chenoweth and Hayes (2001) also found that less linguistically proficient FL writers produced shorter P-bursts compared to writers with higher FL linguistic proficiency. Chenoweth and Hayes (2001) pointed out that the newly proposed text (P-burst in their terms) reflects "the amount of ideas writers could access and translate in one time span" (p. 83). In other words, they believed that the P-burst's length reflects the efficiency of the translation process. Likewise, Miller et al. (2008) used keystroke logging to track their 14 high school students' writing process over three years, and reported that the length of the P-bursts (calculated by dividing the total number of typed characters by the total number of revision and number of pauses) increased over time. One might conclude that the length of P-bursts varies depending on a number of factors such as language of writing (L1 vs. FL) and writers' FL proficiency.

Abdel Latif (2009a) used the mean length of his participants' translating episode as a process-based measure to judge their fluency in writing. According to him, the translating episode is "any chunk that has been written down and terminated by a pause of three or more second by any composing behaviour" (Abdel Latif, 2009b, p. 531). Based on his study of think aloud protocols, three language knowledge tests scores, retrospective interviews and text scores of fifty-seven EFL Egyptian university students, found that the mean length of the translating episode correlated positively with FL proficiency and text quality scores. Abdel Latif (2009a) concluded that using the mean length of the language chunks produced during the translating episode is a valid indicator of the writers' fluency in writing.

Baaijen et al. (2012) argued, however, that variation in the length of P-bursts may not reflect the capacity of the translator, as claimed by Chenoweth and Hayes (2001), but rather depend on the writers' strategy in writing. They explained that writers who prefer to produce well-formed sentences may try out and revise several language bursts mentally before writing out a long burst fluently. On the other hand, writers who prefer to transcribe the output of the translator directly and then reflect on and revise it as they continue writing are likely to produce a series of short bursts interspersed with revision (Baaijen et al., 2012). Thus, differences in writing fluency would not necessarily be a direct reflection of language proficiency but might also reflect individuals' preferred strategy in writing.

The above overview shows that the majority of writing research has used product-oriented indicators to assess writers' fluency. However, it has been suggested that these do not provide very transparent measures. Thus, the current study adopted product and process-oriented indicators to measure writers' writing fluency in order to solve this debate (about the adequacy of which measures—process or product based measures— to evaluate writing fluency). The current study also explored the influence of language (L1 vs. FL), FL proficiency, gender and writing beliefs on writing fluency. More importantly, the study tried to find if writing fluency accounts for variation in text quality. Previous research has mainly focused on comparing writing fluency across languages (e.g., Chenoweth & Hayes, 2001; van Waes & Leijten, 2015), and the effect of FL proficiency on writing fluency (e.g., Abdel Latif, 2009a; Al Ghamdi, 2010; Chenoweth & Hayes, 2001; Spelman Miller et al., 2008) and a few studies has considered the issue of the association between text quality and writing fluency (e.g., Abdel Latif, 2009a; Al Ghamdi, 2010; Spelman Miller et al., 2008). In fact the scarcity of research in this aspect has motivated the current study to consider it. Furthermore, the study attempted to explain how these measures reflect the underlying cognitive processes involved in writing as most of the previous research tended to study writing fluency without relating them to the underlying writing process (except for, Abdel Latif, 2009b, 2013; Chenoweth & Hayes, 2001, 2003; Hayes & Chenoweth, 2006; Hayes, 2009).

#### 2.8.4 Revision Process

Revision has been recognized as an essential process in most writing process models (Chenoweth & Hayes, 2001; Flower & Hayes, 1981; Hayes & Flower, 1980). Revision is a process that can be directed "towards repossessing of any aspect of writing, including the conceptual content, the linguistic expression and the graphemic strings" (Stevenson et al., 2006, p. 203). Accordingly, revision can be carried out at different levels during writing, for example, content revisions are made in order to alter the information, while language revisions are carried out on aspects such as spelling, grammar, linguistic expression and punctuation (Stevenson et al., 2006).

As explained previously, writing sub-processes compete for the resources available in limited capacity working memory (see section 2.7). Therefore, "increased cognitive efforts devoted to one component is said to lead to a decrease in the remaining resources available for other components" (Stevenson et al., 2006, p. 203). It has been established by some researchers (e.g., Kellogg, 1994) that revising is more effortful process than translating in L1 writing. This is because writers need to carry out revision at multiple levels, e.g., content and language, during writing. In FL writing, one might expect, that the limitation of the writers' language knowledge in FL is likely to lead FL writers to concentrate more on lower level linguistic processing, and that would consequently reduce the amount of attention given to higher level processing (Schoonen et al., 2003; Stevenson et al., 2006). This argument has been supported by some empirical evidence. For example, Stevenson et al. (2006) studied the revision process of 22 FL high school Dutch writers when writing in L1 (Dutch) and FL (English), and correlated it to the quality of the text produced using think aloud protocols and keystrokes logging. They found that their participants made more revisions when writing in FL than L1 regardless of the writers writing proficiency level (high or low) or writers' characteristics (bilingual or monolingual). They also found that the frequency of language revisions (spelling, vocabulary and grammar) was significantly greater in FL than L1 whereas the punctuation and phrasing revisions was relatively similar in both languages. Similar findings, in terms of the frequency of language revisions in FL writing, were also reported by a number of other studies (e.g., Al Ghamdi, 2010; El-Aswad, 2002; Whalen & Menard, 1995). Stevenson et al. (2006) also reported that their participants made content

revisions infrequently in both languages. Their study did not report any significant difference between the two languages in terms of content revision. Stevenson et al. (2006) found that typing revisions (when writer accidentally press the wrong key) were the most frequent revisions made in both languages. Their findings showed no significant relationships between the number and type of revisions and the quality of the produced texts in both languages.

Thorson (2000) used keystroke logging to compare the amount and the types of revisions made by 18 English (L1) undergraduate writers learning German as a foreign language. His study distinguished between two types of revisions: immediate revision (if the distance between the position of the revision and the cursor was zero) and distant revision (if the distance between the position of the revision and the cursor was not zero). Thorson (2000) assumed that making more distant revisions would indicate that writers interact more with their text. He also hypothesized that FL would produce more distant revisions as FL writing involves going back and forth between sentences and paragraph to revise words and phrases or add or delete information. Thorson (2000) found that FL writers made more of both immediate and distant revisions when writing in FL than L1. In the same vein, Al Ghamdi (2010) found that immediate revisions were the most common revisions performed by her EFL participants. This may imply that her participants could follow a linear writing process technique and that they fail to realize the recursive and modifiable nature of writing process. According to Thorson (2000), these writers (who are reluctant to move around their text to make changes after the text has been produced) lack the ability to interact with their writing process and to move around their text and modify it after they produced it and proceeded their writing. Similar findings were also reported by Barkaoui (2016), as his FL (English) writers tended to make more precontextual revisions where writers correct themselves immediately as they write. His participants also tended to revise form, 46% of these revisions were typography and 32% were language, more often than content, 13%. Barkaoui's (2016) study also revealed that his FL writers' revision was affected by their FL proficiency as they tended to revise more the less they were proficient in FL and that the amount of revisions decreased as their FL proficiency increased. Although, Barkaoui (2016) found that writers with lower FL proficiency made significantly more language revisions than writers with higher FL proficiency, his study did not report a significant difference between

the two FL proficiency levels (high vs. low) and the amount of content revisions.

It can be concluded that FL writers tend to make more language or surface revisions when writing in FL than L1 writing. However, the frequency of language revision decreases as FL writers' language command increases (Al Ghamdi, 2010). This could be explained in light of the role of language proficiency in writing as FL writers' language proficiency is limited in FL. Thus, language issues such as spelling, grammar and vocabulary, would be one of their concerns during writing.

Previous research tended mostly to compare the amount and the type of revision across languages L1 and FL (Stevenson et al., 2006; Thorson, 2000). Research that has considered the influence of factors such as gender and FL proficiency on revision process is scarce. Furthermore, it has been assumed that carrying out more content revision results in better text quality (Bereiter & Scardamalia, 1987), however, on the one hand this hypothesis has rarely been tested in the literature and on the other hand the findings were inconsistent. For example, while Stevenson et al. (2006) found no effect of content language on the quality of the text produced in both languages (L1 and FL), Al Ghamdi (2010) reported a positive correlation between content revision and text quality of her FL writers. In order to fill in these knowledge gaps, the current study explored if language (L1 vs. FL) writers' language knowledge in FL, gender and writing beliefs influence the amount, location (immediate, distance, or end) and type (content or language) of revisions carried out by undergraduate Omani students and if these revisions explain variations in text quality.

### **2.8.5 Linking Writing Process to the Final Text**

Relating writing process to text quality has also been the subject of attention by L1 and FL researchers (e.g., Breetvelt, van den Bergh, & Rijlaarsdam, 1994; Kellogg, 1994; Rijlaarsdam & Van den Bergh, 2006). Studies that have been carried out to examine process–product relations in FL context have mostly focused on the role of a single cognitive process such as planning (Ellis & Yuan, 2004; S Jones & Tetroe, 1987; Rostamian, Mohammad Fazilatfar, & Akbar Jabar, 2017), revising (Stevenson et al., 2006), or meta-cognitive and linguistics knowledge (Schoonen et al., 2003). Others have studied the role of

multiple cognitive processes on the quality of the written texts (Al Ghamdi, 2010; Uzawa, 1996).

Ellis and Yuan (2004) in their study of 42 EFL learners' texts, reported that pre-task planning resulted in higher writing fluency (syllables per minutes) and greater syntactic diversity (variety of different grammatical forms used).

Kellogg's (1996) model of working memory has been widely used to explain the positive influence of planning on the quality and fluency of writing.

According to Kellogg' (1996) model, planning and translation compete for the limited resources of the working memory during the writing process. In this sense, pre-task planning can play a role in reducing the demands placed on the working memory, allowing writers to devote more working memory capacity to the translation process, with positive effects on fluency and text quality (Johnson et al., 2012). Abdel Latif (2009b) and Al Ghamdi (2010) reported positive correlations between their FL writers' text quality and the length of P-burst (P- burst length arguably reflects the translation process (Abdel Latif, 2013; Chenoweth & Hayes, 2001).

However, Breetvelt et al. (1994) argued that assuming a causal relationship between specific cognitive process and the finished product should be treated with more caution. They argued that the relation between text quality and the frequencies of a certain cognitive process is time dependent. This means that "cognitive activity might have a different impact, depending on the moment it is engaged in during the writing process" (Breetvelt et al., 1994, p. 103). Their findings suggested that the same cognitive activity that positively influences text quality during a specific temporal episode of writing might have a negative effect during another stage of writing. For example, they found that reading the task assignment during the first episode had a positive effect on the text quality but it had a negative effect during the second episode. This could be because the same cognitive activity functions differently in different writing stages. For instance, reading the prompt at the beginning helps to internalize the writing assignment, while reading it at later stages might serve as content generation or a reference for writers to see if they are on the right track (Breetvelt et al., 1994).

Furthermore, Spelman Miller et al. (2008) studied whether FL text is predicted by fluency and pause patterns of 17 Swedish high school students studying English as L2. Their longitudinal study which lasted for three years revealed

that fluency (as measured by number of typed characters and/or revisions – burst) and fluency during burst (as measured by the writing time between pauses and/or revisions) contribute in predicting text quality. They also reported that neither revision nor pauses accounted for variation in text quality. Similarly, Stevenson et al. (2006) studied 22 Dutch secondary school students studying English (L2). Their studies failed to find significant correlations between the type of revision carried out and text quality. Al Ghamdi (2010) studied the FL writing process of 93 females undergraduate students and found that fluency (as measured by number of words per minute and the mean length of text span) predicted the text quality. She also reported that type of revision (language vs. content) and location (immediate vs. distant) did not account for text quality. However, Al Ghamdi (2010) revealed that revisions' frequency affected text quality negatively (that is the more revisions carried out the poorer the text).

The above overview clearly suggests that more research is needed to find out if variation in performing different writing processes influences text quality. This is particularly valuable in educational contexts as it provides teachers and practitioners with more insights about the problems their students have. This also helps to identify which writing sup-processes the teachers need to focus on to improve their students' text quality.

## **2.9 Research on L1 and EFL Writing Processes of Arab Students**

A relatively small number of researchers has adopted the process perspective in studying L1 and/or FL compositions of Arab writers. This small number of studies makes it difficult to generalize the findings about Arab writers' writing. However, these studies have provided some insights about how Arab writers approach the task of L1 and FL writing (Abdel Latif, 2009a). In what follows a number of insights drawn from research in L1 and FL writing processes in Arab context are presented.

First, Arab writers employ similar writing patterns when they write in L1 and FL (Al haysony, 2008; El Mortaji, 2010; El-Aswad, 2002). These patterns are similar to the ones employed by native speakers when they compose in their first language. For example, El-Aswad (2002) studied L1 (Arabic) and FL

(English) writing processes and text quality of 12 Libyan university students. Using think-aloud protocols, observation, interviews, questionnaires and written texts, his study revealed that his participants tended to transfer their L1 writing strategies to the FL writing task: his participants “displayed a unitary composing style across languages” (El-Aswad, 2002, abstract). This means that Arab writers use the same writing patterns that (L1) English writers use. This could suggest that writing process patterns are universal (Al haysony, 2008). This could also explain the popularity of Hayes and Flower's (1980) model as it can be used to study any writing process regardless of the language of the writing. It is worth noting that using similar writing strategies when writing in different languages could also be because these strategies are transferable.

Second, proficiency in FL seems to be an important indicator of Arab writers' FL writing process and text quality (Abdel Latif, 2009a; Al Ghamdi, 2010; El-Aswad, 2002). For instance, Al Ghamdi (2010) used keystroke logging, retrospective methods and text assessment to track the development of the FL (English) writing process of 93 EFL female Saudi students majoring in ELT (English language Teaching) and IT (Information Technology) at three different academic levels (semester 1, 4 and 8). Her cross-sectional study revealed that students of both majors demonstrated systematic development in their writing process and text quality through their academic study. Her findings also showed that students in their eighth semester applied more global revision (content and text structure), showed better awareness of their audiences and the writing task's demands, and that their writing became more fluent and the quality of their written text improved. Her analysis showed that ELT students in their eighth semester demonstrated more improvement in terms of text quality and fluency than IT students in the same academic semester. She explained the improvement of ELT student writing in light of formal FL proficiency and instruction. She claimed that studying ELT as a major had helped ELT students to access FL knowledge more easily and automatically and to reduce their linguistic concerns because English had been both the subject and the vehicle of learning. Some scholars have claimed that the less advanced level of English language proficiency is evident in Arab writers' struggle to find words, organizing their ideas and their concerns with grammatical structure (Al Ghamdi, 2010; El-Aswad, 2002).

Third, research has suggested that Arab writers do not spend much time on planning, rarely make notes before writing, tend to make mental plans and tend not to follow their initial plans in both languages (Al haysony, 2008; Mahfoudhi, 2003). For instance, Mahfoudhi (2003) in his case study of Tunisian EFL university students using think-aloud protocols, immediate retrospective comments, questionnaire and text assessment, found that these students planned very little and rarely made notes before writing their EFL text and hardly wrote more than one draft.

Fourth, research has suggested that Arab writers tend to focus relatively more on organization and content revisions in the case of L1 writing (El-Aswad, 2002), but on grammar, vocabulary and spelling revisions in FL writing (Al Ghadri, 2010; El-Aswad, 2002). This reflects the Arab students' greater concern for language correctness of the written text over content and organization. This in fact reflects the focus of writing instruction, in most of the Arab world, on writing product over process (El-Aswad, 2002). However, Mahfoudhi (2003) reported that his Tunisian EFL students paid more attention to meaning over grammatical form in EFL writing.

Fifth, Arab writers have been found to have little concerns for their readers in both languages L1 and FL (Al Ghadri, 2010; El-Aswad, 2002). This finding is consistent with Hinds' (1987) claim that Arabic is a reader-responsible language as the reader has to figure out the writer's intended message. It could be that the participants in these studies had transferred this strategy when writing in FL as well.

Sixth, Mahfoudhi's (2003) and Fageeh's (2004) studies of Tunisian and Saudi EFL writers respectively revealed that the Arab EFL texts typically lack a thesis statement, argument support, and adequate transitions. Mahfoudhi (2003) attributed these problems to the insufficient use of planning and note-taking before writing and to students' revision strategies. He believed that these problems are due to the inadequate writing practices in writing classes. Similar conclusions were also drawn by Alam (1993) and El-Aswad (2002). For example, El-Aswad (2002) pointed to the inappropriateness of FL writing instruction that is mainly based on a product oriented approach, and hence, pays more attention to language than to the process of writing itself. Alam (1993) also blamed the teaching methods, used to teach writing in the Arab world for inhibiting students' writing as they depend largely on applying

grammatical rules. Furthermore, EFL Arab writers tend to include a lot of repetitions and pauses in EFL writing. Arab writers, like FL writers in other contexts (e.g., Friedlander, 1990; Woodall, 2002), have been found to seek help from their L1 in the course of FL writing to compensate for their limited linguistic skills in FL (Abdel Latif, 2009a; Alam, 1993; El Mortaji, 2010; El-Aswad, 2002).

## **2.10 Implications of the Reviewed Literature and Research Questions**

The literature review informed the current study in a number of aspects. Firstly, it helped in selecting the study design and data collection instruments. Secondly, it informed the study in choosing the language test, to assess students' English language proficiency, and in constructing the questions for the immediate recall questionnaire (IRQ). It also contributed in selecting the writing task and implicit writing beliefs scale. Furthermore, the reviewed literature drew our attention to a number of knowledge gaps and methodological limitations in the previous research.

A number of knowledge gaps can be identified from the overview of the literature. First, while little is known about L1 and FL Arab students writing processes, nothing is known about L1 and EFL writing processes of ELT undergraduate Omani students. Second, Abdel Latif (2009a) concluded that "we still need to know the patterns of interaction between ESL/EFL writers' linguistic knowledge levels and their composing process" (p. 97). Section 2.7.2.2 shows that research has provided contradictory findings in terms of the role of FL proficiency in FL writing process. This leaves the door open for further research to be carried out exploring the patterns of interaction between FL proficiency and FL writing process and written text.

Furthermore, many studies that have assumed that the less advanced proficiency in FL affects FL writing and text quality negatively did not provide a very clear-cut measurement of writers' FL proficiency. For example, Al Ghamdi (2010); Chenoweth and Hayes (2001) and El-Aswad (2002) assumed that belonging to a certain academic semester provides an appropriate indication about students' FL proficiency. However, it is not uncommon that students' FL proficiency varies within one classroom and semester (Al-Badwawi, 2011).

Abdel Latif (2009a); Manchón and Roca de Larios (2007a) and Roca de Larios et al. (2006) are examples of the studies that used reliable tests e.g., Oxford Placement Test (OPT) to measure their participants' proficiency in FL. OPT was used in this study to assess the participants' language proficiency in English.

Third, while a little is known about the effects of implicit writing beliefs on L1 writing processes and text quality, nothing is known about their effect on FL writing processes and written product. More importantly, we do not know whether these beliefs vary across languages and students' FL proficiency and gender. We also need to understand the contributions of implicit writing beliefs to the students' writing process and text quality in both languages.

Fourth, findings on gender differences in writing research have been inconsistent. Moreover, gender difference in adult FL writing process has been rarely discussed. These suggest that this area considers some attention as it contributes to give a clear picture about gender difference in writing process in general, and FL writing process in particular.

Fifth, previous research was not clear about the type of planning (advance or emergent) employed by writers when writing in L1 or FL. Research was also not clear in terms of what factors might affect these two types of planning (e.g., FL proficiency).

Sixth, section 2.8.3 showed that measuring writing fluency has been a matter of debate in writing research (Abdel Latif, 2009b; van Waes & Leijten, 2015). Most of the reviewed studies used product-oriented indicators (e.g., number of words written) to judge writers' writing fluency. More strikingly, the majority of these studies have discussed different fluency measures, but they did not really explain how these measures relate to the underlying writing processes. Thus, this study adopted both product and process-based measures for writing fluency to contribute in exploring this debate. The study intended to provide empirical evidence to further our understanding about the concept of writing fluency and how best it can be measured. More importantly, the study aimed to explain how these measures reflect the underlying cognitive writing processes. Furthermore, the study aimed to find if writing fluency explains variation in text quality as previous research has overlooked this aspect.

Seventh, an important question that deserves more attention particularly in FL writing is whether writing processes as reflected in pauses, fluency and

revision account for variation in text quality (Révész et al., 2017). Although the relationships between text quality and writing process has been discussed in L1 writing (e.g., Breetvelt et al., 1994), only a few research considered these associations in FL writing research (e.g., Abdel Latif, 2009a; Al Ghamsi, 2010; Miller et al., 2008; Revesz et al., 2016; Stevenson et al., 2006).

In addition to these knowledge gaps, a number of methodological limitations can be identified from the reviewed literature. First, except for a few studies that used keystroke logging (e.g., Al Ghamsi, 2010; Spelman Miller, 2000; Stevenson et al., 2006; Thorson, 2000), the majority of research has relied on think-aloud protocols as the main source of evidence about writing processes. Janssen, van Waaes and van den Bergh (1996) described think-aloud technique as being “reactive” (p. 233). They explained this is because this technique might interfere with and disturb writers’ cognitive processes as it requires writers to write and speak at the same time. Think aloud protocols might also impose additional cognitive load on the writing process, which in turn might affect the validity of the data (Spelman Miller, 2000; Thorson, 2000).

Furthermore, the small sample sizes used in most of the research is another limitation as generalizing the findings of such research is problematic. For example, Khwaileh (1998), El Mortaji (2010), and El-Aswad (2002) used 3, 18 and 12 participants respectively. It is worth noting that using small sample size could be due to the use of think-aloud protocols as a main method for data collection because analysing think aloud protocol is costly in terms of time.

Taking these knowledge gaps and methodological limitations into account, the present study aimed to explore the effects of linguistic proficiency in FL, gender and implicit writing beliefs on the L1 and FL writing processes and written products. It also aimed to investigate whether writing processes could account for variation in text quality. The study attempted to answer the following questions:

1. How does the text quality of undergraduate Omani students in FL compare to that of L1 and does this vary across English language proficiency and gender?
2. To what extent translation process of undergraduate Omani students is more efficient in L1 compared to FL and does this vary depending on writers’ FL proficiency and gender?

3. How does efficiency in translation processes of undergraduate Omani students relate to their text quality?
4. To what extent writing sub-processes of undergraduate Omani students (e.g., planning and revision) differ across L1 and FL and are these differences moderated by FL proficiency and gender?
5. To what extent variation in the undergraduate Omani students' text quality could be explained in terms of their writing processes?
6. What are the relative strength of undergraduate Omani students' different writing beliefs and how do these compare with those found in previous research by Sanders-Reio et al. (2014)?
7. How do undergraduate Omani students' writing beliefs vary across languages of writing (L1 and FL), FL proficiency and gender?
8. How do undergraduate Omani students' writing beliefs account for variation in L1 and FL writing processes and text quality?

## **2.11 Summary**

This chapter has set out the theoretical background for the present inquiry. It introduced the four cognitive models of writing that informed the current study. The concepts of working memory overload, socio-cognitive and FL proficiency were also presented. Moreover, the literature on writing research was reviewed. Additionally, the main insights and implications drawn from the literature review were presented. Finally, the research aims and questions were summarized.

# Chapter 3: Research Methodology

## 3.1 Introduction

The aim of this chapter is to present and discuss the research methodology. It begins by presenting the research paradigm and approach. Later, a description of the study design follows. In addition, the rationale for choosing this design in light of the research questions is discussed. This is followed by introducing the participants and the factors that determined the selection of those particular participants. A description of data collection methods is introduced along with the factors that contributed in selecting these specific methods. Then, the procedure that was applied in conducting the study was described and explained. In addition, this chapter introduces the different variables of the study (independent and dependent variables) and how they were measured. Finally, the ethical considerations associated with the study are presented.

## 3.2 Research Philosophy and Approach

Creswell (2014) stated that philosophical ideas affect the practice of research, therefore, they need to be identified. Creswell (2014) and Scotland (2012) argued that research practice in education can be viewed through three main perspectives. The first perspective is the positivist perspective which makes use of scientific methods of inquiry. The second one is interpretivism which utilizes a naturalistic perspective. The third one utilizes views from critical theoretical perspectives. Scotland (2012) established that these philosophical views differ in terms of three main components:

Ontology: the nature of reality and knowledge

Epistemology: how knowledge can be created

Methodology: how data is collected and analysed

The ontological position of positivists, commonly known as “scientific method” is based on realism (Cohen, Manion, & Morrison, 2011; Creswell, 2014; Scotland, 2012). Positivists believe in the existence of reality that can be obtained through direct experiment or observation. According to this view, “The truth is out there, and it is the job of the researcher to use objective

research methods to uncover that truth" (Muijs, 2011, p. 3). Positivists assume that reality exists independently from individuals/researchers. This indicates that positivists assume that reality is not mediated by individuals' sense (Scotland, 2012).

The positivists adopt objective epistemology with a conviction that meaning (reality) solely resides in object, not in the "conscience of the researchers" and researcher should obtain this meaning (Scotland, 2012, p. 10). In this sense the object/phenomena, being studied, and the researcher are independent entities. Muijs (2011) argued that positivist researchers value methods adopting objective perspective in which researchers detached themselves from reality. He explained that this detachment is important to avoid bias caused by the presence of the researcher. Theories and laws are developed through careful and strict observations and measurements (Cohen et al., 2011; Creswell, 2014). Creswell (2014) and Scotland (2012) maintained that within this paradigm, understanding and developing knowledge is achieved through determining the relationships that exist between variables. Accordingly, relationships can be proposed and tested and these relationships might be either accepted/verified, rejected or refined (Creswell, 2014; Muijs, 2011; Scotland, 2012).

Positivists value methodology which are directed at explaining relationships (Cohen et al., 2011; Creswell, 2014; Muijs, 2011; Scotland, 2012).

Experimental and correlational studies are very common and valuable in positivist research where variables (independent and dependent) are clearly and carefully identified and numerically measured in order to facilitate the development of knowledge (Creswell, 2014). This usually involves random sampling, controlling variables, and empirical testing (Scotland, 2012).

Muijs (2011, p. 3) argued that the way positivists view the world as "a fixed laws of cause and effect" and that absolute reality can be objectively measured is problematic. He explained that researchers are part of the world they are researching and observing. Therefore, researchers cannot completely detach themselves from the context of research or the phenomena they are researching. Muijs (2011) stated that what is researched and the findings of the research are influenced by researchers' background, experience and beliefs.

Post-positivism represents “the thinking after positivism” (Creswell, 2014, p. 7). This view accepts the critique of positivism that absolute truth of knowledge is difficult to find. However, post-positivists still hold the view of realism. In contrast to positivists who focus on certainty, post-positivists focus on “confidence—how much can we rely on our findings? How well do they predict certain outcomes?” (Muijs, 2011, p. 5). This view realizes that acting completely as an objective and unbiased outsider when observing or studying the world is difficult (Muijs, 2011; Scotland, 2012). Having said that, however, objectivism is highly emphasized as an important aspect of competent inquiry in the post-positivism view (Creswell, 2014; Muijs, 2011). In this sense, methods and conclusions of bias should be considered and examined (e.g., standard validity and reliability) within the post-positivist perspective (Muijs, 2011). Post-positivism suggests that “we cannot be positive about our claims of knowledge when studying the behaviour and actions of humans” (Creswell, 2014, p. 7). This suggests that absolute truth, as required by positivists, is difficult to be established, particularly when dealing with humans in social contexts.

The current study is placed within the post-positivism paradigm. Creswell (2014, p. 7) stated that post-positivists hold a “deterministic philosophy in which causes (probably) determine effects or outcomes”. This indicates that a researcher, within post-positivism paradigm, attempts to establish relationships between variables and presents them in terms of questions and hypotheses. This idea seems to fit the purpose of the current study of exploring the relationships among different variables, e.g., the relationship between students’ writing beliefs and their writing processes. The problems studied by post-positivists require them to recognize and assess the causes that affect the outcomes (Creswell, 2014). As the study seeks to find the effects of independent variables (Language of writing, FL proficiency, gender and writing beliefs) on a number of dependent variables (e.g., planning and revision patterns), adopting a post-positivist perspective is considered plausible.

Creswell (2014) and Muijs (2011) maintained that post-positivist goals are best approached by means of a quantitative approach. They argued that quantitative methods help in testing the relationship among variables. The study’s method of inquiry is quantitative. The most important aspect in

research within post-positivist perspective is the careful design of the research. This requires that all variables involved in the study are carefully and clearly identified and assessed. The current study's measures of FL proficiency, WBS, planning and pause patterns, fluency, revision behaviours, writers' awareness of their role and their audience, writers' knowledge development, writers' concerns, writers' text quality were quantified and statistically tested for significance. Furthermore, the approach taken by post-positivists is "reductionist" (Creswell, 2014, p. 7). This suggests that behaviours, ideas, performance, concepts or beliefs need to be reduced to small and discrete sets of variables in order to statistically test and measure the relationships between them. In this research, language of writing, participants' FL proficiency, gender and writing beliefs were treated as independent variables. While, planning, pauses and revision patterns, fluency measures, writing time, writers' role and concerns, writers' awareness of their readers, knowledge development and text scores were treated as dependent variables in order to test the correlations between them. This also helped to attest the effect of independent variables on the dependent variables. Since the issue of bias is highly valuable in post-positivism paradigm, this issue was considered in this research. For example, reliability of the OPT, WBS' scales, inter-rater reliability of text assessment were calculated and discussed.

### **3.3 The Study Design**

The cross-sectional/correlational design that was used in this study was a mixed one, with one within-subject variable and the remainder between-subject variables. The within-subject factor was language of writing (L1 vs. FL). The between-subject factors were students' proficiency in English language and gender. This kind of design has been adopted by a number of studies (e.g., Chenoweth & Hayes, 2001; Manchón & Roca de Larios, 2007a; Roca de Larios et al., 2008). This design helped in exploring the relationships between variables. It also allowed to make comparisons between the results across language of writing (L1 vs. FL), gender and different proficiency levels in FL. Using this design helped to control variables (e.g., language of writing, gender and FL proficiency) and measure the effects of independent variables on the dependent variables. Thus, each participant was asked to write two essays, one in L1 and one in FL (order of topic and language was counterbalanced). The

participants were asked to complete OPT to assess their language proficiency in English. Furthermore, WBS was administered to assess their writing beliefs. Keystroke logs and IRQ were collected to track their writing processes. Finally, their texts were assessed, see section 3.6 for more details about the procedures that were implemented in the study.

### **3.4 Participants**

The research involved 77 undergraduate Omani students of both genders (43 male and 34 female) studying at Rustaq College of Applied Sciences in Oman whose age ranged between 20–23 years. These students were enrolled into the English Language Teaching (ELT) major. Arabic is the first language (L1) of all of these students and English (FL) is the medium of instruction at the college. Furthermore, they all had similar educational experience in learning English as a school subject before joining the College. All pupils in Oman start learning English from grade one at school until grade 12, and the English school curriculum is the same all over the country (Al-Badwawi, 2011).

The majority of the participants were enrolled in the foundation programme (FP) before starting their major. This is an intensive English language preparation programme that aims to improve students' language skills and to equip them with the necessary academic skills in order to cope with their academic majors' requirements. Maths and computer skills are also taught along with the language courses. The duration of the FP differs from one student to another depending on their placement test score. The students are either required to study one semester (15 weeks), two semesters, three semesters, or four semesters. After passing the FP, ELT students receive instruction in English language subjects like: phonetics, phonology, grammar, reading and vocabulary, essay writing, children's literature, English literature, listening and speaking, teaching methods, reading in applied linguistics and sociolinguistics. Furthermore, they are regularly required to submit written research, reports, and written assignments in English to fulfil their academic courses' requirements, and their exams are mostly based on academic essay writing.

Teaching writing in general and the writing process in particular is overlooked in the school curriculum for both L1 and EFL (see chapter 1 for more details

about teaching writing). When joining the college, the students receive a considerable amount of instruction in EFL academic writing as most of their modules' assessments depend on academic writing (e.g., writing report, research, or essay writing during exam). However, L1 writing is neglected at the college level.

Selecting these particular participants contributed to the homogeneity of the current research's participants. This is because they have similar L1, had similar school curriculum and educational experiences, underwent a similar FP and were exposed to English language every day in studying their disciplines. The number of the participants (77) is considered adequate in order to increase the statistical power of the analysis. Previous cognitive writing process research has been criticized for having small sample sizes, for example, 15 participants (Hirose, 2003); 22 participants (Stevenson et al., 2006); 13 (Chenoweth & Hayes, 2001) and 6 participants (Pennington & So, 1993). Drawing conclusions about the writing process based on studying small number of participants might be inadequate and problematic.

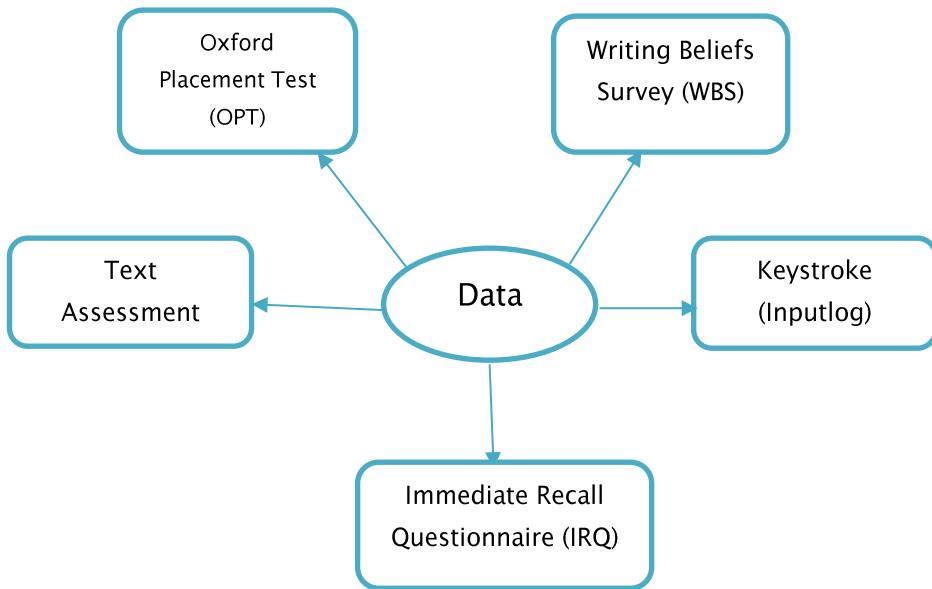
The study considered "purposive" sampling (Mackey & Gass, 2005) when selecting the participants. For example, the participants were drawn from two different academic years (second and fourth). The rationale of selecting two academic years was based on the assumption that these two groups would have different FL proficiency which is one of the factors that was investigated in this research. Thus, it was expected that these two groups would probably perform differently in OPT. On the other hand, participation from each level was done on a voluntary bases as participation was welcomed from all of the students within these two academic levels. Students were encouraged by their teachers to take part in the research (see 3.6).

As the participants of the study belonged to different academic years (second and fourth) one would assume that second year students would be of a lower EFL proficiency level while the fourth year students would be of a higher EFL proficiency level. However, being in the same year of study does not necessarily mean that all of the participants have the same linguistic profile. In the context where the present study took place, it is not uncommon that in the same level of study students with very low English language proficiency study with those who are considered intermediate or advance FL learners (Al-Badwawi, 2011). Clearly, linguistic proficiency influences writing performance

as explained in section 2.7.2 Therefore, OPT was administered first to determine students' language proficiency in English. A similar procedure was used by a number of researchers (e.g., Abdel Latif, 2009a; Manchón & Roca de Larios, 2007a; Roca de Larios et al., 2001).

### **3.5 Instruments of Data Collection**

Incorporating new research methods in cognitive writing process research was necessary to cope with the shift of writing research focus from the product-oriented approach to the process-oriented approach in writing. A number of research methods and techniques have been developed to collect and analyze writing process data such as think-aloud protocols, introspective protocols (stimulated recall and immediate recall), questionnaires, text analysis, observation, video based observation and keystroke logging techniques (Abdel Latif, 2008; Barbier, Jullien, & Provence, 2009; Leijten & van Waes, 2013). The instruments used to collect the data in this study can be organized into (i) instruments to measure independent variables including OPT and WBS; (ii) instruments to measure the process measures (dependent variables) including data obtained from keystroke logging and IRQ; (iii) instrument to measure the final product including text quality assessment, see figure 3-1. The following sections describe each of these instruments along with the rationale for selecting them in reference to the current study questions. Table 3-4 presents the research questions along with independent and dependent variables and the statistical tests.



**Figure 3-1: The main instruments for collecting the study's data**

### 3.5.1 Instruments for Independent Measures

#### 3.5.1.1 Allen's (2004) Oxford Placement Test (OPT)

The OPT is composed of two parts: listening and grammar. The test consists of 100 multiple-choice items, 50 items in each part. On average, the completion of this test takes one hour, 10 minutes for the listening section and 50 minutes for the grammar part and its total score is 100. The grammatical structures included in the test were chosen from the structures regularly covered by most of the course books and public examinations such as those used by British Council (Abdel Latif, 2009a). Allen (2004) mentioned that OPT has been administered to students with different English language levels in 40 nationalities. Allen (2004) maintained that the language used in OPT is controlled and counterbalanced, so that the reliability of the test is high. Wistner, Hideki and Mariko (2008) compared the reliability of OPT and Michigan English Placement Test (MEPT). Their study which was based on studying 132 university students in Japan showed that the reliability of OPT (Cronbach's alpha was .809) was higher than that of MEPT (Cronbach's alpha was .753). The current study revealed a high reliability score for the OPT as Cronbach's alpha was .806. OPT was used in the current study to assess the participants' English language proficiency levels. A number of previous studies also used OPT to measure the participants' EFL proficiency levels (Abdel Latif, 2009a; R. Manchón & Roca de Larios, 2007a; Nicolás-Conesa, Roca de Larios,

& Coyle, 2014; Roca de Larios et al., 2006). Based on Allen's (2004) interpretation of the significance of the OPT scores, the participants of the current study were categorized as “lower—intermediate –modest users” based on their scores in OPT (Mean=121.61, SD=10.37).

### **3.5.1.2 Writing Beliefs (WBS)**

The WBS proposed by Sanders-Reio et al. (2014) was administered to the students at the beginning of each writing session (see 2.7.3 for more details about this survey). In order to ensure that the students understand the statements well, three teachers of English language at the college whose mother tongue is Arabic translated the survey to Arabic. It was first translated by one of these teachers and then was double checked by the second one and then verified by the third teacher. In order to evaluate the validity of WBS a pilot study was conducted before the main study took place. 206 undergraduate Omani students (101 male and 105 female) whose ages ranged from 20–25 years from the Rustaq College of Applied Sciences took part in this study in spring 2015, in the second semester. These students were enrolled in different academic programmes at the college (e.g., ELT, IT and IBA). They were in different academic stages, ranging over the second, third and fourth years of their academic programmes. English Language is the medium of instruction at the College. They received considerable instruction in academic writing as most of their modules assessments depend on academic writing (e.g., writing report, research, or an essay during and exam). All of the students had similar background and their first language is Arabic. The participants were required to complete the WBS twice: once for writing in their L1, and once for writing in FL. The participants were provided with a version of a survey that contains the items written in English and Arabic (see appendix A). They were asked to rate the writing beliefs statements on a Likert-Scale of 1–5, with 1 representing strongly disagree and 5 representing strongly agree. The pilot study revealed that the items of WBS were clear to the students and that they did not have a problem with understanding the statements.

During the main study phase, the translated version of WBS was administered at the beginning of the writing session. The rationale for giving the participants the survey before writing the text was to encourage them to reflect on their experience in writing in general rather than just on their experience of writing the text during the writing session. Administering the questionnaire

after writing the text might prompt the participants to reflect on the writing experience they had just finished.

Table 3-1 shows that the reliability scores for the writing beliefs scales, of the main study, were relatively low in both languages, except for audience orientation scales. Cronbach's alpha of 0.7 is the cut-off value for being acceptable (Pallant, 2010). Cronbach's alpha value of less than 0.7 is considered low and questionable but it is "not uncommon in exploratory research" (Grenfell & Alnufaie, 2013, p. 83). The reliability scores were also compared to the reliability scores reported by Sanders-Reio et al. (2014). As table 3-1 demonstrates that the reliability scores obtained in the current study were lower than those reported by Sanders-Reio et al. (2014). However, they are in the same direction as Sanders-Reio et al.'s (2014) study. For example, audience orientation scale had the highest reliability scores, while transmissional scale had the lowest score in both studies.

Writing Beliefs Scales	Cronbach's alpha for the current study		Cronbach's alpha for Sanders-Reio et al.'s (2014) scales
	(L1)	(FL)	
Transmissional	.54	.58	.65
Transactional	.67	.60	.78
Recursive Process	.50	.64	.72
Audience Orientation	.78	.75	.85

**Table 3-1: Cronbach's alpha scores for each writing beliefs scales in the current study and Sanders-Reio et al.'s (2014) study**

### 3.5.2 Instruments for Process Measures

#### 3.5.2.1 Keystroke Logging (Inputlog)

The think-aloud protocols technique has been extensively used as a main data collection method in most of cognitive writing research (e.g., Bereiter & Scardamalia, 1987; Chenoweth & Hayes, 2001; El-Aswad, 2002; Hayes &

Flower, 1980; Manchón et al., 2009; Roca de Larios et al., 2001, among others). Think-aloud protocols require the writers to articulate their thoughts while writing. These protocols are recorded and coded for later analysis. This has proven to be a productive research tool as it provides a rich sources of data drawn out directly in real time from the writers (Al haysony, 2008; Janssen et al., 1996). However, this technique has been criticized for being intrusive and reactive (Janssen et al., 1996). This act of articulating one's thoughts might interfere with individual's cognitive writing processes as they might interrupt their thinking process (Barbier et al., 2009; Janssen et al., 1996; Wang, 2003) and this may reduce the validity of the findings. Writers might write differently when they are asked to express their thoughts as they may write in a way that they think satisfies the observer (Thorson, 2000). Social desirability may influence the writing process, so writers could give unreliable account of their thoughts (Al haysony, 2008; Spelman Miller, 2000).

Moreover, the verbalized protocols might be incomplete and partial so they might not reflect the underlying writing process accurately. For example, writers who are involved in think-aloud protocols might articulate just a narrow range of their thoughts (Al haysony, 2008). Barbier et al. (2009) assumed that think-aloud could be even more problematic in FL than L1 due to the cognitive complexity that FL writers experience during FL writing (as explained in the literature chapter). Therefore, using think-aloud protocols only, as a main insight into the writers' thinking process, was considered to be a methodological limitation with some previous research (Al haysony, 2008; Wang, 2003).

Using computer as a data collection instrument has become an efficient and common practice in research. Thorson (2000) argued that computers enable researchers to collect data from a large sample in a more efficient and reliable way. In addition, it is believed that individuals' computer skills have increased and many writers are considered proficient computer users who usually write using a word processor (Thorson, 2000). In the field of writing, computers have opened new doors for researchers to investigate the writing process and it provides opportunities to observe the real-time writing process. Keystroke logging programmes have been frequently used in the field of cognitive writing process research (e.g., Al Ghamdi, 2010; Baaijen et al., 2014; Lindgren, Spelman Miller, & Sullivan, 2008; Miller et al., 2008; Thorson, 2000; van Waes

& Leijten, 2015). These programmes enable researchers to observe and analyze online writing processes through cursor movements, keyboard presses, scrolling, pauses and the time taken for such activities (Abdel Latif, 2008; Lindgren et al., 2008; Spelman Miller, 2000). A number of writing researchers have used keystroke logging to study different aspects of writing process. For example, Thorson (2000) and Stevenson et al. (2006) used keystroke logging (Trace-it) to compare online revisions of L1 and FL writers; Spelman Miller et al. (2008) also used it to track the FL writing performance over three years; van Waes and Leijten (2015) compared L1 and FL writing fluency using Inputlog 5.

This study used Inputlog 7.0.0.11 downloaded from [www.inputlog.net](http://www.inputlog.net). Keystroke logging enables researchers to study the complexity of the writing process across a range of different settings, including education, health and the workplace (Leijten & van Waes, 2013). The basic concept for this tool, which is more or less comparable with other logging programmes, is that it records all keystrokes and mouse movements (van Waes, Leijten, & van Weijen, 2009). The distinctive feature of this research tool is that it "provides an unobtrusive record of the moment-by-moment creation of the text" (Baaijen et al., 2012, p. 247). Keystroke logging enables researchers to address different aspects of writing process (e.g., the frequency, length, and occurrence of pauses during writing) and to conduct studies on larger scales (Leijten & van Waes, 2013).

Inputlog is a word processor programme with normal text editing functions. It is installed and activated before the writing session starts, so it does not interfere with the writing activity (Abdel Latif, 2008; Spelman Miller, 2000). The writers can control and use the computer keys as they normally do with any text editor. When the writing session finishes, the recorded logged data is saved as XML files (van Waes et al., 2009). These files provide rich data about the time and the occurrence of different activities like revision, P-bursts, pauses, time, cursor movement, deletions, spacebar...etc. The replay function can be used to elicit writers' reflections on their own writing after the writing session (Miller, Lingren, & Sullivan, 2008; Thorson, 2000). This function also allows the researcher to replay the keystroke-recorded writing sessions in which they can study the writing process in more depth. This logged data can be also archived and used by other researchers (van Waes et al., 2009).

### 3.5.2.1.1 Inputlog

Inputlog is "a logging tool for writing process research developed for the Windows environment" (van Waes et al., 2009, p. 42). It offers researchers a number of useful functions that helps to record, refine, observe, and analyze writing process data. van Waes et al. (2009) provided useful descriptions of these functions. These are:

- a) Record: Inputlog allows researchers to register data of writing session in Microsoft Word and other Windows based programmes, including PowerPoint and Mozilla. Every keystroke and mouse movement can be recorded. In addition, Inputlog can record all the windows that the writers might open in different programmes. For instance, if a writer opens Google during the writing session, Inputlog logs records the web page used along with the time the writer accessed it. It also records copy-paste actions. These features help the researcher to be aware of the behaviors and steps taken by the writers to complete the writing session (van Waes et al., 2009).
- b) Pre-Process: This function helps researchers to refine logged data before the analysis process. It enables the researchers to process the logged data from different perspectives: time based or event based (e.g., mouse movements). Pre-process also offers researchers the opportunity to isolate different writing tasks logged in one writing session (Leijten & van Waes, 2013).
- c) Analyze: van Waes et al.(2009) summarized a number of data analyses offered by Inputlog. These are:
  - i) General File: These are the XML files that contain the main logging information of the writing session (e.g., mouse clicks and keystrokes movement). For each of these actions, the start and the end time is presented.
  - ii) Summary data: The output files also provide the basic statistical information of the writing session including the number, mean, and

standard deviation of the words, sentences, paragraphs, and pauses produced.

- iii) Pause analysis: The number, mean, standard deviation, and length of pauses are also provided through the XML files. Furthermore, the XML files provide more analysis about pauses and their location within words, sentences and paragraph. It is worth mentioning that the researcher can specify the threshold of the pause, so it can be 1, 2, or 5 seconds. Likewise, number of P-bursts can be retrieved easily from pause summary with any threshold.
- iv) Revision Analyses: Researchers can also find basic revision analysis in XML files such as: the number, the type of revision (e.g., insertion, deletion) and the location of the revisions that takes place during the writing session.
- d) Post-process: This function allows the researchers to integrate log files from Inputlog or with data from other observation tools (e.g. eye-tracking). In addition, the logged files can be exported to SPSS programme or can be converted to Excel files for additional analysis through the post-process feature (Leijten & Van Waes, 2013).
- e) Play: This useful function enables researchers to replay the writing session as it was recorded. The play speed can also be adjusted to enable researchers to study the writing process in depth (Leijten & van Waes, 2013). The play feature also offers researchers the chance to incorporate other methodological tools such as stimulated recall to obtain more insights about writers' writing strategies in completing the writing task. Stimulated recall is one type of introspective methods that is used to "prompt participants to recall thoughts they had while performing a task or participating in an event" (Gass & Alison, 2000, p. 17).

One of the criticisms that has been raised about keystroke logging is the difficulty of aligning the logging data with the underlying cognitive processes

(Baaijen et al., 2012). For example, Baaijen et al. (2012, p. 247) pointed out that “in its raw form, this record provides only information about empty time (when no keys are being pressed and filled time (when, and which, keys are being pressed”. However, a number of methodological procedures have been developed to minimize this problem. For example, complementing keystroke logged data with other research methods (e.g., stimulated recall) might help to get much clearer picture about the underlying process (Leijten & van Waes, 2013). For example, Al Ghamdi, 2010, and Spelman Miller (2005) used introspective interviews in their research to get more details about the logged files. This study complemented the data obtained through the keystroke logging by IRQ (see section 3.5.2.2.1).

There are a number of reasons for choosing keystroke logging over other tools such as think-aloud protocols and observation. First, it provides researchers with a comprehensive set of data, including the number of characters, words, sentences, pause times and location, and revisions(Lindgren et al., 2008; van Waes et al., 2009). This kind of data offers some clues about the underlying process. Second, unlike think-aloud protocols, keystroke logging does not interfere with the writing process, so writers do not feel they are being observed. Therefore, it can be argued that the Inputlog data ensures more valid data (Sabbaghan, 2013). Third, this methodological tool expedites the collection of data from a large sample (Thorson, 2000). Most of the previous research that used think-aloud protocols has necessarily had relatively small sample sizes. For example, Bosher (1998) used 3 participants only and Wang and Wen's (2002) study was based on 16 participants. This is because coding and analyzing think-aloud protocols is costly in time. Fourth, keystroke logging has commonly been used in L1 writing context, but it has rarely been used in FL writing contexts. Thorson (2000) pointed out that incorporating computer based instruments in FL writing research is very limited compared to L1 writing research. To the best of the researcher's knowledge, this study is the second one that uses this methodological tool in the Arab World. Al Ghamdi (2010) used Script log, to track the development of EFL writing process of Saudi female students. Thus adopting this tool might help to get more insights about using this instrument in FL context.

This tool actually helped to identify the process measures (dependent variables), see table 3-2. These measures reflect different aspects of

underlying writing processes, as explained more in chapter 4 and 5. For example, P-burst size reflects the efficiency of translation process. Keystroke also assisted to answer some of the current research questions. For example, comparing writing process in terms of time devoted to different stages of writing, writing fluency, number and types of revisions, pause patterns can be tracked by comparing the log files of the writers across language of writing (L1 vs FL), FL proficiency and gender (see table 3-3).

### **3.5.2.2 Introspective Instrument**

Although keystroke logging enables researchers to collect writing data more ecologically and efficiently, the logged data by themselves do not directly reflect the underlying cognitive writing processes (Leijten & van Waes, 2013). Thus, it should be supplemented by other methodological techniques such as introspective methods. Introspective methods, which “tap participants’ reflections on mental processes,” have been widely used in psychology and L2 research (Mackey & Gass, 2005, p. 77). Introspective methods enable individuals to reflect on their mental processes as they solve a problem or perform a task. Gass and Alison (2000) stated that there are two assumptions underlying introspection; firstly, internal processes can be observed in a way similar to that by which the external real-world can be observed. Secondly, humans have the ability to access and verbalize their internal processes. Mackey and Gass (2005) identified three introspective methods: stimulated recall, think-aloud and immediate recall. The current study utilized immediate recall technique in order to gain further data about how participants went about their writing processes.

#### **3.5.2.2.1 Immediate Recall Questionnaire (IRQ)**

Immediate recall, as its name suggests, is used to prompt individuals to reflect on their mental processes immediately after completing a task or an event (Mackey & Gass, 2005). This technique has been used in the field of FL research by a number of researchers (e.g., Al Ghamdi, 2010; Manchón & Roca de Larios, 2007a; Ong, 2014; Philp, 2003). Mackey and Gass (2005) pointed out that introspective reports could be oral or written. This study used a questionnaire to prompt the participant’s immediate recall. This questionnaire was designed to elicit the participant’s writing concerns before and after writing, behaviors, knowledge development and perceived role in completing

the writing task. The questionnaire was administered to the participants immediately after completing the writing task in order to prompt the participants to reflect on different aspects of their writing experience. The questions of the questionnaire (see appendix B) were translated to Arabic by three different teachers who teach English at the Rustaq College and their L1 is Arabic; similar procedure was also applied by Al Ghamdi (2010). The IRQ's questions were developed based on reviewing some previous writing process studies (Abdel Latif, 2009a; Al Ghamdi, 2010; Al haysony, 2008; El-Aswad, 2002; Manchón & Roca de Larios, 2007a). IRQ aimed to identify and explore constructs related to writing processes that might not be measured directly through the keystroke log files. For example, questions 2 and 3 intended to find out about the different types of planning strategies the writers apply in the course of writing. Responses to questions 1 and 6 aimed at finding out the writers' focus and concerns before and during writing. Question 4 helped in exploring writers' awareness towards their audiences. The purpose of question 5 was to find out if writers' knowledge about the writing topic has developed after writing. Question 7 aimed at eliciting writers' own perception of their role as writers.

Table 3-2 summarizes the dependent variables along with their measures. These measures were used to identify the participants' underlying writing processes.

Dependent variables		Measures	Data Source
Planning	Advance planning	Initial pause time	General Analysis File (Keystroke)
	Writers' concerns during advance planning	Question 2	IRQ
	Thinking during formulation process	Proportion of pause time to writing time during formulation stage	General Analysis File (Keystroke) Pause Logging File (Keystroke)
	Planning patterns	Questions 1 and 3	IRQ

<b>fluency</b>	Mean length of P-burst (number of characters)	Summary Logging File (Keystroke)
	Rate of production (number of process words per minute)	
	Final text length	
<b>Revision</b>	Frequency	Revision Matrix, S-notation, Process Graph and Linear Analysis Files (Keystroke)
	Location (immediate, distant, end)	
	Type (Language, content)	
<b>Writing time</b>	Pre-writing time	Linear Analysis File (Keystroke)
	Formulation process time	
	Post-writing time	
<b>Writers' audience awareness</b>	Question 4	IRQ
<b>Writers' knowledge development about the topic</b>	Question 5	
<b>Writers' concerns during writing</b>	Question 6	
<b>Writers' role in writing</b>	Question 7	

**Table 3-2: Dependent variables, their measures and data source**

### 3.5.3 The Writing Task

The writing task that was used in this study is an argumentative task. A number of factors influenced this choice. Firstly, Abdel Latif (2009a) claimed that an argumentative task gives more reliable data in terms of text quantity compared to narrative ones. He explained that narrative tasks are more likely to produce “a ceiling effects as writers might produce shorter or longer narrative texts depending on the details of their stories” (p. 115). Secondly, it

is believed that the argumentative type of writing is more academic and challenging compared to narrative ones (Alhaisoni, 2012b). Manchón and Roca de Larios (2007a) pointed out that argumentative writing encourages writers to engage in problem-solving behavior. Thirdly, as emphasized by Roca de Larios et al. (2001), that argumentative writing is a demanding type of writing requiring the ability to manipulate abstract concepts. It also requires a familiarity with rhetorical conventions in building arguments. Fourth, argumentative task enables writers to incorporate their personal perspectives and experiences (Roca de Larios et al., 2001). Fifth, argumentative writing is one of the typical academic assignments, which the participants of this study are required to carry out to pass their academic modules. Argumentative tasks have been commonly used in writing research (e.g., Al Ghadbi, 2010; Alhaisoni, 2012b; Manchón & Roca de Larios, 2007a; Roca de Larios et al., 2008, 2001; Stevenson et al., 2006).

The participants were given two different writing topics in order to counterbalance the topic effect (see 3.6 for more detail about the procedure). The researcher requested two ELT instructors at Rustaq College to provide a number of argumentative topics that are suitable for the ELT students at the college. These topics were shown to other ELT instructors to select two topics that they think the students are more comfortable and familiar with (see appendix C). The decision of presenting the writing prompt in FL (English) as well as L1 (Arabic) was important to increase clarity and comprehensibility and to avoid any kind of ambiguity (Kroll & Reid, 1994; Reid & Kroll, 1995). Giving the participants the writing prompt in a language that they are familiar with could reduce “the possible effect of varied task comprehension in the foreign language”(Al Ghadbi, 2010, p. 80). Furthermore, the prompts of the writing task were given in a communicative context. This procedure was motivated by the belief that specifying the writing audience and the purpose is important in writing (Akyel, 1994). This could be because presenting writers with more authentic context and audience will promote writing process. When considering this thesis, specifying the audience towards which the writing is directed to was important because considering audience is one of the variable that was studied in this thesis. Therefore, the participants were asked to write an article to the Rustaq Round-up Newsletter, which is issued occasionally by English Language Department at the college.

### 3.5.4 Product Measure (Text Assessment)

The Arabic and English essays were rated holistically, by English language teachers at Rustaq College, in order to provide some indications of the participants' writing quality. The texts were evaluated using a 25-point scale based on five different aspects: 1) task achievement, 2) organization, 3) grammar usage, 4) punctuation, spelling and mechanics, and 5) vocabulary, with each aspect allocated 5 points. This particular rating scheme (see appendix D) was chosen because it is the criteria used at the college to assess student's writings. Thus, the researcher and the assessors, who evaluated the text, were familiar with this rating scheme. Furthermore, this assessment scheme is very similar to the ESL Composition Profile criteria developed by Jacobs, Zinkgraf, Wormuth, Hartfiel, and Hughey (1981). The Jacobs et al. (1981) scheme has been frequently used in writing research to assess students' writing text because of its high reliability (Abdel Latif, 2009a; Al haysony, 2008). It is actually a 100-point rating scale that assess the writing text in terms of five components: 1) content (13-30), 2) organization (7-20), 3) vocabulary (7-20), 4) language use (5-25), and 5) mechanics (2-5). However, since the teachers at Rustaq College are more familiar with the 25 point scale, the Jacobs et al.,(1981) ESL Composition Profile was not considered in this study.

The same raters rated L1 and FL essays. These raters teach English at the college and Arabic is their L1. Each essay was rated by two teachers and the average score was taken. Before assessing the participants' texts, benchmarking, with the presence of the researcher and the assessors, was conducted for a number of reasons. First, it helped to assure that all of the assessors understood the writing criteria and how marking should be carried out. Second, it gave the assessors the opportunity to discuss the marking process, the criteria used in rating the written texts, and the participants' texts scores with each other. Third, benchmarking helped to increase the consistency of participants' texts rating. Since the raters were not very familiar with rating Arabic text, a professor of Arabic language was invited to the benchmarking session and evaluated some Arabic samples. Some discussions regarding rating the Arabic texts took place during the benchmarking with the presence of this professor. This procedure actually helped the raters a lot in assessing the participants' Arabic texts.

Adopting a rating scale to assess the participants' text quality was important for several reasons. First, as the study aimed to compare the text quality of the participants across language of writing (L1 and FL), gender and FL proficiency, obtaining the overall score in each text was necessary for this comparison. Second, the average text score helped to test the relations between text quality and other variables including: writing beliefs, pauses, revision and planning patterns, fluency, writers' concerns and awareness about their audiences (see appendices E and F for some text's samples).

In order to test the degree of agreement between the two assessors' scores, reliability tests were conducted. Table 3-3 shows that the interrater reliability was relatively strong for the participants' overall score and the five criteria scores in FL and L1 texts (Pearson correlation coefficient was above .7), except for the task achievement for the Arabic texts. The interrater reliability for the FL text's scores were higher than those for the L1 ones. One reason one can think of in explaining the low reliability for the task achievement in L1 is that in L1 there are reasonable standard of what judges how well the content is. Whereas judging task achievement in FL might be really affected by how good are the writers' FL proficiency. In L1 writing, language might seem appropriate, so it is hard to agree about how well is the content.

	English Text	Arabic Text
Task Achievement	.750	.606
Organization	.792	.753
Grammar	.842	.762
Spelling and Mechanics	.788	.781
Vocabulary	.885	.832
Total Text quality score	.935	.891

**Table 3-3: Pearson correlation coefficient for the English and Arabic rating**

Research Question	Independent Variables	Independent Variables' Measures	Dependent variables	Data Collection Sources	Statistical Tests
RQ1. To what extent FL text is different compared to that of L1 and does this vary across gender and FL proficiency?	Language of writing (L1 vs. FL) Gender FL proficiency	OPT	Text quality	Independent assessors' assessment	Bivariate Correlation ANCOVA Mediation
RQ2. To what extent fluency in FL is less good than L1 translation process and is this moderated by gender and FL proficiency?			Fluency measures	Keystroke	Bivariate Correlation ANCOVA Mediation
RQ3. How does translation process account for differences in text quality in writing processes?	Language of writing (L1 vs FL)		Fluency measures Text quality	Keystroke Independent assessors' assessment	Bivariate Correlation Mediation

RQ4. To what extent variations in writing processes (e.g., planning and revision) in L1 and FL can be explained in terms of FL proficiency and gender?	Language of writing (L1 vs FL) Gender FL proficiency	OPT	Planning Revision Writing time Writers 'awareness, concerns and knowledge development	Keystroke IRQ	Bivariate Correlation ANCOVA Mediation
RQ5. To what extent, does variation in text quality explained in relation to the writers' writing processes?	Language of writing (L1 vs FL)		Planning Revision Writing time Writers 'awareness, concerns and knowledge development  Text quality	Keystroke IRQ  Independent assessors' assessment	Bivariate Correlation Mediation
RQ6. What are the relative strength of ELT undergraduate Omani students' different	writing Beliefs				T test analysis

writing beliefs and how do these compare with those found in previous research by Sanders-Reio et al. (2014)?					
RQ7. How do Omani undergraduate students' writing beliefs vary across languages of writing (L1 vs. FL), FL proficiency and gender?	Language of writing (L1 vs FL)  Gender  FL proficiency  writing Beliefs	OPT			Bivariate Correlation  ANCOVA
RQ7. How do Omani undergraduate students' writing beliefs correlate with their L1 and FL writing processes and text quality?		WBS	Planning  Revision  Writing time  Writers 'awareness and concerns and knowledge development  Text quality	Keystroke  IRQ  Independent assessors' assessment	Bivariate Correlation  Mediation

**Table 3-4: Summary of research questions, variables, measures, data sources and statistical tests**

### 3.6 Procedure

The study took place in the spring of 2016 at Rustaq College of Applied Sciences at the computer labs (see 1.3.3 for more details about Rustaq College). The head of the English Language Department and some teachers at the department played very important role in encouraging the students to take part in this research. The researcher also met the students and explained the purposes of the research and encouraged them to participate in the research. The researcher explained to the students that each writing session will take about 120 minutes. They were also told that participating in the research requires reasonable typing proficiency in Arabic and English. The researcher also explained that the setup of the study requires them to complete an English language Test (OPT). This actually motivated a lot of students to participate, particularly fourth year students. ELT students in Oman are required to get score 6 in IELTS in order to secure a job in the government sector. Therefore, the ELT students at Rustaq College are looking for chances to practice any English language test that could enable them to practice their English language knowledge. I noticed that the students were interested to take the OPT and to know how well they performed in the test.

In order to counterbalance language and topic effect, the participants were placed into four different groups. Two groups were from the second year (42 students) and the other two were from the fourth year (35 students). For example, the first participant in the first group wrote topic one in L1 and topic two in FL, while the second participant wrote topic two in L1 and topic one in FL. This procedure was followed with the other groups. In order to counterbalance the language effect, two groups (one group from second year and one from the fourth year) wrote the FL task first and then the L1 task while the other two groups wrote the L1 task first and then the FL one.

Before starting the writing sessions, the researcher with the help of two IT technician installed keystroke in two computer labs at the College. OPT was administered to the students first with the help of some teachers, at the College, whom the researcher is familiar with. The setup of the study required each participant to attend two writing sessions in order to write two writing texts, one in L1 and one in FL, on the computer. The sessions were, almost, one week apart from each other. During each session, the participants were

first asked to complete the WBS about the beliefs associated with the language they were writing in. For example, when the participants composed in L1, they were asked to fill in the WBS about their writing beliefs when writing in L1. After completing the WBS, the students were asked in Arabic to provide the last three digits of their ID, their age and gender as this information was required by the keystroke program. The participants were also told that they have 40 minutes to finish the writing task as this is typically the case in writing English text at the college. After distributing the writing prompts, students were asked to click on the recording button for the keystroke logging software and to start writing. When the participants finished the writing task, they were instructed to click the stop icon. Then, IRQ was distributed to the participants. This required them to reflect on their writing in order to elicit their strategies and concerns about their writing process. After completing the IRQ, the participants were assigned for their next writing session. The log files were retrieved from the computers and the writing beliefs survey and IRQ were collected when the participants left the computer lab. The participants' texts were assessed by two independent assessors. The same procedure was followed in each writing session with all of the groups. Figure 3-2 shows the steps that were followed in this study.

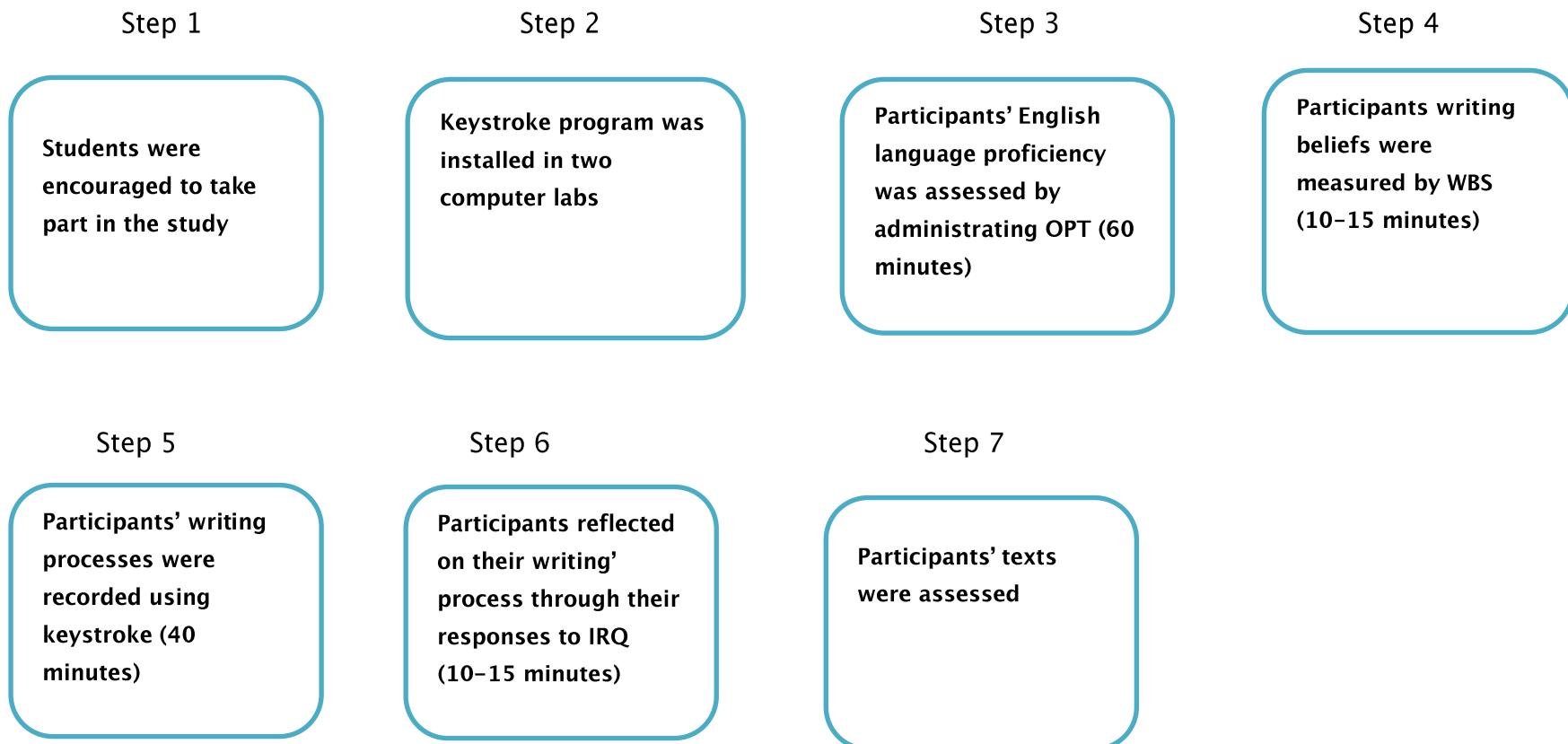


Figure 3-2: The steps that were followed in this study

## **3.7 Ethical Considerations**

Access and acceptance, informed consent, anonymity and confidentiality are the main areas of ethical considerations that should be addressed by the researcher when carrying out the research (Robson, 2011). The following sub-sections explain how these areas were addressed in the current study.

### **3.7.1 Access and Acceptance**

The researcher needs to gain access to the participants, and to be accepted by the organization to carry out the study. Access and acceptance is officially obtained through addressing the authority that runs the institution (Al-Badwawi, 2011). Ethical approval was first obtained from University of Southampton: ethics reference number is 19172 (see appendix G for a copy of the email that approved my request to start the data collection). The main ethics application form can be found in appendix H. The participant information sheet is appendix I, and the consent form appendix J. The two risk assessment forms are included as appendix K and L.

Before starting the data collection phase, an official permission was also obtained by addressing the Ministry of Higher Education in Oman (MoHE) to which Rustaq College of Applied Sciences is affiliated. Getting the official permission required the researcher to send a letter to the Scientific Research Center at the (MoHE) explaining the research's nature, aims, questions, and type of data required. Furthermore, the research proposal and the University of Southampton's ethical approval (ERGO) were attached with the letter. After getting the Ministry official letter of approval, see appendix M, the Ministry sent it to the College's Dean who in turn forwarded it to the Head of English language Department in order to provide the research with required assistance and cooperation.

### **3.7.2 Informed Consent**

Informed consent refers to people's agreement to participate in the research. It actually involves providing the participants with the aim and nature of the research and the party for whom the information is being collected (Robson, 2011). University approved consent forms, see appendix J, were provided to

the participants to sign before taking part in the research. Before starting the study, the participants were provided with the participant information sheet, that explains the nature of the study and what the students are required to do in the study (see appendix I). Moreover, the researcher informed the participants that their contribution is voluntary and that they have the right to withdraw at any time without any penalty, as clearly stated in the information sheet. The main challenge in this regard was students' reluctance to take part in the study which resulted in reducing the sample size. It was initially intended to include 100 students but students' unwillingness to participant in the research reduced the sample size to 77.

### **3.7.3 Anonymity and Confidentiality**

Cohen et al. (2011) pointed out that the essence of anonymity by stating that "information provided by participants should in no way reveal their identity" (p. 91). This means that the information provided by the participants and the participant's identity should not be accessible by any other person. Cohen et al. (2011) maintained that confidentiality is important to protect the participants' right and privacy. Confidentiality involves "not disclosing information from a participant in any way that might identify that individual or that might enable the individual to be traced" (Cohen et al., 2011, p. 92). This means that researcher must not provide any information to the public in a way that could identify the participant's identity from the information. In the current study, the participants were assured that their names will not be mentioned in the study. During the data collection phase, the participants were not required to write their names in the OPT, WBS, IRQ or writing sessions rather they were asked to write the last three digit of their ID. For the data analysis, participants were referred to by particular numbers instead of names or ID in order to keep their identities anonymous.

## **3.8 Summary**

This chapter presented the methodological framework for the current study. The chapter started by a description of the study's paradigm. It also explained the study design in light of the study aims. Furthermore, the chapter gave a description of the participants and the rational for recruiting these participants. The chapter also presented and described the instruments of data

collection with reference to the research questions. These instruments can be classified into three categories: i) instruments to measure independent variables (OPT and WBS), ii) instruments to track and measure the participants' writing processes and strategies (dependent variables) (keystroke and IRQ); and iii) instrument to evaluate and measure the final product (text assessment). Moreover, this chapter explained the procedures that were implemented to conduct this study. Finally, ethical considerations that were taken into account in conducting the study were also presented.

# Chapter 4: Data Analysis and Findings

## 4.1 Relationships between English Language Proficiency, Year of Study and Gender

The initial analysis was designed to assess how English language proficiency varied depending on year of study and gender. In order to test this, a two-way between subjects, analysis of variance, was carried out, with participants' year of study and gender as between factors, and English language performance (OPT) as the dependent variable. Effect size was evaluated using Cohen's (1988) criteria which suggest that partial eta square ( $\eta^2_p$ ) values at or above .01, .06, and .14 indicate small, medium and large effect sizes respectively. The analysis indicated that there was a significant main effect of year of study ( $F_{(1,73)} = 5.35, p = .024, \eta^2_p = .07$ ), with students in year 4 ( $M = 123, SD = 11.18$ ) performing better than students in year 2 in OPT (Mean=120.5, SD=9.6), and a significant main effect of gender ( $F_{(1,73)} = 11.41, p = .001, \eta^2_p = .13$ ), with females ( $M = 125, SD = 8.6$ ) performing better than males ( $M = 118.9, SD=10.9$ ). Figure 4-1 shows the mean scores on OPT as a function of year of study and gender.

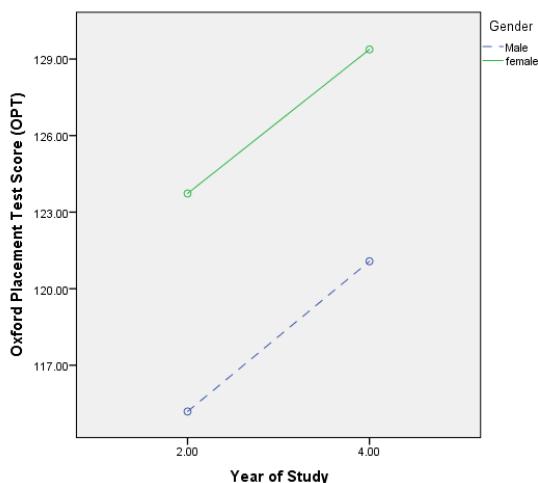


Figure 4-1: The participants' OPT mean scores as a function of year of study and gender

As can be seen in figure 4-1, females scored higher overall on OPT than males in both years of study. In addition, performance was consistently better in year 4 than year 2, indicating that students' language performance had improved between year 2 and 4. These results have two consequences for the remaining

analysis. First, since, year of study was originally used as a proxy for language expertise, and the significant main effect of year of study supported the validity of this assumption, the remaining analyses used the students' English language proficiency (OPT) as an independent variable instead of using students' year of study. Second, in the light of the significant association between gender and English language proficiency, subsequent analyses assessed whether any gender differences in performance of the English language writing task were mediated by English language proficiency.

## 4.2 Writing processes

The next analysis focused on measures of the writing process. In order to meet this intention, measures reflecting translation (fluency) processes, revision processes and planning processes for both language tasks (Arabic and English) were extracted and analysed from the keystroke logs. Prior to analysis extreme outliers, defined as scores three standard deviations above or below the mean, were excluded. The data were screened using normal Quantile–Quantile plot, histogram and test of normality, to check whether the data were normally distributed. Some variables were log– transformed to approximate normality.

Bivariate correlations were calculated to identify the relationships between the variables. Repeated measures analysis of covariance (ANCOVA), which combines analysis of variance with multiple linear regression, was carried out to assess the effects of the independent variables on the dependent variables (process measures). Language of writing (Arabic and English) was used as a within subject variable and gender and English language proficiency (OPT) were used as between subject measures. Each dependent variable was examined separately. Independent variables were examined in sets; main effects, two-way interactions and three way–interactions. Non-significant terms were gradually removed in order to simplify the model. The results of the final simplified model are presented. Complementary analyses using: repeated measure ANOVA and mediation analysis Hayes (2013), were carried out in later stages. The analysis was used to answer the following questions:

To what extent translation process (fluency) of undergraduate Omani students is more efficient in L1 than FL and does this vary depending on the writers' FL proficiency and gender?

To what extent writing sub-processes of undergraduate Omani students (e.g., amount and type of planning and revision) differ across L1 and FL and are these differences moderated by FL proficiency and gender?

#### 4.2.1 Translation Process (Fluency Measures)

Three different measures were used to assess writing fluency of the participants, namely: *P-bursts* (number of characters produced between pauses of two seconds or more), *rate of production* (process words written per minute during the writing process), and *text length*, length of the final text produced (number of the words appearing in the participants' final texts). These measures have all been used in previous research as indicators of fluency, but differ in the extent to which they directly reflect "translation" skill. Text length partly reflects how fluently writers produce text, but also reflects variations in how long writers persist on the task, as well as writers' overall strategy for writing (how much time they spend planning and revising). Rate of production controls for how long writers persist on task but may still reflect variation in overall writing strategy. P-bursts are arguably the most direct measure of translation skill insofar as they reflect the quantity of language that a writer can produce between pauses in writing (Chenoweth & Hayes, 2001). The following analyses consider effects on each of these measures in turn, before considering the similarities and difference between these effects.

Table 4-1 shows the means and standard deviations for each of these variables, along with the correlations between them, and the correlations of each with gender and participants' OPT score. Note that three outliers were found and excluded from this analysis. Normal Quantile-Quantile plot, histogram and test of normality indicated that the distribution for rate of production, P-bursts and the text length were positively skewed. The three variables were therefore log-transformed which resulted in a satisfactory approximation to the normal distribution. The values presented in the table are the raw, rather than transformed scores.

Variable name	M	SD	1	2	3	4	5	6	7
1. Arabic <i>P- burst length (Log<sub>n</sub>)</i>	21.85	10.61							
2. English <i>P- burst length (Log<sub>n</sub>)</i>	12.09	5.21	<b>0.64**</b>						
3. Arabic <i>rate of production (Log<sub>n</sub>)</i>	13.55	4.51	<b>0.78**</b>	<b>.45**</b>					
4. English <i>rate of production (Log<sub>n</sub>)</i>	8.07	2.59	<b>0.59**</b>	<b>0.84**</b>	<b>.49**</b>				
5. Arabic <i>text length (Log<sub>n</sub>)</i>	286.04	62.96	<b>.39**</b>	<b>.31**</b>	<b>.32**</b>	<b>.39**</b>			
6. English <i>Text length (Log<sub>n</sub>)</i>	236.45	65.40	<b>.38**</b>	<b>.67**</b>	<b>.26*</b>	<b>.76**</b>	.23		
7. *Gender			.15	<b>.28*</b>	-.12	.16	.03	<b>.32**</b>	
8. OPT	121.49	10.55	.18	<b>0.42**</b>	.08	<b>.31**</b>	.07	<b>.24*</b>	<b>.30**</b>

\*  $p < .05$ , \*\* $p < .01$ , 2 tailed tests.

\* Dummy coded, Male =1, Female =2

**Table 4-1: Means and standard deviation for each of the continuous variables, along with the bivariate correlations between variables**

#### 4.2.1.1 Mean Length of P-Bursts

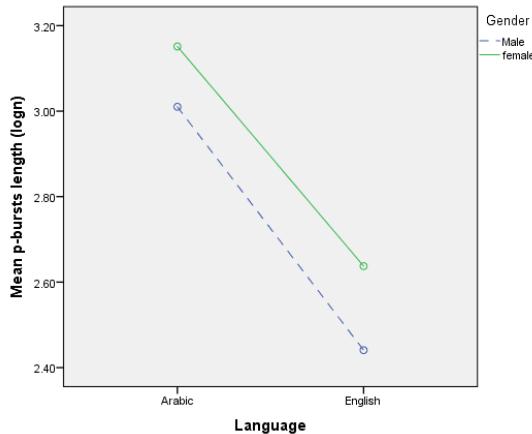
Mean length of P-burst, measured by the number of characters produced between pauses of two seconds or more, was used as an indicator of the participants' writing fluency (Abdel Latif, 2013; Chenoweth & Hayes, 2001; Révész et al., 2017). The decision to use a threshold of 2 seconds was based on a convention in writing process research as most previous research has used the threshold of two seconds or more to measure the length of P-bursts (e.g., Chenoweth & Hayes, 2001; Lindgren et al., 2008; Miller et al., 2008;

Revesz et al., 2016), and hence makes it more consistent to compare the results.

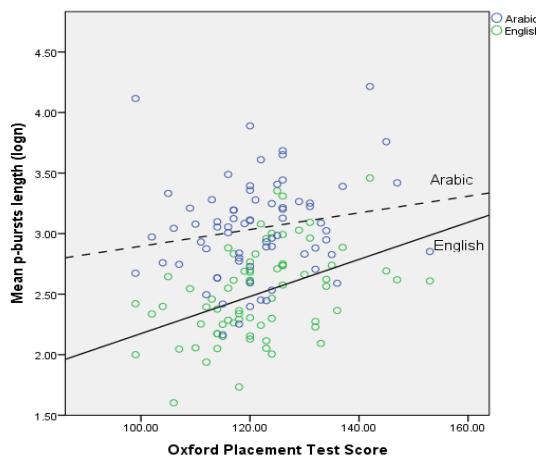
As can be seen in table 4-1 the length of P-bursts in Arabic and English were moderately to strongly correlated with each other, which may indicate common factors such as the general typing speed of individuals, general language skills or overall writing strategy. In Arabic, the length of P-bursts was not related to either gender or English language proficiency. By contrast, in English the length of P-bursts was significantly correlated with both gender and English language proficiency, indicating that females were able to produce longer P-bursts in English than males and individuals with higher English language proficiency produced longer P-bursts in English. Finally, as noted in section 4-1, females scored significantly higher than males in English language proficiency.

There was evidence that the effects of gender and English language proficiency suppressed one another, so two separate regression models were fitted to the data. The first model, including gender but not English language proficiency, showed significant main effects of gender ( $F_{(1,70)} = 4.59, p = .039, \eta^2_p = .062$ ) and of language of writing ( $F_{(1,70)} = 10.22 p = .002, \eta^2_p = .16$ ) but no significant interaction between them. As can be seen in figure 4-2, this reflected the fact that participants produced longer P-bursts when writing in Arabic than in English, and that females produced longer P-bursts than males. The second model, including English language proficiency (OPT) but not gender, showed a significant interaction between language of writing and English language proficiency ( $F_{(1,70)} = 4.10, p = .041, \eta^2_p = .07$ ). As can be seen in figure 4-3, this reflected the fact that P-burst length was significantly correlated to English language proficiency in English ( $b = .015, se = .004, p < .0005$ ), but not significantly related to it in Arabic ( $b = .007, se = .004, p = .13$ ). Overall, this had the effect that, although P-burst length was larger in Arabic than English, the size of this difference was reduced for participants with higher English language proficiency. The reason that the two alternative models fit the data is because of the significant correlation between gender and English language proficiency. This has the effect that when both variables were included in the regression model at the same time they mutually suppressed one another. Therefore, mediation analysis was carried out to test whether the effect of gender on P-burst is a consequence of females' superiority in English

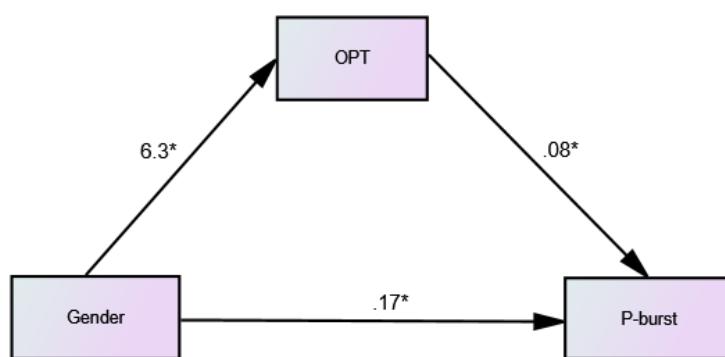
language. Mediation analysis confirmed that the effect of gender on P-burst length in English was significantly mediated by English language proficiency ( $p < .05$ ). The path diagram showing these relationships is presented in figure 4-4. There was no equivalent mediation in L1.



**Figure 4-2: Mean length of P-burst ( $\log_n$ ) as a function of language of writing and gender**



**Figure 4-3: Mean length of P-burst ( $\log_n$ ) as a function of language of writing and English language proficiency (OPT)**

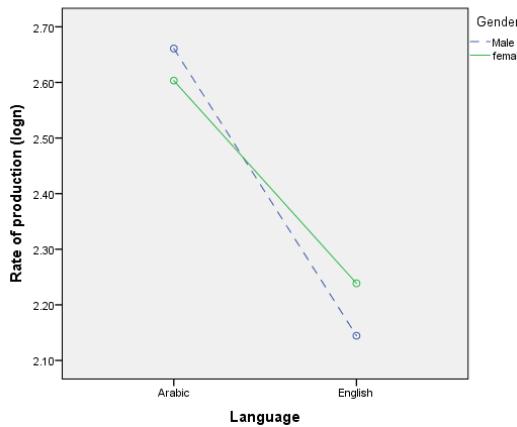


**Figure 4-4: The relationships between gender, English language proficiency (OPT) and P-burst in English writing (unstandardized coefficient)**

#### 4.2.1.2 Rate of Production (words per minute)

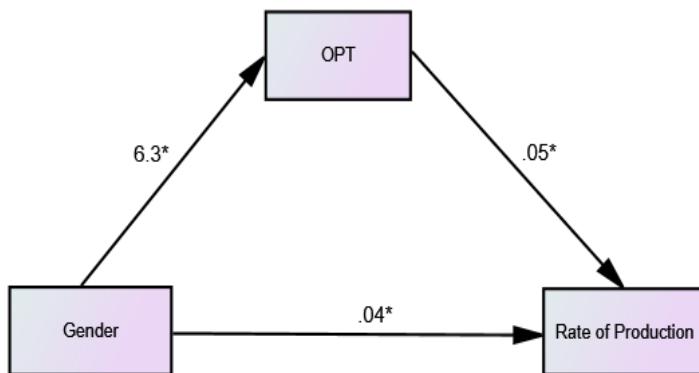
As can be seen in table 4–1, there was a moderate positive correlation between rate of production in Arabic and English, which might again reflect common effects of typing speed, general language skill or overall writing strategy. Rate of production in Arabic was unrelated to gender or English language proficiency. Rate of production in English was also unrelated to gender but was significantly faster for participants with high English language proficiency.

As with the analysis of P-burst, the initial regression analysis of these data indicated that the two alternative models, differing in whether gender or English language proficiency were included in the models, fit the data. For the model including gender, there was a significant main effect of language ( $F_{(1,67)} = 184.22, p < .005, \eta^2_p = .73$ ), moderated by a significant interaction between language and gender ( $F_{(1,67)} = 6.76, p = .011, \eta^2_p = .09$ ). The interaction reflected the fact that females rate of production ( $M = 8.43, SD = 2.12$ ) was higher than males ( $M = 7.81, SD = 2.89$ ) in English; whereas males' rate of production ( $M = 14.02, SD = 4.67$ ) was higher than females ( $M = 12.92, SD = 3.78$ ) in Arabic, see figure 4–5. Similarly, for the model including English language proficiency, there was a significant effect of language of writing ( $F_{(1,67)} = 10.53, p = .002, \eta^2_p = .14$ ), moderated by a significant interaction between language of writing and English language proficiency ( $F_{(1,67)} = 4.15, p = .046, \eta^2_p = .06$ ). In both models, the results indicated that the participants in general wrote almost twice as fast in Arabic ( $M = 13.55, SD = 4.31$ ) than in English ( $M = 8.07, SD = 2.59$ ). The significant interaction between language and English language proficiency confirmed the results for the bivariate correlations indicating that English language proficiency affected rate of production in English but not in Arabic.



**Figure 4–5: The participants' rate of production ( $\log n$ ) as a function of language and gender**

Similar to P-burst analysis, the two alternative models fit the data is because of the significant correlation between gender and English language proficiency. Therefore, when both variables were included in the regression model at the same time they mutually suppressed one another. This is consistent with the hypothesis that the effect of gender on rate of production in English is a consequence of the superior English language proficiency of females. In order to test this hypothesis, a mediation analysis was carried out. The analysis revealed that the effect of gender on English rate of production was significantly mediated by participants' English language proficiency ( $b = .05$ ,  $se = .03$ ,  $p < .005$ ). This confirmed the above hypothesis that the effect of gender on rate of production in English is indeed a result of females' higher English language proficiency. The path diagram showing these relationships is presented in figure 4–6.



**Figure 4–6: The relationships between gender, English language proficiency and rate of production in English writing (Unstandardized coefficient)**

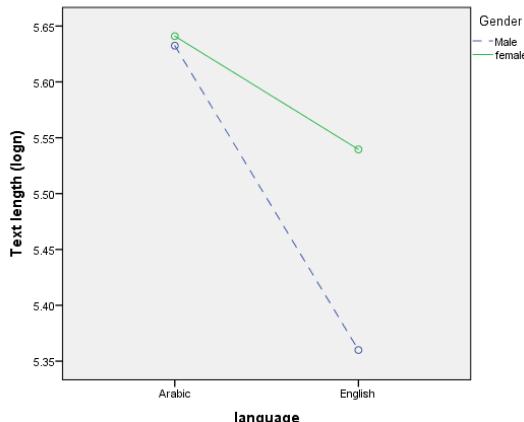
#### 4.2.1.3 Average Text Length (in words)

Text length can be a valid fluency measure when participants are given equal time to finish the writing task (Al Chamdi, 2010), and it has been used in this way in previous studies. However, in the present study, where there was variation in how long participants took to complete the task, it may reflect, not just how fluently participants can produce text, but also how long they persist at the task. Table 4-1 shows that, unlike the previous two measures, there was no significant correlation between text length in Arabic and text length in English. However, similar to the previous two measures, there were contrasting relationships with gender and English language proficiency for Arabic and English. For Arabic, there were no significant relationships between text length and gender or English language proficiency. By contrast, text length in English was related to gender and English language proficiency, indicating that females wrote longer texts than males and that participants with high English language proficiency wrote longer text in English.

As with the previous two measures, there was evidence that the effects of gender and English language proficiency suppressed one another, so two separate regression models were fitted to the data. The first model, including gender but not English language proficiency, showed a significant main effect of language of writing task ( $F_{(1,69)} = 24.11, p < .005, \eta^2_p = .26$ ), moderated by a significant interaction between language and gender ( $F_{(1,69)} = 6.65, p = .012, \eta^2_p = .09$ ). As can be seen in figure 4-7, this reflected the fact that, in general, the participants wrote longer texts in Arabic ( $M = 286.04, SD = 62.90$ ) than in English ( $M = 236.45, SD = 65.40$ ). However, this difference was much larger for males than females, with the effect being a consequence of the fact that males ( $M = 215.71, SD = 57.8$ ) produced significantly shorter texts than females ( $M = 264.72, SD = 68.42$ ) when writing in English, but that there was no difference between males and females for text length in Arabic.

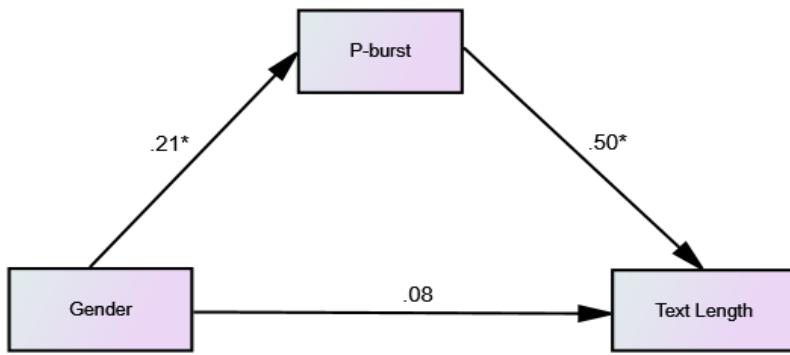
The second model, including English language proficiency but not gender, showed a significant main effect of language of writing ( $F_{(1,69)} = 4.36, p = .035, \eta^2_p = .06$ ), as in the first model. However, no significant main effect of English language proficiency ( $p = .10$ ), and no significant interaction between English language proficiency and language of writing task ( $p = .09$ ). Furthermore, mediation analysis, testing whether the effect of gender on text

length in English was mediated by English language proficiency, showed that there was no significant mediation of gender by English language proficiency ( $p = .24$ ).



**Figure 4-7: The participants' average text length as a function of language of writing and gender**

This analysis suggested, therefore, that although, similarly to the previous two measures, text length was significantly shorter for males than females when writing in English, this was not a consequence of the males' weaker English language proficiency. Given the strong similarity between the results, however, it was decided to test whether the specific measures of rate of production and mean length of P-burst showed any evidence of mediating the effect of gender on text length in English. This showed no significant mediating effect for rate of production ( $p = .17$ ). However, it did show a significant mediating effect for mean P-burst length ( $b = .011$ .  $se = .05$ ,  $p = .02$ ). Furthermore, when this indirect effect was included in the model, there was no evidence of a significant direct effect of gender on text length ( $p = .13$ ), indicating that the differences between males and females in the mean length of P-bursts in English fully accounted for the shorter texts produced by males in English writing. These relationships are summarised by the path diagram in figure 4-8.



**Figure 4-8: The relationships between gender, P-burst length and text length in English writing (Unstandardized coefficient)**

#### 4.2.1.4 Summary of Conclusions for Fluency Measures

These results indicate, first, and perhaps not surprisingly, that participants wrote more fluently in Arabic than in English: they produced P-bursts that were almost twice as long in Arabic than in English; wrote faster in Arabic than English; and produced final texts that were 21% longer in Arabic than in English. Second, females wrote more fluently than males in English, but not consistently so in Arabic. Thus females, scored significantly higher than males on all three measures when writing in English. By contrast, when writing in Arabic, there were no gender differences in rate of production or text length, though there was some evidence that females produced longer P-bursts than males. Third, greater English language proficiency enhanced fluency on all three measures when participants wrote in English but had no corresponding effects when writing in Arabic. This indicates that linguistic maturity in English partly explains writing fluency in English. Furthermore, the mediation analyses demonstrated that the greater linguistic maturity in English of females accounted for their longer P-bursts and faster rate of production in English writing. Gender differences in foreign language writing appeared, in this sample at least, to be a consequence of differences in foreign language proficiency rather than because of some other factors.

It is important to emphasize that these findings are correlational in form and hence that the influence of some other common factors cannot be ruled out. It is possible that the higher levels of motivation in females, for example, could account for their greater linguistic maturity as well their greater fluency in writing in English. To rule this possibility out, future research would need to

measure motivation to write, and control for it in analyses of the effects of other variables.

Furthermore, it is worth noting, that P-burst length was the measure that was most strongly correlated with English language proficiency. This is consistent with Chenoweth and Hayes' (2001) claim that the length of P-bursts reflects the capacity of the “translator” of the text production component of the writing process. It is assumed to represent the amount of language that a participant can produce in a single “chunk” of language output. This suggests that P-burst length may be the most direct measure of the “translator” component of the writing process, and may explain why it mediated the effect of gender on text length in English, whereas the broader language proficiency measure of OPT did not. In addition, the association of English language proficiency with gender and with P-burst length provides a possible explanation for the apparent gender difference in P-burst length in Arabic. The present results suggest that measures of English language proficiency need to be complemented with measures of first language proficiency, in order to assess whether these can account for differences in P-burst length in a writer's L1.

Finally, the correlations analysis revealed that if individuals were fluent writers in Arabic they also tended to be fluent, to some extent, in English writing, at least as measured by P-burst length and rate of production. This common pattern across Arabic and English might reflect general typing skills, but also could indicate the effect of general linguistic fluency, or that these participants apply similar writing patterns in Arabic and English compositions.

#### **4.2.2 Revision**

The second component of the writing process to be analysed was revision. In order to provide an overview of the measures used for this analysis, two examples of the process graphs produced by Inputlong are shown in figure 4-9. These are taken from the same writer, and show the process graphs for the writing tasks carried out in Arabic and English. These graphs show the elapsing of time on the x-axis, and the cumulative number of characters produced on the right-hand y-axis. (The left-hand axis shows pause time and is not relevant in the present context). Two separate lines are plotted: the upper, blue line represents the characters produced in the keystroke log; the lower, green line shows the characters retained in the final product. The gap between the

lines therefore represents the extent to which characters produced during writing were deleted. When the two lines continue uninterrupted, this gap represents the amount of *immediate* revision taking place: text is deleted and modified at the point of inscription. When text production is interrupted, and the writer returns to an earlier point in the text to delete or add text, this is represented by a vertical line showing the movement back in the text, and is characterized as *distant* revision. At the end of the writing session, writers often read back over the text, editing and revising. This is represented by a vertical line towards the end of the writing session, and is characterized as *end* revision rather than as a *distant* revision.

In the example shown in figure 4–9, the left-hand graph represents the writing process in Arabic, and the right-hand graph represents the writing process of the same writer in English. As can be seen in the figure, writing in Arabic for this writing was a very linear process. There was relatively little revision, with the majority of the revision being *immediate* (as represented by the gap between the blue and green lines). There was only one instance of a *distant* revision and no evidence of *end* revision. By contrast, writing in English was much less linear. There were more *immediate* revisions (as presented by the wider gap between the blue and green lines), a high number of *distant* revisions, and more evidence of *end* revision. This broad contrast is typical of the majority of the participants.

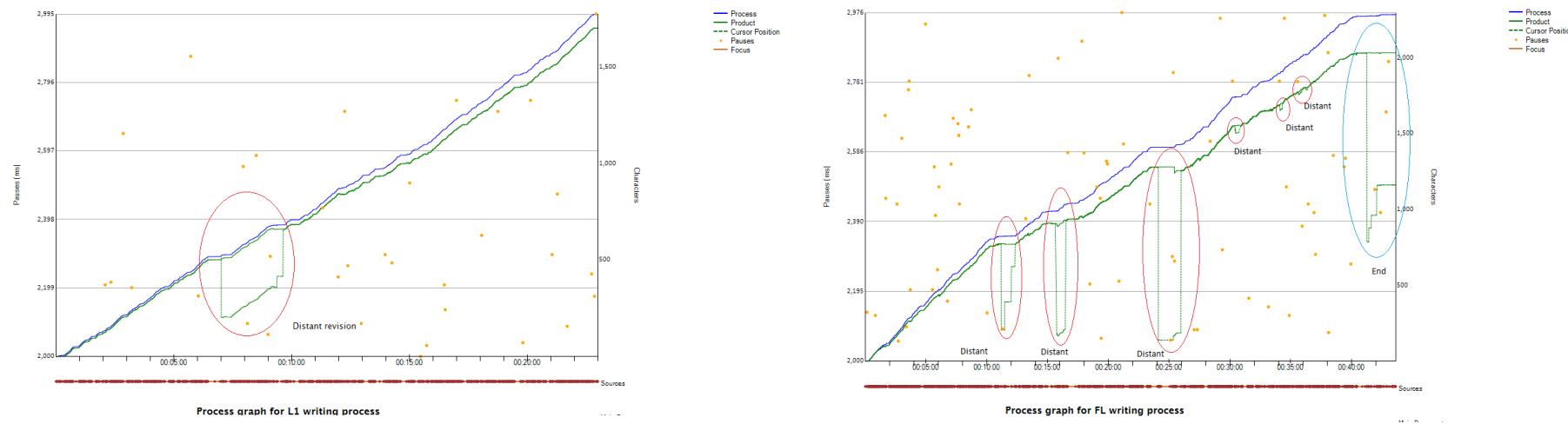


Figure 4-9: Process graphs for Arabic and English writing processes

Six different measures were calculated from the keystroke logs. These consisted of three different types:

- (1) Global measure of revision, designed to provide a broad overview of amount of revision. This included: (i) the total number of revisions per text.
- (2) Measures of revisions made at different locations. These consisted of (ii) the number of immediate revisions per text, (iii) the number of distant revisions per text, and (iv) the number of end revisions per text.
- (3) Measures of the extent to which revision consisted of language editing or involved more substantial changes in content. Because of problems in the way that Inputlog recorded Arabic script, this analysis was only carried out on the English language texts. The measures taken were: (v) the number of language revisions per text, and (vi) the number of content revisions per texts.

For all of these measures, the number of revisions was divided by the total number of words produced to control for variations in text length. The normal Quantile-Quantile plot, histogram and test of normality indicated that the revision variables were positively skewed. Therefore, the variables were log-transformed to approximate normality. Five extreme outliers were found and excluded from this analysis. Consequently, the data achieved satisfactory approximations to the normal distribution.

Table 4-2 shows the means and standard deviation for each of these variables in the two languages tasks, along with the bivariate correlations between them, and with gender and English language proficiency.

Variable name	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Number of revision per text Arabic ( $\log_n$ )	.32	.15											
2. Number of revision per text English ( $\log_n$ )	.42	.14	.40**										
3. Immediate revision per text Arabic ( $\log_n$ )	.27	.13	.92**	.45**									
4. Immediate revision per text English ( $\log_n$ )	.34	.14	.44**	.88**	.51**								
5. Distant revision per text Arabic ( $\log_n$ )	.009	.008	.64**	.20	.52**	.23*							
6. Distant revision per text English ( $\log_n$ )	.014	.010	.45**	.46**	.40**	.33**	.42*	*					
7. End revision per text Arabic ( $\log_n$ )	.002	.003	.33*	.28*	.09	.23	.15	.15					
8. End revision per text English ( $\log_n$ )	.003	.004	-.09	.26*	-.11	-.01	-.10	.34**	.17				

9. Language revision per text English ( $\log_n$ )	.41	.14	.42**	.99**	.45**	.85**	.27*	.48**	.27*	.22
10. Content revision per text English ( $\log_n$ )	.01	.008	.14	.24*	.16	.13	.12	.16	.11	.19
11. *Gender			.28*	.22	.19	.17	.25*	.20	.30*	.09
12. Oxford Placement Test score (OPT)	121.9	10.60	.06	-.12	.04	-.18	.14	.14	.06	.09
	0								-.14	.23*
										.30**

\* $p < .05$ , \*\* $p < .01$ , 2 tailed tests.

\* Dummy coded, Male = 1, Female = 2

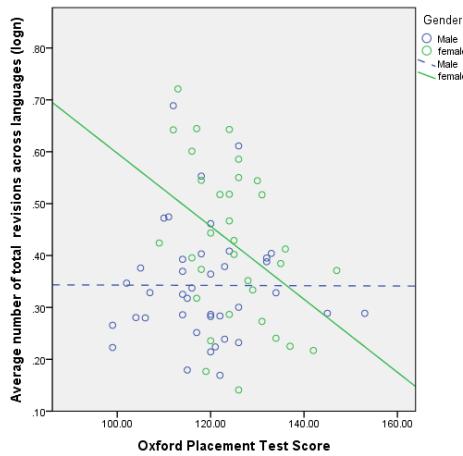
Table 4-2: Means and standard deviation (SD) for each of the revision variables, along with the bivariate correlations between the variables and between the variables and OPT and gender

It is worth noting that all revision measures in one language were moderately correlated with the corresponding measure in the other language, except for end revision, as table 4–2 shows. This indicates that participants applied consistent revisions patterns across the two languages, presumably reflecting a common trend of participants in revision regardless of the languages. Secondly, as a preliminary observation before detailed analysis, it should be noted that the overwhelming majority of the revisions were immediate ( $M = .37$  revisions per text,  $SD = .16$ ), rather than being either distant ( $M = .012$ ,  $SD = .009$ ) or end revisions ( $M = .003$ ,  $SD = .004$ ), ( $F_{(2,130)} = 353.16$ ,  $p < .0001$ ,  $\eta^2_p = .84$ ).

#### 4.2.2.1 Total Number of Revisions

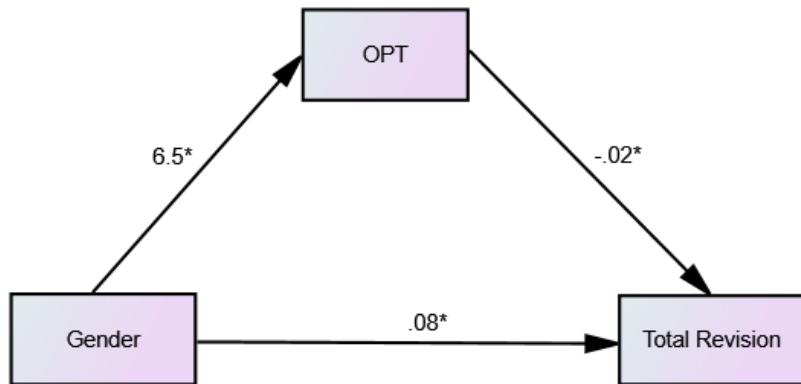
Table 4–2 shows that the participants made a higher number of revisions in English than Arabic, and that females made more revisions in both languages than males, though this failed to reach significance in English. There was no evidence for a simple bivariate relationships between English language proficiency and total amounts of revisions.

The initial regression analysis assessing the effects of language of writing and gender confirmed that there was a significant main effect of language of writing ( $F_{(1,64)} = 24.43$ ,  $p < .0005$ ,  $\eta^2_p = .26$ ), and a significant main effect of gender ( $F_{(1,64)} = 5.734$ ,  $p = .020$ ,  $\eta^2_p = .08$ ). However, when English language proficiency was added to the model, this revealed a significant interaction between gender and English language proficiency ( $F_{(1,64)} = 4.642$ ,  $p = .035$ ,  $\eta^2_p = .07$ ). The key feature of this interaction was that it applied to both the English and Arabic writing tasks. Figure 4–10 shows the relationship between English language proficiency and the total number of revisions averaged across the two languages of writing. As can be seen, the interaction reflects the fact the, for females, more revisions were carried out (in both languages of writing) the less proficient they were in English. By contrast, males showed no relationship between the amount of revisions they carried out and their English language proficiency.



**Figure 4–10: The participants' total number of revisions per text ( $\log n$ ) averaged across both languages as a function of gender and English language proficiency**

Mediation analysis was then carried out separately for the two language of writing to assess whether the effect of gender on total amount of revision was mediated by English language proficiency. The path diagram for the English language task is shown in figure 4–11. As can be seen in the diagram, gender had two separate effects on the total amount of revision. First, there was a significant direct effect ( $b = .08$ ,  $se = .03$ ,  $p < .05$ ), with females generally carrying out greater amount of revisions than males. Second, there was also a significant indirect effect through English language proficiency ( $b = -.02$ ,  $se = .01$ ,  $p < .05$ ), with females' higher English language proficiency being related to a reduction in the amount of revisions carried out. These results indicate that females, in general, carried out more revisions than male in English. However, the more proficient the females became in English the less revisions they carried out in English. By contrast, for Arabic, although there was a significant direct effect of gender on amount of revision ( $b = .09$ ,  $se = .04$ ,  $p < .05$ ), there was no significant indirect effect through English language proficiency ( $b = -.002$ ,  $se = .01$ ,  $p > .05$ ). This is consistent with the general tendency for females to revise more than males, but it indicates that English language proficiency does not have a negative mediating effect on the amount of revisions carried out in Arabic.



**Figure 4-11: The relationships between gender, English language proficiency (OPT) and the amount of total number of revision in English writing (unstandardized coefficient)**

#### 4.2.2.2 Location of the Revision

The next analysis looked more specifically at revisions made in different locations: (i) revisions carried out during the production of the text (either immediate or distant); and (ii) end revisions (revisions carried out at the end of the writing process, after producing the whole text).

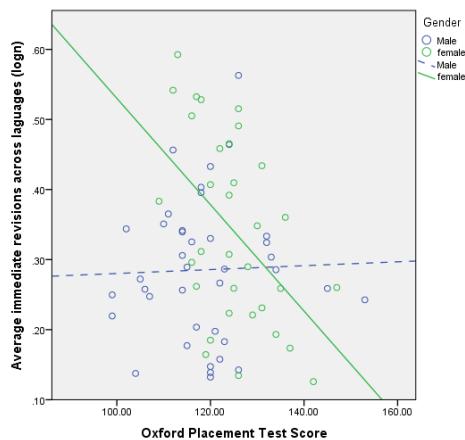
##### 4.2.2.2.1 Immediate Revisions

Table 4-2 shows that participants made more immediate revisions in English than Arabic, but that there were no significant relationships between gender and English language proficiency and the number of immediate revisions carried out in Arabic and English.

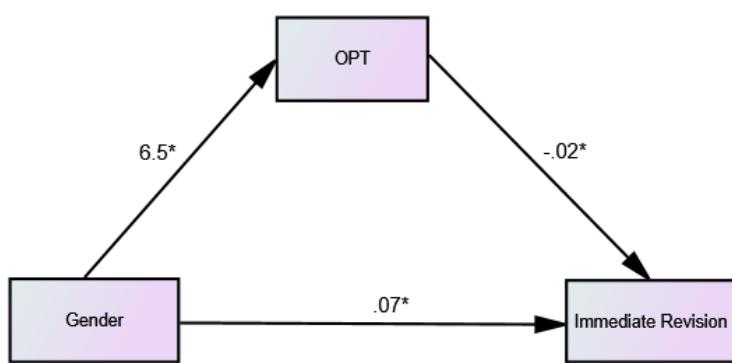
Regression analysis showed essentially the same pattern of results as for the total number of revisions. Thus, the initial regression analysis assessing the effects of language of writing and gender confirmed that there was a significant main effect of language of writing ( $F_{(1,64)} = 17.20, p < .0005, \eta^2_p = .21$ ) and a marginally significant main effect of gender ( $F_{(1,64)} = 3.61, p = .06, \eta^2_p = .05$ ). However, as before, when English language proficiency was added to the model, this revealed a significant interaction between gender and English language proficiency, applying to both writing tasks ( $F_{(1,64)} = 7.14, p = .010, \eta^2_p = .10$ ). As can be seen in figure 4-12, where English language proficiency is plotted against the number of immediate revisions, this shows the same pattern as for the total number of revisions. The number of immediate revisions carried out by females was negatively related to their English

language proficiency, whereas the number of immediate revisions carried out by males was lower than females and unrelated to their English language proficiency.

Mediation analysis also showed the same pattern of result as for total number of revisions. Thus, in English, there was both a significant direct effect of gender on the amount of immediate revisions ( $b = .07$ ,  $se = .03$ ,  $p < .05$ ), and a significant indirect effect through English language proficiency ( $b = -.02$ ,  $se = .01$ ,  $p < .05$ ), the path diagram in figure 4-13 represents these relationships. By contrast, there were no significant direct or indirect effects for Arabic ( $p > .05$  in both cases).



**Figure 4-12: The participants' immediate revisions per text ( $\log_n$ ) averaged across both languages as a function of gender and English language proficiency**

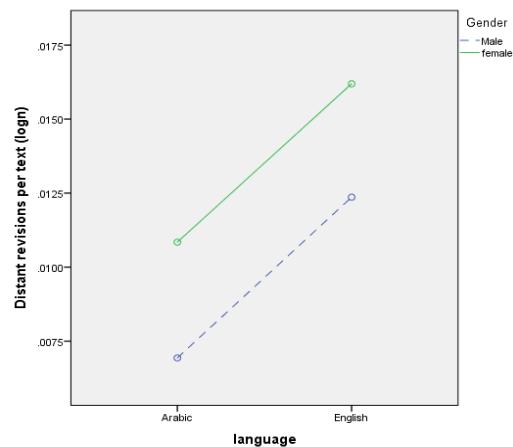


**Figure 4-13: The relationships between gender, English language proficiency and number of immediate revisions per text in English writing (unstandardized coefficient)**

#### 4.2.2.2.2 Distant Revisions

Table 4-2 shows that participants made more distant revisions in English than in Arabic, and that gender was positively correlated with the number of distant revisions (though the correlation for English failed to reach significance). There were no significant correlations for English language proficiency.

Regression analysis confirmed that the effects of language of writing on the number of distant revisions per text was statistically significant ( $F_{(1,65)} = 18.64, p < .005, \eta^2_p = .22$ ). Gender also proved to have a significant main effect ( $F_{(1,65)} = 4.38, p = .040, \eta^2_p = .06$ ) with females making more distant revisions than males in both languages, see figure 4-14. There was no evidence of any significant main effect or interaction with English language proficiency. Overall, then, these results were similar to those for immediate revisions in that more distant revisions were carried out in English than Arabic, and females made more distant revisions than males. However, unlike the immediate revisions, there was no evidence of a link with English language proficiency.

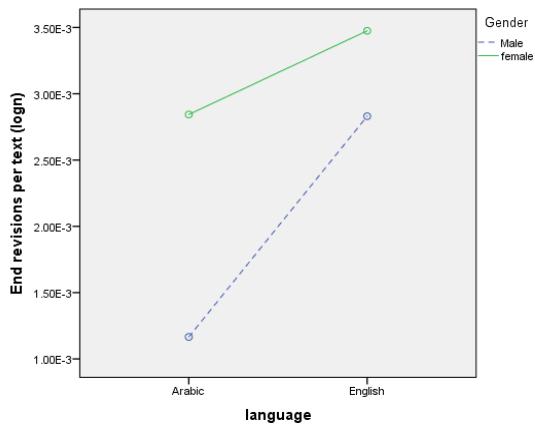


**Figure 4-14: The participants' distant revisions per text ( $\log_n$ ) as a function of language of writing and gender**

#### 4.2.2.2.3 End Revisions

Table 4-2 shows that more end revisions were carried out in English than in Arabic. In addition, there was a significant correlation between gender and end revision for Arabic. No other correlations were significant. Regression analysis confirmed that the effect of language of writing was significant ( $F_{(1,65)} = 6.79, p = .011, \eta^2_p = .10$ ). Gender also proved to have a significant main effect ( $F_{(1,65)} = 4.38, p = .040, \eta^2_p = .06$ ), with females carrying out more end revisions in both

languages than males, see figure 4–15. Although the difference between the genders appears to be more pronounced for Arabic, there was no evidence of a significant interaction between gender and language of writing ( $p > .50$ ). Similarly, there was no evidence of a main effect or interaction with English language proficiency ( $p > .4$ ) in all cases).



**Figure 4–15: The participants’ end revisions per text (log<sub>10</sub>) as a function of language of writing and gender**

#### 4.2.2.3 Language and Content Revisions in English

The final analysis assessed the extent to which revision was focused on editing language or on changing content. Language revisions was identified as any revision that was carried out to modify language; this could be concerned with correcting typing, spelling, grammar or punctuation. Content revision was identified as any revision that was carried out to change the content (Spelman Miller et al., 2008; Stevenson et al., 2006). To illustrate the difference between these two types, the following examples, taken from two different writers, show the difference between the two.

*Example 1:*

Co education-is-one-of-the-way-whic[j]<sup>1</sup> {h}<sup>2</sup> is-followed-by-most-of-the- [countries]<sup>2</sup> {institutions-around-the-world}.....and-that-will-reflect-on-their- [achievem]<sup>3</sup> {performance}-in-c[i]<sup>4</sup>ourses.

In this excerpt the writers made four revisions. The first and the fourth revisions are correction of typing revisions where the writer pressed j and i keys (respectively) accidentally and immediately corrected their mistake. The second and third are more related to content revision as the writer replaced

*countries with institutions around the world*, presumably to specify their argument. They also replaced the *achievement* with *performance*, maybe to reflect more specific meaning.

*Example 2:*

Co.education·is·a·new·system·<sup>2</sup>{that.h<sup>3</sup>ave}{as}·appli<sup>4</sup>[e]{ed·in·Omani·schools·and·colleges·recentaly}.It·means·that·boys·and·girls·study·together·in·one·class<sup>1</sup>[e]{room}

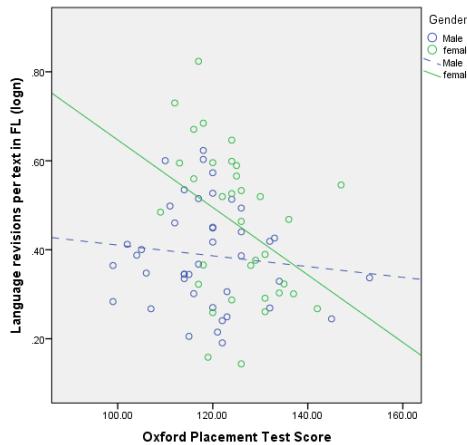
In this excerpt the writers made 4 revisions; typing, grammatical, and content. The first and fourth are typing revisions, as the writers seemed to press the keys accidentally. The third one is grammatical correction as the writer replaced the word *have* with *has*. The second one, which is underlined, is a content revision, as the writers decided to add this sentence during a subsequent stage of their writing process, maybe after realizing that being specific at that point is important.

Due to the fact that the computer keyboard is laid out differently in Arabic, extracting and analysing language and content revisions in Arabic was not possible. This analysis therefore focuses on language and content revisions in English writing only.

As a preliminary observation, it should be noted that, as can be seen in table 4-2, the majority of the revision consisted of language revision rather than content revision ( $F_{(1,69)} = 4.62$ ,  $p = .035$ ,  $\eta^2_p = .06$ ).

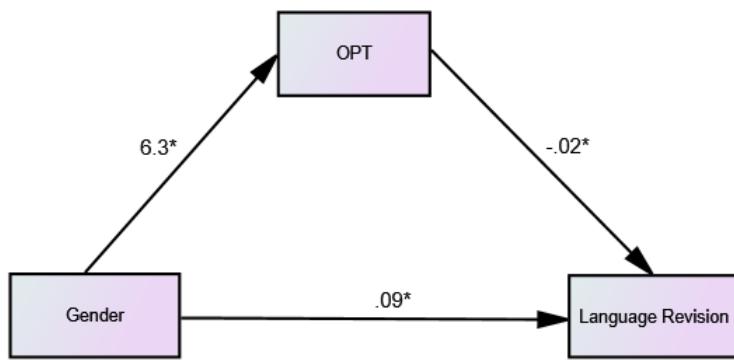
#### **4.2.2.3.1 Language Revisions in English**

A two way between subjects ANCOVA revealed that gender had a main effect on the number of language revisions in English ( $F_{(1,72)} = 4.43$ ,  $p = .039$ ,  $\eta^2_p = .06$ ) with females ( $M = .45$ ,  $SD = .17$ ) carrying out more language revisions than males ( $M = .38$ ,  $SD = .11$ ). English language proficiency proved to have a main effect ( $F_{(1,72)} = 6.82$ ,  $p = .011$ ,  $\eta^2_p = .09$ ) as writers with higher English language proficiency carried out less language revisions. However, there was also a marginally significant interaction between gender and English language proficiency ( $F_{(1,72)} = 3.59$ ,  $p = .06$ ,  $\eta^2_p = .05$ ) indicating that females' language revisions decreased as their English language proficiency increased. This interaction is plotted in figure 4-16.



**Figure 4–16: The participants' language revisions per text ( $\log_n$ ) in English as function of gender and English language proficiency**

This pattern of results is similar to the pattern for immediate revisions, which is consistent with the fact the majority of the revisions in the text were immediate and focused on language. Mediation analysis showed that gender had both a direct and indirect effect on language revisions. The direct effect reflected the fact that females carried out more language revisions than males ( $b = .09, se = .03, p < .05$ ). The indirect effect reflected the fact that English language proficiency of females reduced the extent to which they had to revise language ( $b = -.02, se = .01, p < .05$ ). These relationships are presented in the path diagram in figure 4–17. The overall effect of gender on language revisions is, therefore, the result of two conflicting tendencies.



**Figure 4-17: The relationships between gender, English language proficiency and total number of language revisions per text in English writing (unstandardized coefficient)**

#### 4.2.2.3.2 Content Revisions in English

Table 4-2 shows that there was a significant positive correlation between English language proficiency and the amount of content revisions, but no significant direct relationship with gender. A two-way between subjects ANCOVA confirmed that there was a significant main effect of English language proficiency on the amount of content revisions in English ( $F_{(1,67)} = 4.01, p = .049, \eta^2_p = .06$ ). There was no evidence of a main effect of gender or for an interaction with gender ( $p > .20$ , in both cases).

Although there was no direct effect of gender on content revisions, mediation analysis showed that there was an indirect effect through English language proficiency ( $b = .11, se = .06, p < .05$ ). A key feature of the overall effect and this mediation effect is that they were positive, with higher levels of English language knowledge being associated with more content revisions. This is in the opposite direction to the relationship between English language proficiency and language revision. This suggests that higher English language proficiency helps writers to reduce the need to revise language, and allows them to focus more on content revisions.

#### 4.2.2.4 Summary of Conclusions for Revision Measures

These results show that the vast majority of revisions in both languages were immediate and focused on language rather than content. This might reflect the linearity of the writing processes across both languages as individuals corrected their mistakes immediately during writing instead of waiting to

correct them later. Given that general background, there was consistent evidence that participants revised more in English than in Arabic across the revision measures.

For immediate revisions and language revisions, as well the overall measure of total revisions, which is primarily a reflection of immediate language revisions, there was a consistent interaction between gender and English language proficiency. The key feature of this interaction was that it applied to writing in both Arabic and English. This suggests that the effect is not just dependent on English language proficiency itself, but also depends on other factors associated with this measure. The most plausible possibilities are that this measure reflects general language proficiency and/or motivation to perform well on language tasks, as well as English language proficiency test itself. The pattern of the interaction indicated that there were two conflicting tendencies here. Females, appeared in general to be more motivated to revise in both languages than males, and this had a direct effect on the amount of revision carried out by males and females. But, given this greater tendency to revise, females' revisions were more dependent on their English language proficiency. They needed to revise more the less proficient they were in English language. By contrast, males' revisions did not depend on their English language proficiency. In order to confirm the precise nature of this interaction, however, future research needs to collect measures of both first language proficiency (Arabic in this case), and of motivation, in addition to the measure of foreign language proficiency (OPT) used in this study. This would enable future research to test whether writers' L1 proficiency correlates with their FL proficiency. One feature of the results that suggest that English language proficiency may reflect more than one cause is that English language proficiency only mediated the gender difference in revisions for the English language task. By contrast, there was no evidence that this mediated the effect in Arabic. It may be that the effect of English language proficiency on Arabic is a consequence of associations with motivation and general language proficiency, whereas the effect in English is a consequence of proficiency of English itself.

The pattern of results for distant and end revisions, and for content revisions was different to the pattern for immediate language revisions. For distant and end revisions, amount of revisions depended solely on language of writing

(more revisions in English) and gender (more revisions for females). There was no evidence for an effect of English language proficiency. This suggests that revisions carried out separate from the immediate process of text production may be different in form to immediate revision, and less dependent on language proficiency. By contrast, content revisions were associated with English language proficiency. The key feature of this relationship was that, in contrast to the relationship with language revision, it was positive. Greater English language proficiency was associated with more content revisions and less language revisions. This suggests that language proficiency may play an important role in enabling writers to develop higher-level revision skills.

#### 4.2.3 Writing Time (Planning)

The next analyses were designed to investigate planning processes, focusing on how participants divided up the writing process into different activities (self-regulation), and on the amount of time that they spent thinking relative to writing (planning). Although the participants in the current study were given a similar amount of time (40 minutes) to complete each writing tasks, they were told that this was an approximate time, and that it was up to them to finish in 40 minutes or less. There was therefore variation in how long individuals spent writing overall, and in how long they spent in different writing activities. For the purpose of this analysis, the overall time was divided into three stages: a pre-writing stage, a formulation stage, and a post-writing stage. The time they spent on each stage was calculated from the keystroke logs. Five measures were calculated:

- (i) Total amount of time on task;
- (ii) Time spent thinking before starting to write (pre-writing time). This measure was log-transformed to approximate normality;
- (iii) Time spent writing the text (formulation time).
- (iv) The proportion of pause time to writing time during the formulation stage. This was calculated by dividing the total amount of time taken up by the pauses of two seconds or more during formulation by total formulation time. It represents the proportion of formulation time taken up with thinking as opposed to translation and transcription.

(v) Time spent revising the text (post-writing time).

Table 4-3 shows the means and standard deviations for these measures, separately for each writing task, along with bivariate correlations between the variables, and their correlations with gender and English language proficiency. A number of general observations can be made from the table. First, participants in both languages devoted most of their composing time to the formulation stage (more than 90% of their total writing time). By contrast, on average, they spent less than a minute in thinking before writing (indicated by the first keystroke), and only two to three minutes reading and revising their texts after they had finished writing. This is not to say that planning and revising did not take place during formulation. Rather it is to stress that these activities were not divided into very distinct stages. Planning and revising took place largely at the same time as formulation, instead of being separated into distinct planning, formulation and revision stages. Abdel Latif (2009a) and Roca de Larios et al. (2008) also reported that their participants spent most of their time in the formulation process. They also reported that their writers spent less time on planning as opposed to revising. Second, the proportion of formulation time taken up by thinking was significantly related to the overall writing time and formulation time for Arabic, but not for English. This is consistent with formulation time being more strongly determined by the amount of thinking during formulation in Arabic. By contrast, in English, the relationship is presumably weaker because formulation time depends also on fluency of translation and transcription. Consistent with this assumption, the proportion of pause time during formulation in English was negatively correlated with English language proficiency and with gender (which is correlated with language proficiency). Third, there was a strong correlation between Arabic and English in the proportion of time spent thinking during formulation. This suggests that the tendency to combine planning with translation during formulation reflects a similar strategy across languages.

Variable name	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Total writing time Arabic	1745	603											
2. Total writing time English	2105	383		.06									
3. Pre-writing time Arabic (log <sub>n</sub> )	24	26	-.02	<b>.34**</b>									
4. Pre-writing time English (log <sub>n</sub> )	61	61	-.08	<b>.38**</b>	.17								
5. formulation time Arabic	1606	499	.73**	.15	.02	.04							
6. formulation time English	1905	402	.12	<b>.89**</b>	.27*	<b>.30*</b>	.16						
7. Post-writing time Arabic	148	159	.30*	.15	-.11	.10	.10	.09					
8. Post-writing time English	172	154	-.11	.18	-.09	-.04	-.13	-.10	<b>.30*</b>				
9. proportion of pause time to writing time during formulation stage Arabic	.21	.07	<b>.42**</b>	.17	.12	-.07	<b>.51**</b>	.18	-.04	.002			
10. proportion of pause time to writing time during formulation stage English	.27	.07	.12	.13	-.08	-.009	.17	<b>.23*</b>	-.013	<b>-.30**</b>	<b>.65**</b>		
11. *Gender			.16	<b>.25*</b>	.07	.10	.09	<b>.26*</b>	.18	.06	-.21	<b>-.40**</b>	

12. Oxford Placement Test (OPT)	121.61	10.37	-.05	-.10	-.06	-.08	-.04	-.12	.06	.10	-.11	<b>-.33**</b>	<b>.30**</b>
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\* $p < .05$ , \*\* $p < .01$ , 2 tailed tests.

\*Dummy coded, Male =1, Female =2

**Table 4-3: Means (by seconds) and standard deviation (SD) for each of the continuous variables, along with the bivariate correlations between variables**

#### 4.2.3.1 Total Writing Time

Participants spent a significantly longer time writing in English (35.08 minutes, on average) than in Arabic (29.08 minutes, on average) ( $F_{(1,73)} = 19.44, p < .005, \eta^2_p = .21$ ). Additionally, a significant main effect of gender was found ( $F_{(1,73)} = 5.48, p = .022, \eta^2_p = .07$ ), indicating that females spent significantly more time on the writing task than males did in both languages, see figure 4-18. No significant effect of English language proficiency was found, confirming the bivariate correlations result in table 4-3.

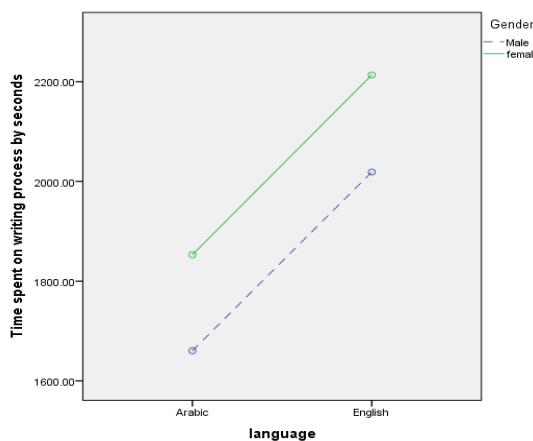


Figure 4-18: Total writing time as a function of language of writing and gender

Mediation analysis showed that gender has both a direct effect on the time spent on writing in English ( $b = 3.93, se = 1.47, p < .005$ ), and an indirect effect whereby gender was mediated by English language proficiency ( $b = -.74, se = .58, p < .005$ ). The path diagram that shows this relationships is in figure 4-19. There was no corresponding mediating effect of English language proficiency for writing in Arabic.

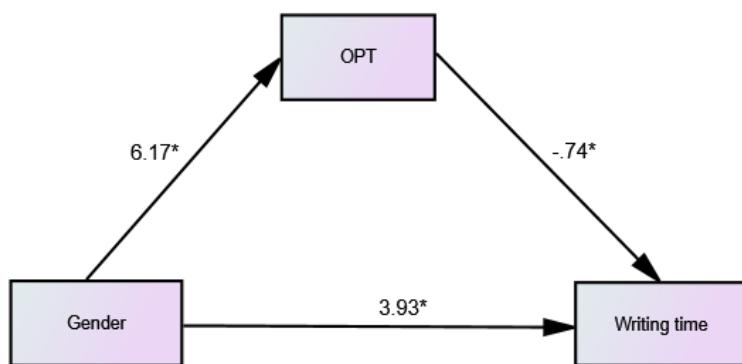
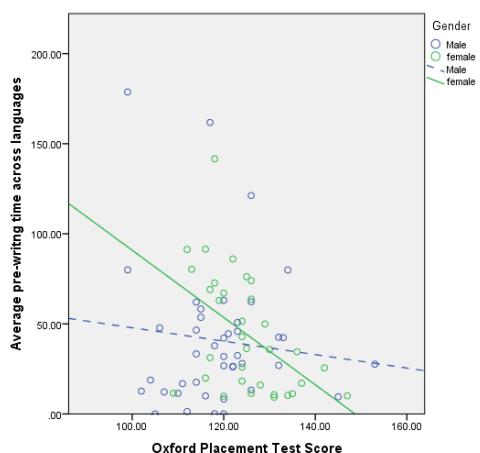


Figure 4-19: The relationships between gender, English language proficiency and total writing time in English writing (unstandardized coefficient)

#### 4.2.3.2 Time Devoted to Pre-writing Stage

Participants spent significantly more time on the pre-writing stage in English ( $M = 61$  seconds,  $SD = 61$ ) than in Arabic ( $M = 24$  seconds,  $SD = 26$ ) ( $F_{(1,73)} = 22.78$ ,  $p < .0005$ ,  $\eta^2_p = .23$ ). In addition, when gender and English language proficiency were added to the model, a significant effect of gender was found ( $F_{(1,70)} = 4.63$ ,  $p = .035$ ,  $\eta^2_p = .06$ ), moderated by a significant interaction between gender and English language proficiency ( $F_{(1,70)} = 4.27$ ,  $p = .043$ ,  $\eta^2_p = .06$ ) indicating that the effect of gender on the time spent on the pre-writing stage varied depending on their English language proficiency. The key feature of this interaction was that it applied across both languages. As can be seen in figure 4-20, the interaction reflects the fact the females spent significantly less time on the pre-writing stage as their English language proficiency improved ( $b = -.004$ ,  $se = .002$ ,  $p < .05$ ), but males' pre-writing time did not vary depending on their English language proficiency ( $b = -.0003$ ,  $se = .001$ ,  $p > .05$ ). This interaction of the same form as the interaction between gender and English language proficiency for the revision measures, and suggests that how long females spent in advance planning was also affected by their English language proficiency.

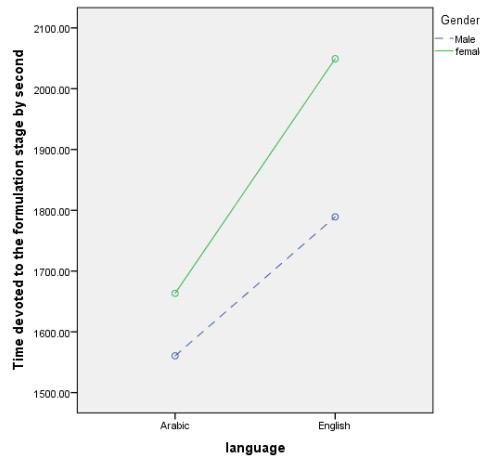


**Figure 4-20: Average pre-writing time across languages as a function of gender and English language proficiency**

#### 4.2.3.3 Time Devoted to Formulation Stage

Participants devoted significantly less time to the formulation stage ( $F_{(1,72)} = 18.76$ ,  $p < .005$ ,  $\eta^2_p = .21$ ) when writing in Arabic (26.77 minutes, on average) than in English (31.57 minutes, on average), see figure 4-21. Although, females spent more time on formulation stage, in both languages, compared

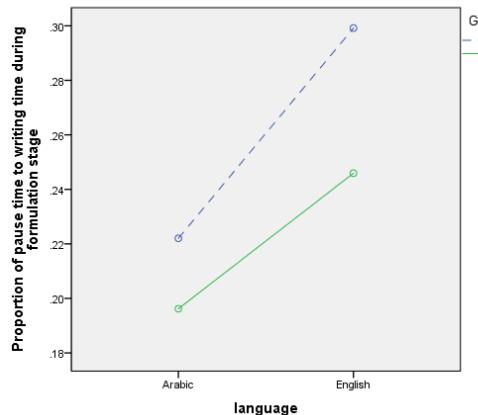
to males, the differences between the two genders did not reach the significance level ( $F_{(1,72)} = 3.40$ ,  $p = .070$ ,  $\eta^2_p = .05$ ). Additionally, English language proficiency did not have a significant effect on the time devoted to the formulation stage, confirming the results obtained from the correlation analysis.



**Figure 4-21: Time devoted to the formulation stage (seconds) as a function of language of writing and gender**

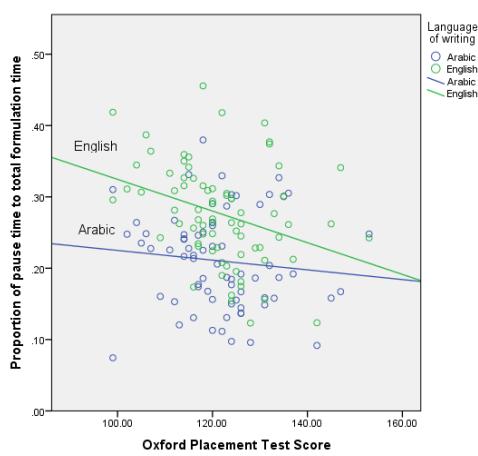
#### 4.2.3.4 Proportion of Pause time to Writing Time during Formulation Stage

Language of writing proved to have a significant main effect on the proportion of pause time to writing time during formulation stage ( $F_{(1,69)} = 8.71$ ,  $p = .004$ ,  $\eta^2_p = .11$ ). However, there were also significant interactions between language of writing and gender ( $F_{(1,69)} = 4.34$ ,  $p = .041$ ,  $\eta^2_p = .06$ ) and between language of writing and English language proficiency ( $F_{(1,69)} = 4.56$ ,  $p = .036$ ,  $\eta^2_p = .06$ ). These two interactions are plotted in figure 4-22 (language and gender) and figure 4-23 (language and English language proficiency). As can be seen in figure 4-22, both males and females paused for a higher proportion on formulation time when writing in English than when writing in Arabic. However, the difference is bigger for males than females. This reflects the fact that the difference between males and females is smaller, and non-significant significant, for writing in Arabic ( $t_{(70)} = 1.80$ , 2 tailed test,  $p = .08$ ), whereas it is larger, and significant for writing in English ( $t_{(73)} = 3.78$ , 2 tailed test,  $p < .0005$ ). In other words, although both males and females spent a higher proportion of time pausing during formulation when writing in English, males were affected more strongly than females.



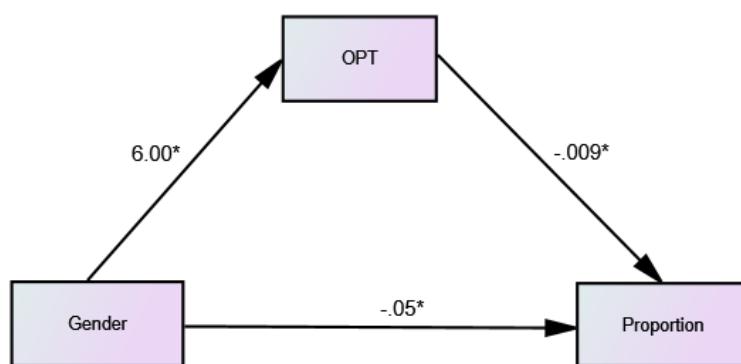
**Figure 4-22: Proportion of pause time to writing time during formulation stage as a function of language of writing and gender**

Turning to the interaction between language of writing and English language proficiency. As can be seen in the figure 4-23, although participants paused for a higher proportion of time when writing in English than in Arabic, this difference declined as English language proficiency level increased. At the highest level of English language proficiency there was no longer any difference between writing in English and Arabic. This reflects the fact that the proportion of pause time during formulation stage in English depends significantly on English language proficiency ( $b = -.002$ ,  $se = .001$ ,  $p = .004$ ,  $R = -.33$ ), whereas in Arabic, it is unrelated to English language proficiency ( $b = -.001$ ,  $se = .001$ ,  $p = .37$ ,  $R = -.1$ ). It is important to note here that this effect is independent of gender, so it applies to both males and females.

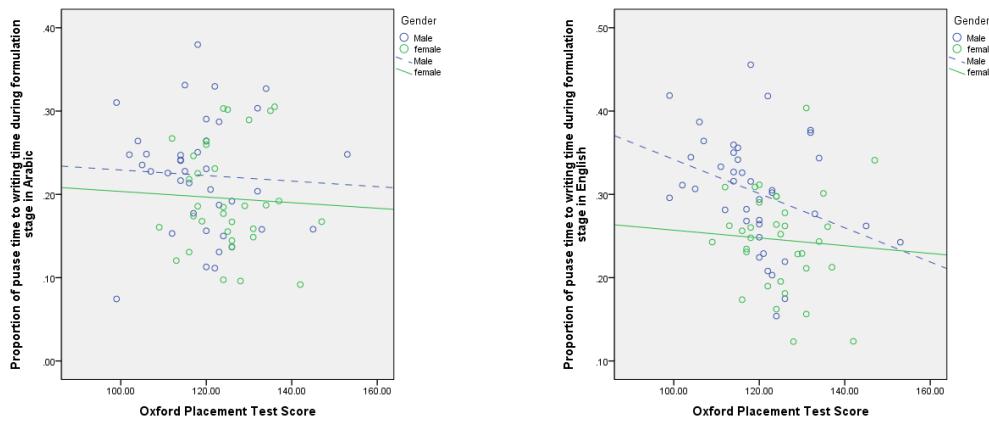


**Figure 4-23: Proportion of pause time to formulation time as a function of English language proficiency and language of writing**

In order to test whether the difference in English language proficiency between males and females accounted for the difference in the extent to which they paused when writing in English, mediation analysis was carried out for both English and Arabic. This showed that, when writing in English, there was both a direct and indirect effects of gender on the extent of pausing during formulation. Thus, females' higher levels of English language proficiency were significantly associated with smaller proportions of pause time during formulation (a significant indirect effect ( $b = -.009$ ,  $se = .006$ ,  $p < .005$ )). However, this did not fully account for the effect as there was also a significant direct effect of gender ( $b = -.05$ ,  $se = .015$ ,  $p < .005$ ), indicating that an additional unknown factor was also partially responsible for females lower levels of pausing during formulation. The path diagram in figure 4-24 represents this relationships. By contrast, when writing in Arabic there was no evidence of either a direct or an indirect effects of gender on pause time during formulation. These results suggest that the proportion of pause time to writing time during formulation in English was higher with males because males had lower English language proficiency. They also indicate that as males' English language proficiency improved, pause time during formulation dropped down significantly in English but not in Arabic as shown in figure 2-25.



**Figure 4-24: The relationships between gender, English language proficiency (OPT) and proportion of pause time to writing time in English writing (Unstandardized coefficient)**



**Figure 4-25: Proportion of pause time to writing time during formulation as a function of language of writing, gender and English language proficiency**

#### 4.2.3.5 Time Devoted to the Post-Writing Stage

Although participants spent slightly more time on the post-writing stage when writing in English than Arabic, and males spent less time on the post-writing stage compared to females in both languages, neither of these effects was statistically significant. There was also no significant effect of English language proficiency on the time spent on the post-writing stage.

#### 4.2.3.6 Summary of Conclusions for Writing Time

These results show that, for these participants, writing in both languages mainly involved formulating the text, with little advance planning or revision. Planning and generation of content was therefore carried out at the same time as formulation of text rather than separately in advance. The participants spent more time overall on the writing task when writing in English as opposed to Arabic, presumably because of the greater language demands of writing in English. This overall effect was duplicated for each stage of writing, except for the post-writing (revision) stage.

Additionally, females devoted more time overall than males to completing the writing task in both languages. Mediation analysis indicated that this gender difference was actually the result of two conflicting tendencies. One was a direct effect as females, in general, wrote for longer than males, presumably because they were more motivated. The other was an indirect effect whereby females' higher English language proficiency reduced the amount of time they

spent on writing in English, presumably because this enabled them to carry out writing process more efficiently.

All participants spent only a short amount of time thinking before they wrote, but they did so for longer when writing in English than Arabic. The most important finding here was that pre-writing was differently affected by English language proficiency for males and females. Males showed little variation in how long they planned in advance for writing; whereas females spent longer planning the lower their English language proficiency. This suggests that language ability, which might be expected to mainly affect formulation of text, can also affect thinking in advance of writing, for females at least. Interpreting the precise reasons for this effect is difficult, however, because it was present for both languages. One possible explanation is that English language proficiency correlates with first language proficiency. This could be tested by collecting information about first language proficiency as well as foreign language proficiency in future research.

Given that advance planning was short, planning of content had to take place at the same time as formulation. This thinking during writing was captured by measuring the amount of pause time occurring during formulation. This measure showed a particular clear pattern of results. Participants paused for higher proportion of time when writing in English than in Arabic, presumably because of extra thought needed to express themselves in a foreign language. Consistent with this explanation, the amount of pausing during formulation in English decreased as participants English language proficiency increased. Importantly, this relationship was present for both males and females, and for English but not Arabic. Furthermore, the fact that this difference between the languages disappeared at the highest levels of English language proficiency indicates that the extra pause time in English was entirely due to the extra language processing required in English. In addition, there was a consistent difference between males and females, with males pausing for longer than females in both languages, even after difference in language proficiency had been accounted for. This suggests that there is a general difference between males and females in the amount of thinking needed to produce the text.

## 4.3 Text Quality

### 4.3.1 Text Assessment

In order to compare the participants' text quality across languages, English language proficiency and gender, the texts were analysed. It was also important to identify how language (Arabic vs. English) gender and English language proficiency affect the participants writing performance. Analysing the writers' texts was also important to identify the factors that influence the quality of the participants' texts, for example, to find out any potential correlations between text quality, the writing process and writing beliefs.

Two independent assessors assessed every text. Eight raters working in panels of two rated the participants' Arabic and English texts. Each panel rated the Arabic text and the matched English one in order to ensure consistency in assessment. The study adopted a 25- point rating scale that assesses the text in five different components: 1) task achievement, 2) organization, 3) grammar, 4) vocabulary and 5) spelling and mechanics. The score for each individual component equals 5 and the total score equals 25 (see section 3.5.4 for more details about this marking scale and rating process). The average score of the two assessors' ratings for each component and for the total text scores were calculated and then used to answer the following questions:

How does the text quality of undergraduate Omani students in English compare to that of Arabic and does this vary across English language proficiency and gender?

How does efficiency in translation process (writing fluency) of undergraduate Omani students relate to text quality in Arabic and English?

To what extent variation in the undergraduate Omani students' text quality can be explained in terms of their writing processes?

### 4.3.2 Participants' Written Text Quality across Languages, Gender and FL Proficiency

Two outliers were found and thus excluded from this analysis. Principal Component Analysis (PCA) showed that a single factor could be extracted from the data. Tables 4-4 and 4-5 show that the average overall quality and the

average of the five quality components in each language (English and Arabic) were strongly correlated indicating that the five quality components present one factor, which is the overall text quality score. Furthermore, average overall text quality and all of the quality components in each language correlated positively with gender and English language proficiency (except for average task achievement score in Arabic). These results indicate that the average overall text quality and all of the text quality components scores (except for task achievement score in Arabic) in Arabic and English were significantly higher for females and for participants with higher English language proficiency.

Variable name	Mean	SD	1	2	3	4	5	6	7
1. Average Overall text score	16.30	3.92							
2. Average Task achievement score	3.67	.78	.88**						
3. Avarage Organization	3.34	.86	.92**	.86**					
4. Average Grammar	3.05	.86	.94**	.75**	.82**				
5. Average Vocabulary	3.40	.93	.94**	.78**	.81**	.89**			
6. Average Spelling and mechanics	2.82	.82	.89**	.68**	.73**	.84**	.81**		
7. *Gender			.51**	.49**	.47**	.49**	.47**	.38**	
8. Oxford placement Test (OPT)	121.89	10.35	.50**	.37**	.47**	.50**	.51**	.38**	.28*

\* $p < .05$ , \*\* $p < .01$ , 2 tailed tests.

\*Dummy coded, Male =1, Female =2

**Table 4-4: Means and standard deviation (SD) for each of the quality component's score in English, along with the bivariate correlations between the quality components, gender and English language proficiency**

Variable name	Mean	SD	1	2	3	4	5	6	7
1. Average Overall text	17.59	3.31							
2. Average Task achievement	3.71	.64	.75**						
3. Avarage Organization	3.35	.77	.85**	.77**					
4. Average Grammar	3.66	.72	.90**	.63**	.73**				
5. Average Vocabulary	3.68	.85	.88**	.60**	.72**	.87**			
6. Average Spelling and mechanics	3.17	.75	.85**	.54**	.61**	.84**	.79**		
7. *Gender			.37**	.09	.23*	.43**	.37**	.36**	
8. Oxford placement Test (OPT)	121.76	10.36	.31**	.10	.27*	.29*	.29*	.32**	.28*

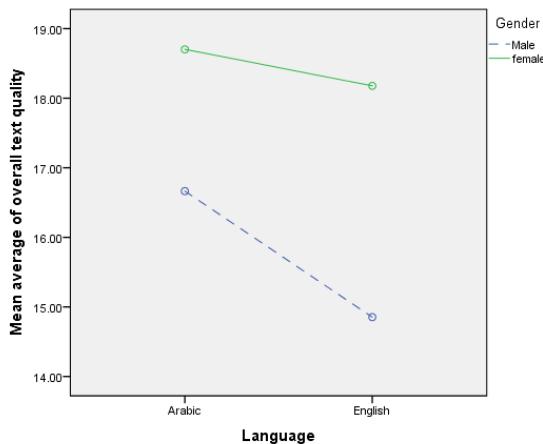
\* $p < .05$ , \*\* $p < .01$ , 2 tailed tests.

\*Dummy coded, Male =1, Female =2

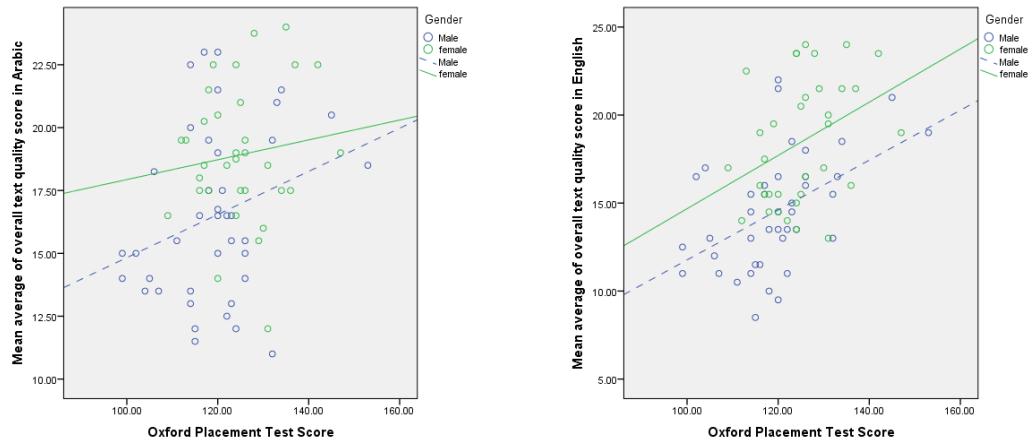
**Table 4-5: Means and standard deviation (SD) for each of quality component's score in Arabic, along with the bivariate correlations between the quality components, gender and English language proficiency**

#### 4.3.2.1.1 Average Overall Text Score

Following the analysis of the bivariate correlations and PCA, the overall text quality score was used to measure the effect of language, English language proficiency and gender on the quality of the text produced. Regression analysis revealed a significant main effect of language ( $F_{(1,70)} = 4.26, p = .043, \eta^2_p = .06$ ), indicating that participants scored higher in the overall text quality in Arabic than English, see figure 4-26. English language proficiency also proved to have a significant main effect ( $F_{(1,70)} = 15.24, p < .001, \eta^2_p = .18$ ), implying that in general participants scored significantly higher in the overall text quality as their English language proficiency improved, see figure 4-27. Figure 4-27 indicates that the effect of English language proficiency on the participants' overall text quality was stronger in English than Arabic, as the lines in figure 4-27 are steeper in English more than Arabic. Furthermore, gender had a significant main effect ( $F_{(1,70)} = 20.69, p < .001, \eta^2_p = .23$ ), indicating that females in general performed better than males in the overall text quality as demonstrated by figure 4-26.

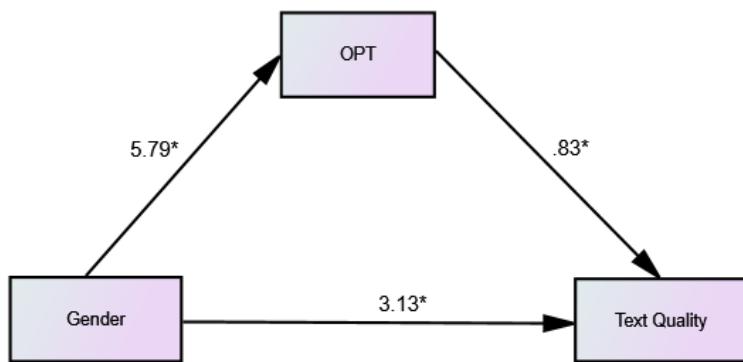


**Figure 4-26: The participants' overall text quality as a function of language of writing and gender**

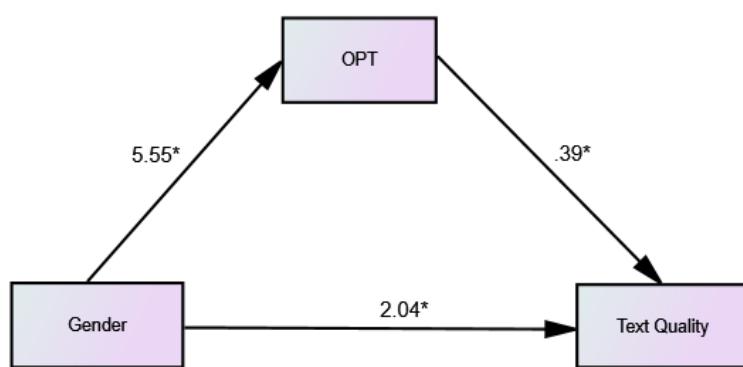


**Figure 4-27: Average overall text score in both languages as a function of gender and English language proficiency**

Mediation analysis suggests that gender had both a direct and indirect effects on text quality in both languages. As for English task, the direct effect reflected that females produced better text quality than males ( $b = .3.13$ ,  $se = .75$ ,  $p < .0005$ ). The indirect effect reflected the fact that females produced better text quality in English writing was indeed a consequence of their good command in English ( $b = .83$ ,  $se = .35$ ,  $p < .005$ ), see figure 4-28. Similarly, for the Arabic task, there was a direct effect of gender ( $b = 2.04$ ,  $se = .74$ ,  $p < .005$ ), indicating that females produced better text quality than males in Arabic. There was also a significant indirect effect through English language proficiency ( $b = .39$ ,  $se = .24$ ,  $p < .005$ ), implying that higher English proficiency of females enabled them to produce better text quality in Arabic task, see figure 4-29. These results actually confirmed the results obtained from the bivariate correlations that females and participants with higher English language proficiency scored higher in text quality. The key feature of these relationships was that it applied across both languages. This might again suggest that English language proficiency test (OPT) captures general language proficiency, in addition to English language proficiency. It also might suggest that females are more motivated than males to produce better text quality.



**Figure 4-28: The relationships between gender, English language proficiency and text quality in English writing (unstandardized coefficient)**



**Figure 4-29: The relationships between gender, English language proficiency and text quality in Arabic writing (unstandardized coefficient)**

## 4.4 Correlations between the Writing Process and Text Quality

Correlation analyses between the participants' writing processes (fluency, revision, writing time and planning patterns, and their text scores were carried out in order to find out if variation in their text quality can be explained in light of their writing process.

### 4.4.1 Correlations between Text Quality and Fluency Measures

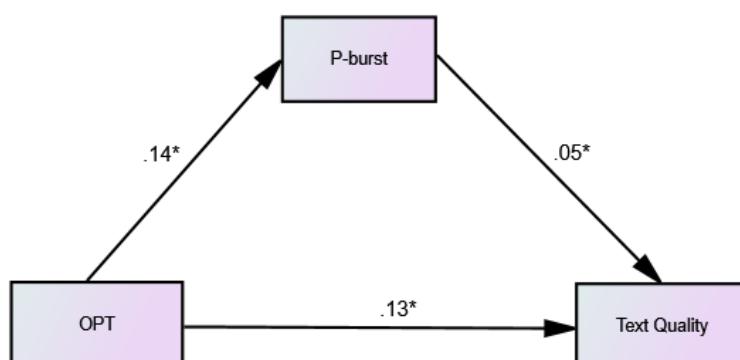
Bivariate correlations in table 4-6 show that for both languages, how long is the text was positively correlated with the overall text quality indicating that the longer the texts the participants wrote in Arabic and English the better score they achieved. Interestingly, for English, average overall text score was correlated with the mean size of P- bursts and rate of production but not for

Arabic texts. This suggests that the more fluent the writer were in writing English the better the texts they produced. These results also suggest that being a fluent writer, might not always lead to a good text quality in one's first language. Therefore, taking into account other factors that might affect text quality in Arabic is also important. Mediation analysis revealed that the effect of English language proficiency on English text quality was significantly mediated by P-burst length in English ( $b = .05$ ,  $se = .02$ ,  $p < .005$ ), as indicated by the path diagram in figure 4-30. However, no corresponding mediation effect was found by the mean of rate of production and mean length of text length when P-burst was controlled for in English. This relationship indicates that the size of P-burst partially accounted for the effect of English language proficiency on text quality in English writing but no corresponding result was found in Arabic.

<i>Fluency measures</i>	<i>Mean length of p-bursts (<math>\log_n</math>)</i>	<i>Mean of rate of production (<math>\log_n</math>)</i>	<i>Mean length of final text (<math>\log_n</math>)</i>
<i>Overall text score</i> <i>Arabic</i>	.18	-.10	.37**
<i>Overall text score</i> <i>English</i>	.50**	.38**	.50**

\*\* Correlation is significant at the 0.01 level (2-tailed)

**Table 4-6: Correlations between the participants' average overall text quality score and the fluency measures in Arabic and English**



**Figure 4-30: The relationships between English language proficiency, P-burst and text quality in English writing (unstandardized coefficient)**

#### 4.4.2 Correlations between Text Quality and Revision Patterns

It can be noted from table 4–7 that the participants' average total text quality scores in Arabic and English did not correlate with all of the revisions patterns, except for the end revision in English. This suggests that the number of revisions and the location of revisions the individuals carried out in Arabic and English did not account for variation in participants' text quality except for end revision in English writing. It also indicates that the extent to which the participants carried out language or content revisions in English did not contribute to their text quality. However, the number of revisions the participants carried out after they produced their text in English correlated positively with their overall text quality in English writing. This indicates that the more the participants carried out revisions after producing their first draft in English the better they scored in their overall text quality.

<i>Revisions</i>	<i>Total number of revisions per text (log<sub>n</sub>)</i>	<i>Immediate revisions per text (log<sub>n</sub>)</i>	<i>Distant revisions per text (log<sub>n</sub>)</i>	<i>End revisions per text (log<sub>n</sub>)</i>	<i>Language revisions (log<sub>n</sub>)</i>	<i>Content revisions (log<sub>n</sub>)</i>
<i>Arabic overall text score</i>	.07	-.03	.07	.11	-	-
<i>English overall text score</i>	-.06	-.19	.09	.23*	-.11	.09

\*Correlation is significant at the 0.05 (2-tailed)

Table 4–7: Correlations between the participants' average overall Arabic and English text quality and their revisions

#### 4.4.3 Correlations between Text Quality and Writing Time

Table 4–8 shows that the participants' text quality score in both languages had low and non-significant correlations with the four time variables (except for the total composing time in Arabic). The moderate correlation between total writing time and the text quality in Arabic suggests that the more time the participants devoted to writing in Arabic the better text quality they produced. Contrary to expectation, no correlation found between the text quality and the time spent on pre-writing stage (initial planning) as it was expected that the

more time the participants spent on the pre-writing stage, the better the quality of their texts become, (Bereiter & Scardamalia, 1981; Ellis & Yuan, 2004; Kellogg, 1988). This could be because these participants did not spend much time in planning in general.

Given that the correlation between text quality and the proportion of pause time to writing time during formulation stage (which reflects thinking during formulation process) was relatively strong in English, reflects the struggle the FL writers might undergo during the course of English writing (as they need to cope not only with the writing process' demands but also with the language issues) and this negatively affected the quality of their text. This also suggests that generating content during formulation stage might compete with other processes like translation which results in cognitive overload. The strong negative correlation between P-burst and proportion of pause time to writing time during formulation stage in English (Pearson Correlation,  $r=-.78$ , significant at .01 level) further supports this argument; indicating that generating the context during formulation stage could slow the translation process which results in poorer text quality in English. No corresponding correlations was found between proportion of pause time to thinking time during formulation and the Arabic text.

<i>Writing times</i>	<i>Total writing time</i>	<i>Pre-writing time</i>	<i>Formulation time</i>	<i>Proportion of pause time to writing time during formulation</i>	<i>Post-writing time</i>
<i>Overall text quality in Arabic</i>	.26*	.11	.21	-.09	.22
<i>Overall text quality in English</i>	.14	-.13	.13	-.53**	.17

*\*\*correlation is significant at the 0.01 level (2-tailed)*

**Table 4-8: Correlations between the participants' overall text quality score writing times in Arabic and English**

## 4.5 Immediate Recall Questions

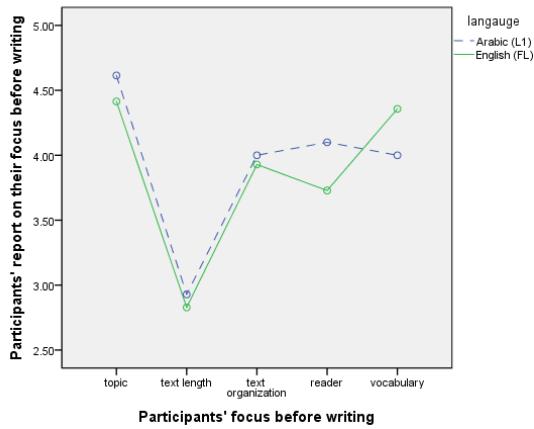
### 4.5.1 Participants' Report on their Focus before Writing

The first IRQ aimed to elicit the participants' responses about their focus before writing their texts. It actually represents what component they thought of more during their initial planning. Five different measures were used to stimulate participants' responses on their focus before writing. These were (i) focus on the topic (content), (ii) focus on the text length, (iii) focus on the text organization, (iv) focus on the readers, and (v) focus on the vocabulary. Students were asked to rate, in a five Likert scale, how much they focused on these five concepts.

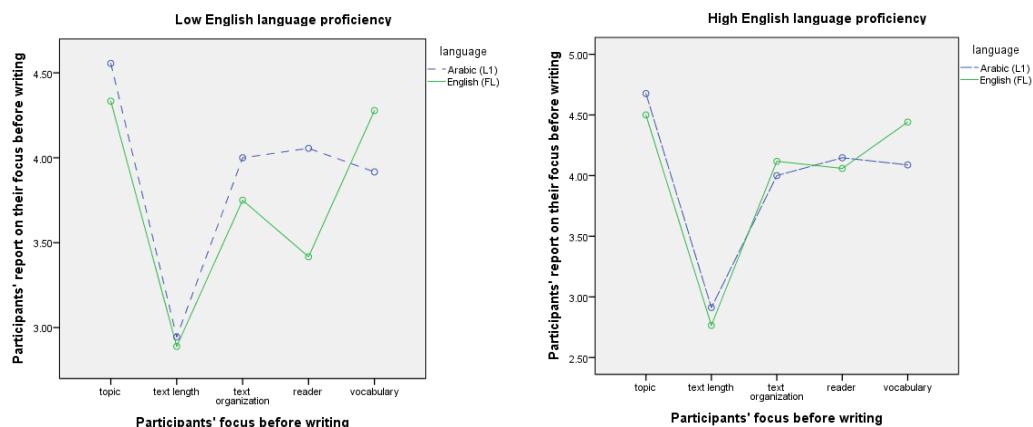
The initial regression analysis revealed a significant interaction ( $F_{(1,68)} = 3.26, p = .016, \eta^2_p = .05$ ) between language of writing and participants' focus before writing, indicating that participants' focus before writing varied depending on the language of the writing. To begin with, figure 4-31 demonstrates that participants had significantly the highest focus on topic (content) ( $p < .005$ ) and the lowest focus on text length ( $p < .005$ ) in both languages. However, pairwise comparison demonstrated that for Arabic, the difference on the participants focus on text organization, reader and vocabulary were not statistically significant. This suggests that participants gave, to some extent, similar amount of attention to these three concepts before they started writing in Arabic. Conversely, participants reported thinking of vocabulary more significantly ( $p < .005$ ) than their readers and text organization when writing in English. They also reported paying significantly more attention to their text organization over their readers in English writing ( $p < .005$ , in both cases), see figure, 4-31.

However, when English language proficiency was added to the model, this revealed a significant interaction between language of writing, before writing focus construct and English language proficiency ( $F_{(1,68)} = 3.08, p = .021, \eta^2_p = .04$ ). This interaction indicates that the differences on participants' concerns before writing in English varied depending on their English language proficiency. Figure 4-32 shows that the pattern of difference was stronger for participants with low English language proficiency and virtually disappeared for those with high English language proficiency. Before writing, participants with

low English language proficiency tended to give significantly more attention to vocabulary and less attention to readers ( $p < .005$ ), and text organization ( $p = .03$ ) in English. Pairwise comparison showed that writers' with lower English language proficiency' attention to vocabulary was as important as the content, as the differences between the two items was non-significant ( $p = .81$ ). Furthermore, their attention to reader was significantly less than their attention to text organization in the English task ( $p < .005$ ). However, as the writers' English language proficiency improved the differences on their focus on vocabulary and text organization became smaller and non-significant in English writing. The results also showed that the difference between attention to readers and vocabulary was still significant ( $p < .005$ ) indicating that participants thought less of their readers and more on the vocabulary before writing in English even when their English language proficiency improved. No significant effect of gender was found.



**Figure 4-31: Participants' report on their focus before writing as a function of language of writing**



**Figure 4-32: Participants' report on their focus before writing as a function of language of writing in the two English proficiency levels**

#### 4.5.2 Participants' Report on Planning Type

What planning strategies the participants used during writing was measured by IRQ2. Five different questions were used to elicit participants' responses on their planning. This demonstrates whether participants differ in planning their text globally or at the local level and if their strategies varied across language of writing, gender and English language proficiency. Regression analysis revealed no significant effect of language of writing on the participants' reports on planning type indicating that participants used, to some extent, similar kind of planning strategies when writing in Arabic and English. For example, participants reported using whole text mental planning and sentence planning strategies more than using whole text written planning and paragraph planning in both languages. However, there was a significant effect of type of planning ( $F_{(1,70)} = 18.26, p < .005, \eta^2_p = .21$ ) moderated by a significant interaction between type of planning and gender ( $F_{(1,70)} = 6.27, p < .005, \eta^2_p = .08$ ) indicating that participants' reports on type of planning varied depending on their gender. Pairwise comparison showed that females and males differed significantly in terms of their reports on making written plan for the whole text and for each paragraph. In general, females were much less likely to make written plans for the whole text and its constituent paragraphs, see figure 4-33. No significant differences were found between males and females on the other planning strategies, e.g. planning the whole text mentally, making written plan for each paragraph and planning each sentence as they write.

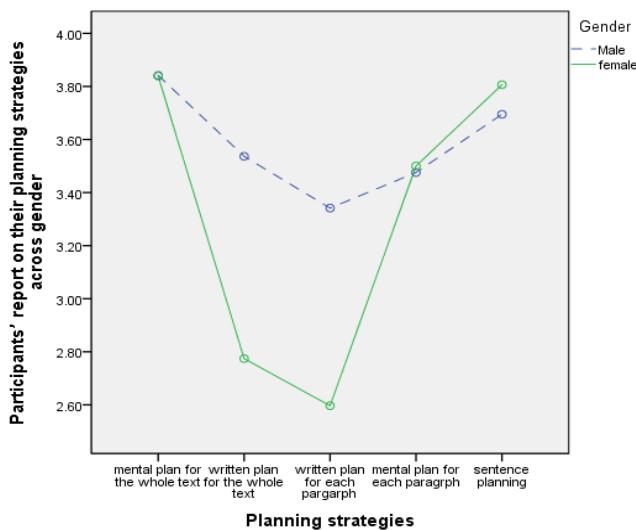


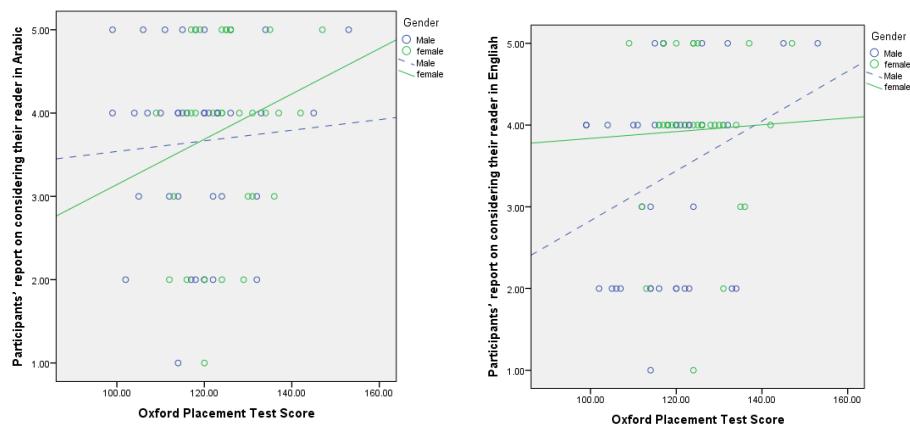
Figure 4-33: Participants' report on their planning type as a function of gender

#### 4.5.3 Participants' Report on Following their Plan

How much participants followed their plan was elicited from participants' responses to the third question in IRQ. Regression analysis revealed no significant effect of language, gender and English language proficiency on the participants' reports of following their plan.

#### 4.5.4 Participants' Report on Considering Audience

Attention to audience was tested by the fourth question in the IRQ. Regression analysis revealed no significant effect of language and gender on the participants' report of how much they took into account their audience. English language proficiency proved to have a significant effect ( $F_{(1,71)} = 5.05$ ,  $p = .028$ ,  $\eta^2 = .07$ ), implying that in general participants with higher English language proficiency reported considering their audience more, see figure 4-34.



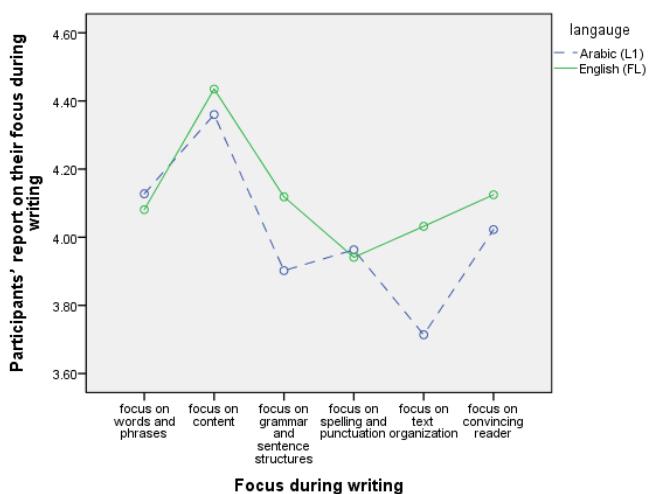
**Figure 4-34: Participants' report on considering their readers in Arabic and English as a function of gender and English language proficiency**

#### 4.5.5 Participants' Report on Change in Understanding

The fifth IRQ question was meant to measure how much participants perceived their knowledge of the topic they wrote has developed or changed through writing. No significant effects of language of writing, gender or English language proficiency were found on the participants' report in their knowledge development through writing.

#### 4.5.6 Participants' Report on their Focus during Writing

Participants' focus during writing was measured by analysing the sixth IRQ question. No significant effect of language of writing was found in terms of the participants report on their concern during writing. Participants had the highest focus during writing on the content in both languages. They also had the lowest focus during writing on text organization when writing in Arabic and on spelling and punctuation when writing in English as figure 4-35 shows. It is also worth noting from the figure, that participants reported focusing more on text content, grammar and sentence structure, text organization and convincing readers more when writing in English than Arabic. Gender and English language proficiency proved to have no significant effect on the participants' report of their focus during writing. However, it is worth mentioning that females reported focusing on grammar and sentences structure, spelling and punctuation, text organization and convincing their readers more than males in both languages. On the other hand, males, in general, reported focusing on words, phrases, and content more than females, see figure 4-36.



**Figure 4-35: Participants' report on their focus during writing as a function of language of writing**

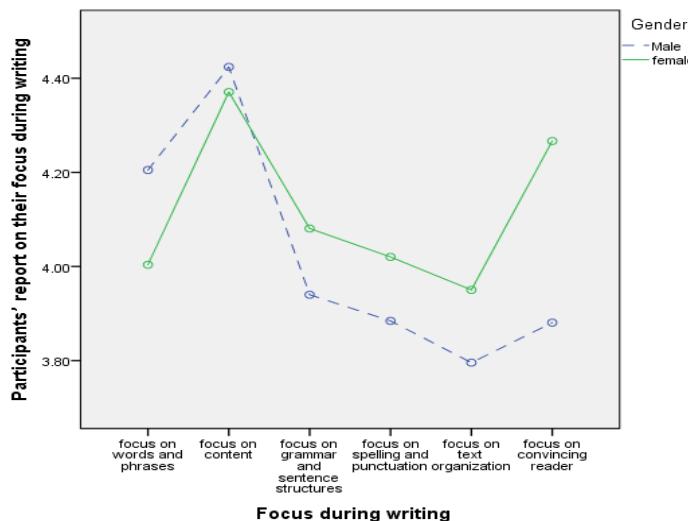


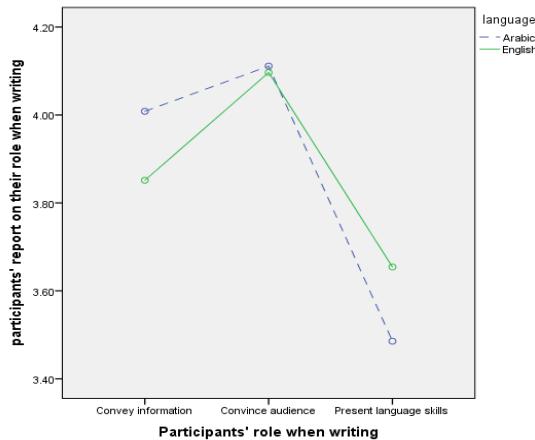
Figure 4-36: participants' report on their focus during writing as a function of gender

#### 4.5.7 Participants' Report on their Role during Writing

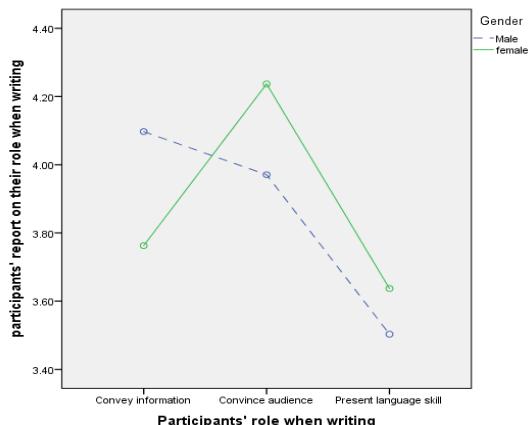
How participants perceived their role as writers was tested by the seventh question in the IRQ. No significant effect of language of writing in terms of the participants' report on their role in writing was found. Figure 4-37 shows that in both languages, participants reported presenting their language skills as the least important and convincing their reader as the most important.

However, participants reported giving more attention to convey information when writing in Arabic than English, see figure 4-37. Furthermore, they reported their desire of presenting their language skills more when writing in English than Arabic, see figure 4-37. However, a significant effect of participants' role construct ( $F_{(1,66)} = 5.30, p = .007, \eta^2_p = .14$ ), moderated by a significant interaction between participants' role construct and gender ( $F_{(1,66)} = 4.50, p = .015, \eta^2_p = .12$ ) was found. To begin with, figure 4-38 shows that presenting language skills was relatively low priority for both genders as males and females thought that presenting language skill is significantly less important than conveying information and convincing audiences. However, the interaction between writer's role and gender implies that females and males differed significantly in their perception of their role as convincing readers or conveying information. The pairwise comparison demonstrated that females significantly focused more on convincing their readers than conveying information ( $p = .003$ ). Whereas, male did not significantly distinguish between these two concepts (convincing readers and conveying information) which suggests that males treated these two concepts, to some extent, equally.

However, it is worth noting that males gave more attention to convey the information more than to convince their audience, but that was not significant ( $p = .426$ ), see figure 4-38. These results might imply that females were more socially oriented in terms of communication with their readers and males cared more about presenting information.



**Figure 4-37: Participants' report on their role when writing as a function of language of writing**



**Figure 4-38: participants' report on their role when writing as a function of gender**

#### 4.5.8 Summary of Conclusions for Participants' Responses to IRQ

These results demonstrate that, in general, participants had similar strategies and focus when writing regardless of the language, their gender and their English language knowledge. However, some significant differences between the participants across Arabic and English were yielded. For example, participants reported that before writing they focused on vocabulary, that they

intended to use during writing more in English than Arabic. It is actually expected that writers will give more attention to vocabulary over audience and content when writing in English writing. This is because writing in English requires good language maturity and since the participants were (on average) in their lower intermediate level in English, according to their OPT score; they sacrificed audience and text organization attention to focus on vocabulary. More interestingly, the participants' attention to their audience increased in both languages as their English language proficiency improved. This implies the importance of English language proficiency in improving not only English writing performance but also Arabic, a pattern that was found in the process measures as well. Furthermore, males and females differed in their perception about their role as writers as males were more concerned on conveying information whereas females focused more on convincing readers.

Furthermore, males reported using paragraph planning as opposed to females.

#### **4.5.9 Correlations between Text Quality and the Participants' Reported Writing Strategies**

A few meaningful correlations were found between participants' text quality and their reported strategies. For example, in terms of the participants focus before and during writing, significant correlations (though modest) were found between the participants' concern for the content and their text quality in Arabic (Pearson correlation is 0.30 and .23, respectively, all significant at 0.05 level). This indicates that the more attention the participants gave to their content before and during writing, the better the texts they produced when writing in their L1. Additionally, the correlation between participants' knowledge improvement of the writing topic and their text quality in Arabic proved to be significant ( $r = .23$ , significant at .05 level). On the other hand, a significant negative correlation was found between participants' Arabic and English text quality and their paragraph planning strategy ( $r = -.33$  and  $-.25$  respectively, significant at .01 and. 05 levels). This implies that using written plan for each paragraph resulted in poor text quality in both languages. In terms of the participants' perceived role as writers, a significant positive correlation was found between their role as communicators and their text quality in English ( $r = .29$ , significant at .05 level). This suggests that the more the participants' perceived themselves as communicating their ideas to convince their readers the quality of texts got better.

## 4.6 Writing Beliefs

The writing beliefs scales were analysed to answer the following research questions:

- (i) What are the relative strength of undergraduate Omani students' different writing beliefs and how do these compare with those found in previous research by Sanders-Reio et al. (2014)?
- (ii) How do the undergraduate Omani students' writing beliefs vary across languages of writing (Arabic vs. English), English language proficiency and gender?
- (iii) How do the undergraduate Omani students' writing beliefs relate to their writing processes and text quality?

Table 4–9 shows the means and standard deviations for the four sets of writing beliefs, along with the correlations between them and with gender and English language proficiency. A number of general observations can be made about the pattern of these relationships. First, the strength of the beliefs appears to be similar, and positive (a rating of 4 indicates agreement with the beliefs), for transactional beliefs, recursive beliefs and audience orientation beliefs. However, participants appear to agree less strongly with transmissional beliefs than the other beliefs. Second, the low to moderate correlations of the scales with each other are consistent with those found by Sanders-Reio et al. (2014). Third, the fact that there are fairly high correlations between the beliefs for writing in English and Arabic suggests that participants' beliefs vary in a similar way for the two languages. Finally, the generally positive correlations between gender and each of the writing beliefs suggest that females tend to score higher on the scales than males. It is worth noting, though, that this only appears to be significant for audience orientation, and that it is less consistent for transactional beliefs. In addition, there is some evidence that the strength of participants' transmissional beliefs for both languages of writing was lower for participants with higher English language proficiency.

Variable name	Mean	SD	1	2	3	4	5	6	7	8	9
1. <i>Transmissional Arabic</i>	3.18	.75									
2. <i>Transmissional English</i>	3.4	.66		<b>.59**</b>							
3. <i>Transactional Arabic</i>	4.00	.57		<b>.35**</b>	<b>.36**</b>						
4. <i>Transactional English</i>	4.00	.52		<b>.33**</b>	<b>.36**</b>	<b>.49**</b>					
5. <i>Recursive Arabic</i>	4.03	.61		<b>.24*</b>	<b>.32*</b>	<b>.55**</b>	<b>.29*</b>				
6. <i>Recursive English</i>	4.09	.57		<b>.31*</b>	<b>.33**</b>	<b>.29*</b>	<b>.36**</b>	<b>.50**</b>			
7. <i>Audience orientation Arabic</i>	4.03	.50		<b>.25*</b>	.20	<b>.62**</b>	<b>.39**</b>	<b>.57**</b>	<b>.38**</b>		
8. <i>Audience orientation English</i>	4.00	.47		.16	.24	<b>.56**</b>	<b>.41**</b>	<b>.55**</b>	<b>.33**</b>	<b>.79**</b>	
9. * <i>Gender</i>				.16	.21	<b>.26*</b>	-.09	.17	.14	<b>.24*</b>	<b>.31**</b>
10. <i>Oxford Placement Test (OPT)</i>	121.61	10.37		-.22	<b>-.26*</b>	.06	-.13	.08	.08	.23	-.15
											<b>.30**</b>

\* $p < .05$ , \*\* $p < .01$ , 2 tailed tests.

\*Dummy coded, Male =1, Female =2

**Table 4-9: Means and standard deviation (SD) for each of the writing belief scale, along with the bivariate correlations between the scales, gender, and English language proficiency**

Table 4–10 compares the means scores of the scales in the pilot study, the main study and Sanders–Reio et al.’s (2014) study

Writing Beliefs Scales	Mean				
	Pilot Study		Main Study		Sanders–Reio et al. (2014)
	L1	FL	L1	FL	L1
Transmisional Beliefs	3.47	3.30	3.18	3.4	2.4
Transactional Beliefs	4.07	3.95	4.0	4.0	4.0
Recursive Process	4.03	4.02	4.03	4.09	4.1
Audience orientation	4.04	3.93	4.03	4.0	4.1

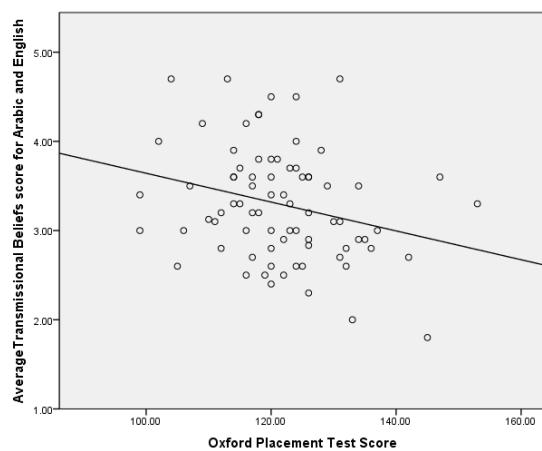
Table 4–10: The mean scores of writing beliefs scales in the pilot study, main study and Sanders–Reio et al.’s (2014) study

As can be seen in the table, the ratings for transactional beliefs, recursive process beliefs and audience orientation beliefs are almost identical for the pilot study and the main study, indicating that the Omani students gave consistent ratings to these beliefs. These ratings were also very similar to those held by the undergraduate students from the US studied by Sanders–Reio et al.’s (2014) study. The ratings for transmisional beliefs, however, were different. The Omani students agreed significantly less strongly with these beliefs than they did with the other beliefs ( $F_{(3,228)} = 35.08$ ,  $p < .0005$ ,  $\eta^2_p = .32$ ), in the same way as the US students gave lower ratings to these beliefs than the other beliefs. However, the Omani students ratings were nevertheless significantly stronger than the US students transmisional beliefs ( $t_{(228)} = 4.05$ ,  $p < .0005$ ). In other words, although the Omani students shared similar beliefs that good writing involves developing understanding during writing (transactional beliefs), revising the text as it is written (recursive processes), and taking readers into account (audience orientation), they believed more strongly than the US that it is also involves transmitting information in books and quoted from authorities (transmisional beliefs).

The next section examines how the different beliefs vary as a function of language of writing, gender and English language proficiency.

#### 4.6.1 Transmissional Beliefs

Regression analysis revealed that the difference in transmissional beliefs for Arabic and English was significant ( $F_{(1,75)} = 9.32, p = .003, \eta^2_p = .11$ ), indicating that participants held stronger transmissional beliefs when writing in English than Arabic. The tendency for females to hold stronger transmissional beliefs than males indicated by the positive (but non-significant) correlations between gender and transmissional beliefs shown in table 4-9, however, failed to reach significance ( $F_{(1,75)} = 2.47, p = .08, \eta^2_p = .04$ ). Additionally, there was a significant effect of English language proficiency ( $F_{(1,75)} = 5.72, p = .02, \eta^2_p = .07$ ), indicating that participants' transmissional beliefs for both languages decreased as their English language proficiency improved, see figure 4-39.

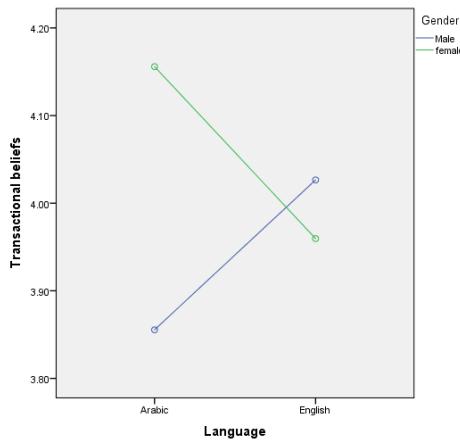


**Figure 4-39: Relationship between participants' transmissional beliefs and English language proficiency across both languages**

#### 4.6.2 Transactional Beliefs

A significant interaction between language of writing and gender was found ( $F_{(1,71)} = 5.40, p = .023, \eta^2_p = .07$ ), indicating that the differences between the two languages varied depending on the participants' gender. As can be seen in figure 3-40, this reflects the fact that females had significantly stronger beliefs than males for writing in Arabic ( $t_{(71)} = 3.21, p = .02$ ), but there was no significant difference for writing in English ( $t_{(71)} = .76, p = .45$ ). This suggests that females believed that writing in Arabic involves engaging with text and

developing their understanding more strongly than males did. This belief is reduced for writing in English.



**Figure 4–40: Participants' transactional beliefs as a function of language of writing and gender**

#### 4.6.3 Recursive Process Beliefs

No significant differences were found for beliefs about recursive process scale. These results suggest that participants' recursive process beliefs were similar for both languages, gender and English language proficiency. Participants generally agree, therefore, that good writing involves revising and editing the text.

#### 4.6.4 Audience Orientation Beliefs

Regression analysis revealed a main effect of gender ( $F_{(1,71)} = 7.39, p = .008, \eta^2_p = .09$ ). This is consistent with the positive correlations between gender and audience orientation beliefs shown in table 4–9, and suggests that females believed more strongly than males that writing should involve taking the readers into account for writing in both Arabic and English.

#### 4.6.5 Summary of conclusions for writing beliefs.

This sample of ELT Omani undergraduates held similar beliefs about writing to the US sample studied by Sanders-Reio et al. (2014), except for transmissional beliefs. Although they agreed less strongly with these beliefs than with the other beliefs about writing, this suggests that they have a relatively stronger belief than Sanders-Reio's US students that writing involves transmitting

information from books and authorities. Furthermore, this belief was stronger for writing in English than writing in Arabic, and was stronger for participants with weaker English language proficiency. One possible explanation for this pattern of results is that writing is seen as more about transmitting information when it is harder for participants to express their thoughts (e.g., in a foreign language, and with lower language proficiency). The problem with this is that language proficiency was only measured in English, and yet this correlation was still present for writing in Arabic. This could be explained if language proficiency in English was correlated with language proficiency in Arabic. However, this can only be tested by future research collecting information about proficiency in both first and foreign languages.

There was also evidence that females had stronger beliefs than males that writing involves taking readers into account, involves the development of understanding and engaging with the text. However, the strength of this second belief was reduced for writing in English. This implies a general difference between males and females in the extent to which writing is believed to be about communicating understanding, which is reduced when writing in a foreign language. Finally, there were no differences in the extent to which writing was believed to involve recursive processes. The participants in general agreed that writing involves revising and editing the text, regardless of the language of writing or English language proficiency.

#### **4.6.6 Correlations between Writing Beliefs, Text Quality and Writing processes**

The next set of analyses were designed to examine how writing beliefs were related to text quality and writing processes.

##### **4.6.6.1 Text Quality**

Previous research by Sanders-Reio et al. (2014), using the same writing beliefs scales as this study, found that text quality in L1 writing was negatively correlated with transmissional beliefs, and positively correlated with recursive processes and audience orientation beliefs. They found no significant relationship with transactional beliefs. The significance of the correlations was therefore tested using 1 tailed tests, except for transactional beliefs. Table 4-11 shows the correlations between each of the writing beliefs and text quality

for writing in Arabic and English. As can be seen in table 4-11, the correlations between participants' writing beliefs and text quality in both languages were generally very low and non-significant. In particular, there was no evidence for relationships for writing in Arabic. For English, however, there were significant positive correlations between quality and audience orientation beliefs, and quality and recursive processes beliefs. This implies that writing in English was of higher quality for participants who believed that writing involves taking readers into account and that writing involves revising and editing the text. However, these correlations are difficult to interpret because of the lack of corresponding correlations for Arabic. The lack of correlations for Arabic (L1 in this case) also contradicts the findings of Sanders-Reio et al. (2014) for L1 in their study (English).

<i>Writing Beliefs Scales</i>	<i>Transmisional</i>	<i>Transactional</i>	<i>Recursive Process</i>	<i>Audience orientation</i>
<i>Overall text quality score</i>	-.02	-.11	-.04	.01
<i>Arabic</i>				
<i>Overall text quality score</i>	-.06	-.03	.21*	.26*
<i>English</i>				

\*correlation is significant at the 0.05 level (1-tailed)

Table 4-11: Correlations between writing beliefs and text quality in Arabic and English

#### 4.6.6.2 Writing Processes

The relationships between writing beliefs and writing processes showed a consistent relationship between recursive process beliefs for English and the corresponding revisions measures for English. The relationships between the four writing beliefs and the revision measures are shown in table 4-12.

Table 4-12 shows that all of the revision measures correlated significantly with the recursive process scale in English, except for total amount of revision, which was marginal ( $p < .1$ ) but would be significant if a 1-tailed test had been used, and content revision. These relationships suggest that FL writers perceived FL writing process as a language task rather than iteration process where more global revising and editing should take place. However, there was

no evidence for similar significant relationships between recursive process beliefs and revisions in Arabic. This may be because the scale is less valid measure in Arabic. Or it may be because revision is required less when writing in a first language, and so has less impact on text quality. However, the significant positive correlation between recursive process scale and end revision in English did suggest that writers who viewed writing as a recursive process, believed that revision should take place after producing the first draft (end revision) as revising content is more likely to take place.

The remaining scales did not generally show any significant correlations with writing processes. The one exception was a significant relationship between audience orientation in English and amount of content revision. This suggests that taking readers into account is associated with more content revision. One possible explanation for this is that focussing more on communicating with the reader may lead to more attention being paid to the content of the text. Because of problems with the software in recording Arabic it was not possible to test whether there was a similar relationship for writing in Arabic. This should be tested in future research.

For the correlations between participants' writing beliefs and their writing fluency there was a significant correlation between mean P-burst length and audience orientation beliefs for writing in English ( $r = .24$ , significant at .01 level), but no other correlations were significant. The correlation between audience orientation beliefs and the size of P-burst in English suggests that focussing more on communicating with the readers may lead participants to produce language in larger chunks in a foreign language. The fact that audience orientation for writing in English and P-burst length were both associated with text quality suggests that audience orientation and its associated effect on P-burst length may contribute to higher text quality when writing in a foreign language. Taking together these results imply that recursive writing beliefs and audience orientation writing beliefs for English may play a part in producing text of higher quality. These two beliefs were correlated with text quality and were associated with processes – revision and P-burst length – that were also associated with text quality.

Revision measures	Writing beliefs for Arabic				Writing beliefs for English			
	Transmisional	Transactional	Recursive process	Audience Orientation	Transmisional	Transactional	Recursive process	Audience Orientation
Total revisions ( $\log_n$ )	.19	.10	-.05	.08	.21	.08	-.23	.16
Immediate revisions ( $\log_n$ )	.17	.07	-.07	.13	.15	.08	-.26*	.13
Distant revisions ( $\log_n$ )	.02	-.02	.09	.003	.11	.16	-.24*	-.03
End revisions ( $\log_n$ )	.07	.23	.09	.15	.13	.09	.25*	-.08
Language revisions ( $\log_n$ )					.19	-.07	-.24*	.16
Content revisions ( $\log_n$ )					.04	-.04	-.01	.26*

\*correlation is significant at the 0.05 level (2-tailed)

Table 4-12 : Correlations between writing beliefs and revision measures for Arabic and English

By contrast, the correlations for writing beliefs in Arabic were generally low and non-significant. The only significant correlation was between transactional beliefs and post-writing time ( $r = .27$ , significant at .05 level). This suggests that writers with high transactional beliefs tended to spend more time reading and revising their texts after completing their drafts of text. Since, transactional beliefs are about the extent to which writing involves developing understanding, a possible explanation for this is that these beliefs lead writers to read their text more closely to check their understanding of the content. However, given the general lack of relationships between writing beliefs for Arabic and either writing processes or text quality, it is difficult to draw conclusions about this isolated finding.

# Chapter 5: Discussion

The present study investigated the effects of gender, FL proficiency on the L1 (Arabic) and FL (English) text quality, writing processes and writing beliefs. This chapter summarizes the main findings and explains them in the light of the reviewed literature. The first section evaluates the effects of gender and FL proficiency on the quality of the written text. The second section links the keystroke measures, used in the current study, with underlying writing processes using Chenoweth and Hayes's (2003) model of cognitive writing process. The third section discusses how FL proficiency and gender influence the underlying writing processes in both languages. Additionally, this chapter discusses if variation in text quality can be explained in terms of these underlying processes. The last section introduces writing beliefs of Omani students and how they vary across languages gender and FL proficiency. It also discusses if writing beliefs account for differences in L1 and FL writing processes and text quality.

## 5.1 Text Quality

The results showed straightforwardly that the language of writing, gender and FL proficiency affected text quality. This offers a clear answer to the first research question. The analysis demonstrated that the quality of L1 text was better than FL text. This is consistent with previous studies which reported the superiority of L1 over FL in terms of text quality (Babayigit, 2015; Lindgren et al., 2008; Pennington & So, 1993; Tillema, 2012). There was also clear evidence that text quality was related to both gender and FL proficiency, with females producing better text than males, and better FL proficiency associated with higher text quality. This raises a question about where this gender difference came from. For FL writing, this has a straightforward interpretation. Better proficiency in FL enables one to write better text, and since the females in this sample had better FL proficiency than males, they produced better text than males. As discussed in the literature review (section 2.7.5) that the effect of gender in writing is quite confusing, because the literature has provided inconsistent findings. This study actually provided a clear-cut picture about gender gap and added a new empirical finding to the existing literature in

writing in favour of females (Babayığit, 2015; Castro & Limpo, 2018; Olinghouse, 2008).

However, there is more to the results than this, because there was also evidence for the same, albeit significantly weaker, set of interrelationships between the same factors and text quality in L1. The fact that the relationships persisted for FL when L1 performance was controlled for, indicates that there is a specific relationship with FL proficiency in L1. However, the fact that females also wrote better than males in L1, and this was mediated by their language proficiency in FL indicated that there is a more general relationship with factors correlated with FL proficiency. The positive effect of FL proficiency on L1 text is quite puzzling, as it seems to be a recurring theme in this study as shown in chapter 4. There are a number of possible explanations for this. First, proficiency in FL may reflect more general language proficiency. It is possible that it also reflects Linguistic proficiency in L1, more weakly but nevertheless significantly, so that L1 text quality also showed a smaller but significant correlation with FL proficiency and with gender. To test this explanation, future research should include a measure of language proficiency in L1 as well as a measure of language proficiency in FL. This would enable one to test whether the two measures were correlated, and whether the relationship between L1 text quality and FL proficiency was indeed because of its correlation with L1 proficiency. Second, and in addition to, these correlations may reflect a difference in motivation. Females may be more highly motivated than males and hence performed better on both the writing task and OPT. Previous research in gender difference actually found that males are less motivated than females in writing (Frank Pajares & Valiante, 2001). This could be controlled for in future research by including a further test of level of motivation for each task.

Additionally, the study proved that having a good command of FL proficiency enabled participants to write a text of high quality. This is actually consistent with previous studies that highlighted the contribution of FL proficiency in improving the quality of the text (e.g., Abdel Latif, 2009a; Al Chamdi, 2010; Chenoweth & Hayes, 2001; Lindgren et al., 2008). The main difference in the present study is that most of this previous research has equated FL proficiency with the amount of experience or time spent studying FL rather than a direct measure of FL proficiency. The advantage of the present study is that, in using

a standardized FL test to assess participants' FL proficiency (see Abdel Latif, 2009a; Manchón & Roca de Larios, 2007a; Roca de Larios et al., 2006) who used the same test (OPT) as this study. Using such test allows one to specify variation in language proficiency precisely and hence assess the correlation between language proficiency and other variables directly, rather than as an indirect assumption about effect of experience or time spent on studying. It also enables one to provide a more precise account of the effect of gender on writing product and processes.

Overall, then, there is a clear evidence that the students wrote better in their L1, and that females generally wrote better than males. In FL, this difference was more pronounced, and could be accounted for by females' better language proficiency in FL. The data also indicates the possibility, however, that gender difference may also be a consequence of more general difference in language ability and/or difference in motivation. Therefore, looking at the process data is important to understand gender difference on the one hand and whether writing processes account for the variation in text quality on the other hand.

## 5.2 Relating Keystroke Data to Writing Processes

Writing process research has started to incorporate keystroke as a main tool for writing process data because it generates a lot of writing data. However, keystroke data by themselves do not provide direct measures of the underlying processes (Baaijen et al., 2012). Therefore, before discussing the relationship between writing processes, and the other variables, this section discusses how keystroke measures can be interpreted in terms of the underlying writing processes proposed by Chenoweth and Hayes (2003).

### 5.2.1 Planning Measures

Planning is a process that potentially happens everywhere during the course of writing and pauses are, to some extent, the first signs for planning (Schilperoord, 1996). Having said that, pauses might also indicate rereading and evaluation of the text written so far. They also might reflect different types of planning- language planning or more global idea generation for example. In order to better analyse planning, the log was divided into three stages. First, pre-writing stage, which predominantly reflects advance planning (potentially

more about content generation). Second, formulation stage (more about formulating ideas and the proportion of pause time to writing time during writing stage was used to reflect planning/thinking during formulation process). Third, post-writing stage (mainly about evaluation and the minimum of this could be reading the text). However, this section focuses more on the first two stages, which presumably focus on advance planning and planning during writing (emergent planning). Furthermore, in order to facilitate the interpretation of planning, the IRQ was used to provide further information about goals of different instances of planning. For example, IRQ helps to know whether participants preferred to plan in advance and what aspects they planned and focused on more, content, language or audience...etc. Advance planning is represented by the proposer box in Chenoweth and Hayes (2003) model.

### 5.2.2 Fluency Measures

The three fluency measures used in the current study (the size of language chunks produced between pauses of two second or more (P-bursts), words written per minute during writing process (rate of production) and the length of the final text produced) are the most common fluency measures used in writing research (see sections 2.8.3 and 4.2.1 for more details about these measures). However, although these measures do all capture some aspects of how fluently a text is produced, they vary in how directly they reflect different component of writing processes. Some researchers (Abdel Latif, 2009a, 2009b; Chenoweth & Hayes, 2001, 2003; Hayes, 2009, 2012a) argued that the size of P-burst is the most direct measure of the translation process. Generally, measuring writing fluency has been kind of issue in the literature (see section 2.8.3 for more details about this debate). One of the main aim of this thesis is to see whether keystroke based measures can help to understand this issue better.

Schmidt (1992) defines fluency as an “automatic procedural skill” (p. 358). In this sense, fluent writing is a consequence of automatic access to language proficiency. Accordingly, the translation process, where language is proposed in strings (bursts), and the transcription process, where the proposed language is encoded into a text, are directly affected by the language proficiency. Therefore, the length of P-burst depends on how much language individuals

can propose before the capacity of the translator is exceeded (Galbraith, 2009a). Consequently, the efficiency of the translator can be assessed by the size of P-burst as an increase in the size of the P-burst reflects “an increase in the capacity of the translator to handle complex language structure” (Chenoweth & Hayes, 2001, p. 94). Thus, one would expect that higher language proficiency positively affects the size of P-burst.

Final text length and rate of production can arguably reflect some aspects of the translation and transcription processes. For example, how much and how fast writers can propose and encode language might increase the production rate as writers can produce the text more quickly. The efficiency of their translator and transcriber might also be an important factor in producing a lengthy text because writers can process language more automatically. The problem with production rate and text length, however, is that they could be influenced by writers’ writing strategy and motivation (Abdel Latif, 2013). For instance, text length might be affected by the time given to accomplish the task and how long individuals want to go on with their writing. Rate of production can also be affected by the time individuals spent on writing and by individuals’ revision strategy. For example, some writers could write very fast, but they prefer to revise and edit a lot as they go with their writing and that might slow their rate of production. Therefore, rate of production and text length are not just representing the output of the translation process, but they can also reflect writers’ writing strategies as well. Whereas, the size of P-burst, which indicates how bigger chunk of language individuals can produce in one unit, is a more direct reflection of the translation process (Chenoweth & Hayes, 2001, 2003; Hayes, 2009, 2012a). In what follows, therefore, I will assume that *P-burst size* provides the most direct evidence about translation process.

### 5.2.3 Revision Measures

The revision measures (immediate, distant, end, language and content revisions) map into different writing processes. As for the location of the revision, it is important to make a distinction between revisions carried out to correct errors within the translation and transcription processes, which one might expect to be immediate revisions, and revisions carried out at a distance in the text (distant revisions) or after writing has been completed (end revisions). To the extent, the revision is focused on language errors rather than

on content and other organization aspects, one might expect a higher level of immediate revisions. Immediate revisions are more related to the point of utterance, therefore, they are more likely related to translation and transcription processes as writers try to produce correct language or correct the text they have just produced immediately before moving forward. Whereas distant and end revisions allow more global revision (reflecting on the text as a whole) where modifying the text's content and organization is most likely taking into account (Hayes, 2012b). Nevertheless, distant and end revisions could also reflect local revision as writers might correct language errors rather than content. Accordingly, FL writers are expected to carry out more immediate revisions as they are more likely concerned with correcting language errors over content and organization aspects. By contrast, L1 writers might carry out more end and distant revisions since their memory are not cognitively overloaded with language concerns so they make more global changes to their texts.

### **5.3 Linking the Study's Findings to the Writing Processes**

This section explains the findings of the current study in terms of the underlying writing processes. Section 5.1 indicates that FL proficiency and gender are important factors in explaining individuals' written texts. According to the cognitive writing model proposed by Chenoweth and Hayes (2001, 2003) planning, formulation (translation and transcription) and revision are the main processes involved in writing. The current study found that translation process has its own specificity, particularly in FL, and it actually affected how other processes function. Thus, starting to discuss the findings related to translation process is more reasonable. Then, I will look at the impact of translation on those processes (planning and revision). This section actually provides answers to the following research question:

To what extent translation process of undergraduate Omani students is less efficient in FL than L1 and does this vary depending of writers' FL proficiency and gender?

To what extent writing sub-processes of undergraduate Omani students (e.g., planning and revision) differ across L1 and FL and are these differences moderated by FL proficiency and gender?

### 5.3.1 Translation

One thing that affects text production is how fluently writers are able to produce the text (Silva, 1993). Since I argued that P-burst is the most direct measure for fluency, it is more reasonable to discuss P-burst measure first. The results of the current study clearly showed that participants wrote more fluently in L1 than FL and this was applied across the three fluency measures used in the current study. Writers were able to produce P-bursts that were almost twice the size when writing in L1 as opposed to FL. This finding corresponds directly to those reported by Chenoweth and Hayes (2001, 2003), Hayes (2006) and van Waes and Leijten (2015). Given that the correlation between FL proficiency and P-burst size was the strongest among the other fluency measures, the study further supports the conclusion that P-burst is the most direct indicator of the efficiency of translation process. This conclusion was further confirmed by the fact that the size of P-burst was significantly higher when writing in L1 than FL and higher with writers with higher FL proficiency. The study contributes to the existing debate about fluency measures and provides a robust evidence that P-burst is the direct measure to assess the efficiency of translation process (writing fluency). This is actually consistent with previous empirical findings that argued for the superiority of P-burst size as the most direct measure of translation process (see Abdel Latif, 2013, 2009a; Chenoweth & Hayes, 2001, 2003, Hayes, 2009, 2012a). This actually raises an important question whether the effects of FL proficiency on translation is responsible for the variation in text quality in FL. By contrast, the process data has confirmed that linguistic proficiency in FL had no effect on L1 translation process. The keystroke data has indeed helped to explain the puzzling effect of FL proficiency on L1 text quality as it is clearly not a consequence of the effect of FL proficiency on translation but due to some other factors like motivation or general language proficiency for example.

A similar effect for the other fluency measures were also found. Writers were almost twice as fast in terms of words per minute when writing in L1 compared to FL. However, the text length in L1 was not as twice that of FL text and this

could be because of the fact that participants spent more time in writing the FL text. Having said that, however, on average the FL text was 21% shorter than the L1 one. This is consistent with previous research that has revealed that FL writers produced lower number of words in relatively slow production rate compared to L1 writing (Chenoweth & Hayes, 2001; Lindgren et al., 2008; Sasaki & Hirose, 1996; Silva, 1993; Thorson, 2000; van Waes & Leijten, 2015).

Overall, FL was slower and had shorter P-bursts indicating that translation process is less efficient in FL. However, text length, which presumably relates to motivation, did not show clear-cut difference. This is because text length on its own is not only affected by how well individuals can access language (translation ability) but also motivation. It most likely reflects how long individuals go on writing for (Abdel Latif, 2009b). It is true that participants in this study were given similar amount of time (40 minutes), but some finished substantially earlier while some ran over time. Thus, variation in writing time could explain the discrepancy in text length. This suggests that text length reflects partly how much time participants spent on writing, which could be influenced by participants' motivation- their willingness to go on with their writing. This is consistent with the claim made by Hayes (2012b) that motivation has an effect on "people willingness to engage in writing" (p. 372). It has been proposed in section 5.1 that gender difference could be due to a motivational factor. Given that females devoted significantly more time in writing and wrote relatively longer text than males, the results further confirmed that motivation can account for text length on the one hand, and gender difference on the other hand.

According to automatization process, an increase in FL proficiency reduces the difference between the two languages (L1 and FL). The results actually confirms that the participants' FL proficiency is a significant predictor for their writing fluency in FL. Thus, scores on the OPT were positively correlated with all three fluency measures in FL but not with participants' L1 writing fluency. This is similar to previous research using similar fluency measures to the present study which has shown a correlation between FL writing fluency and FL proficiency (e.g., Abdel Latif 2009a; Al Ghamdi, 2010; Chenoweth & Hayes, 2001; Lindgren et al., 2008; Spelman Miller et al., 2008, Sasaki, 2002).

In contrast to Spelman Miller et al's., (2008) research which found no effect of gender on writing process, gender had a significant effect on the participants'

writing fluency in this study. Specifically, females proved to be more fluent than males in both languages and significantly in FL. However, the mediation analysis suggested that this was for different reasons for the different fluency measures. Thus, the greater burst size and faster rate of production of females in FL were a consequence of their higher FL proficiency. However, there was no equivalent mediating effect of FL proficiency on overall text length. This again suggests that there must be an alternative explanation for the gender differences in text length in FL. One possibility is that this reflects an additional difference in motivation with females being more motivated to persevere with writing than males. This is supported by the fact that females outperformed males in the three fluency measures in FL and that their superiority in fluency in L1 and some FL aspects (e.g., text length) is not mediated by their FL proficiency. This conclusion- that females are more motivated than males- received further confirmation from the participants' responses to IRQ7, regarding their perceived role as writers. For example, IRQ7 revealed that females placed more emphasis than males on communicating their ideas while writing in both languages. These findings actually replicate previous research's findings that females are more proficient and motivated than males in writing (Babayigit, 2015; Olinghouse, 2008; Frank Pajares & Valiante, 2001).

### **5.3.2 Planning**

According to Kellogg's Cognitive Overload Hypothesis (1996, 1999, 2001), attending one aspect of writing process can cause other processes to suffer. It has been established that pre-task planning reduces the cognitive overload as it reduces the number of cognitive processes that take place during writing time (Kellogg, 1988; Rostamian et al., 2017) and consequently allowing writers to pay more attention to other processes such as translation. Therefore, advance planning should improve the quality of the text produced and the fluency of text production process. FL writers need not to think or worry about generating content during text production process. Therefore, the classical advice is to plan their text a head in order to reduce the cognitive demands and focus more on the translation and transcription processes during writing. Thus, advance planning should allow writers to generate content rather than thinking about language issues.

However, the data of this thesis surprisingly showed that translation process interferes with advance planning. The participants' responses to IRQ1, regarding their focus before writing, support this conclusion. Participants placed more emphasis on vocabulary than other aspects such as audience and text organization when writing in FL. By contrast, they thought of audience, text organization and vocabulary equally in L1. The fact that this was moderated by FL proficiency provides further evidence that problems in translation is affecting planning process in FL writing. Therefore, participants devoted relatively more time ahead of writing to solve translation process related issues like finding appropriate vocabulary. This actually indicates that translation process is dominating FL writing.

Furthermore, the higher proportion of pause time to total writing time during formulation stage in FL indicates that FL writers tend to halt frequently while writing because writers need to deal with not only writing demands but also language issues in FL (Al Ghadbi, 2010; Révész et al., 2017; Sasaki & Hirose, 1996; Sasaki, 2000). This indicates that participants tended to plan and generate their content during the formulation process. They applied what Bereiter and Scardamalia (1987) called the "what to write next" strategy which is mostly used by children and less experienced writers. Sasaki (2000) also reported that her less experienced writers did not devote much time for initial planning and tended to paused more frequently during formulation stage. However, this -thinking during formulation time- has been treated differently in previous research. Previous research tended to compared how much time writers pause to how much they write for the whole text. The problem with this measure is that it crosses different things. For example, writers might pause for a long time before writing -initial pause- and then write very fast as they go with their writing. In this case, they will have a high proportion of pause time to writing time for the whole text and in fact, the high proportion of pause is actually a consequence of their initial pause and not their actual pause during formulation stage. Whereas this study used the proportion of pause time to writing time during formulation stage. This particular measure has enabled to distinguish between thinking time -presumably planning- in different stages of writing.

The fact that gender interacted with FL proficiency in terms of planning (advance planning and thinking during writing) fits with the general theme of

the current study that FL translation process is dominant. It also provides further evidence that FL proficiency is significant in reducing the power of translation process in FL writing. There was evidence that FL proficiency reduced the extent of pauses during formulation. The results clearly showed that there was a significant drop of females' advance planning time and males' thinking time during formulation moderated by their FL proficiency. This actually replicates findings reported by Al Ghamdi (2010); Lindgren et al. (2008) and Spelman Miller et al. (2008) that found that the proportion of pause to writing time drops as FL proficiency improves. This implies that acquiring more language knowledge in FL enables one to focus less on solving translation process issues and more on higher-level tasks such as considering audience. A particularly interesting feature of the present findings is that this appears to affect advance planning as well as planning during formulation process. The fact that the writers of the current study planned and generated their content during the formulation process could also play a role to increase the cognitive load as these two processes compete for limited resources in the working memory and consequently higher-level thinking activities, such as considering audience, were left unattended.

These results indicate that FL writing, at least in this sample of less experienced FL writers, is primarily driven by their FL proficiency. They also suggest that FL translation process disrupts higher level planning (e.g., text organization and considering audience). This was evident in IRQ4 as participants' attention to their readers got significantly higher in both languages as their FL proficiency improved. This is consistent with the conclusions made by Bourdin and Fayol (1994, 1996, 2002) that low level processes involved in writing, e.g., spelling and retrieving words, might result in increasing the cognitive overload even if these processes are automated and this consequently impair individuals from performing high level processing like idea retrieval and organization. The dominant influence of language related issues in FL writing is consistent with Stevenson et al.'s (2006) "Inhibition Hypothesis". The results of the study suggested that participants' concerns to express their ideas in FL, even during planning process, inhibited their attention to attend higher- level thinking processes such considering audience.

Contrary to Manchón and Roca de Larios's (2007a) study that revealed a significant increase in the amount of time allocated to planning as FL

proficiency level improved, this study did not reach this conclusion. The study even found a reverse as females' initial planning time decreased as their language knowledge in FL increased. This could be explained in terms of the difference in the instruments used to collect writing process data in the two studies. Manchón and Roca de Larios (2007a) used think aloud protocol while this study utilized keystroke. van Waes and Schellens (2003) assumed that when writing on a word processor device, writers tend not to pause long before they start writing but they tended to pause more frequently as they go on with their writing process. Given that participants did not spent much time on pre-writing stage across the two languages is consistent with this assumption. Furthermore, the study also found that participants tended to plan their content during formulation in both languages (as reflected by the high proportion of pause time to writing time during formulation). This indicates that writing in a word processor device might result in a more fragmented writing. This could also reflect general writing strategy. In other words, it could be that these writers lack the ability to make initial planning or are not aware of the importance of initial planning strategy in writing. Similar findings in other Arabic contexts were reported by Al haysony (2008) and Mahfoudhi (2003).

Overall, participants paused relatively longer before and during writing in FL than L1. There were also some evidence that translation process is dominating some aspects of FL writing (e.g. advance planning). There was some evidence that an increase in FL proficiency reduced the effects of translation process and allowed writers to focus on high level thinking processes like considering audience and text organization. The next question is whether these have effect on the quality of the text produced.

### **5.3.3 Revision**

In discussing participants' revision patterns, a distinction between: i) FL proficiency effects (which be specifically more related to FL writing than L1), ii) motivation effect (how much individuals are willing to spent effort to correct their writing), iii) and general writing strategies (not very much as process and writers might apply them regardless of the language of writing) must be considered. Participants' revision behaviours provide further evidence that the

translation and transcription processes are less efficient and essentially dominating FL writing.

As for the location of the revisions, it has been believed that making a distinction between immediate and distant revisions would help to indicate whether writers use mainly linear or recursive manner of writing (Al Ghamdi, 2010; Thorson, 2000). The current study revealed that undergraduate Omani students were most likely to proceed their writing process in a more linear manner since they mainly made immediate adjustments to their texts. On average, more than 95% of their total revisions were immediate revisions in both languages. In general, the process data demonstrated that writers conducted more revisions when writing in FL as opposed to L1. This is in line with what has been proposed that compared to L1 writing, FL writers carry out more immediate and distant revisions when writing in FL because FL writing "would necessitate increased interaction with the text during the composing process" (Thorson, 2000, p. 162). These findings correspond to the findings reported by Stevenson et al. (2006) and Thorson (2000) that writers made less immediate revision in L1 writing and that distant revisions were less frequent in L1 compared to FL. In fact, the high percentage of immediate revisions in FL is consistent with this study's argument that translation process is dominating FL writing. Immediate revisions corresponds directly to Chenoweth and Hayes' (2001) R-bursts (bursts that are followed by revision of the text already produced). R-burst can be seen as a breakdown of language production because of translation process problems that have to be immediately corrected. This received further confirmation from the fact that more than 98% of the participants' total number of revisions in FL was language revisions (correcting language: spelling, typing, grammar) and only less than 2% of their revisions was directed to modify content.

An important question in this respect is whether there is a difference between languages (L1 vs. FL) or whether this is a common reflection of a general writing strategy or a motivational effect. Given that the percentage of immediate revisions was high in both languages implies that this is more related to a general writing strategy. Stevenson et al. (2006) also found that Point-of-Inscription revisions (which most likely reflect immediate revisions) are the most common revisions in both languages (L1 and FL). The fact that the participants, in general, tended not to revise afterwards (distant and end

revisions) also confirms that revision patterns, at least with this sample, reflects a general writing strategy. The high percentage of immediate revisions in both language (in comparison to distant and end revision) and the percentage of language revisions in FL may partly be a consequence of the writing instructions, which overemphasize the importance of producing as fewer grammatical mistakes as possible (El-Aswad, 2002). This was further supported by the participants responses to IRQ7 as 63% and 57% (in FL and L1 respectively) of them reported that presenting their language skills was one of their main concern in writing. The excessive percentage of immediate and language revisions could also be evidence that Omani students failed to realize the recursive nature of writing. Applying a linear mode of writing, which characterised novice writers' writing (Bereiter & Scardamalia, 1987; Linda Flower, 1979), indicates that participants were more likely affected by the spoken mode of language (Al Ghamedi, 2010). Thus, one implication of this research on writing instruction is to highlight the importance of making students interact with their text by encouraging them to move forward as well as backword in the course of writing.

As for the gender differences in performance, this study produced apparently paradoxical findings as males, who have weaker FL proficiency than females, carried out significantly fewer revisions than females in both languages across all revision measures. To solve this puzzle, a distinction between how many errors individuals conduct, which need revisions, and how much effort individuals want to spend on revision, which reflects motivation, should be made. Firstly, females' revision patterns were influenced by their FL proficiency. For example, their total number of revisions and immediate revisions in both languages and their language revisions in FL decreased as their FL proficiency improved. This provides further evidence that the efficiency of translation and transcription processes increased as language proficiency improved. According to Schmidt (1992) less controlled process of language production means more quicker and automatic retrieval of language knowledge. This implies that writers with good language command struggle less in searching for lexical and grammatical structures. This actually results in proposing more accurate, grammatically and lexically, language strings by the translator (Chenoweth & Hayes, 2001). This is not to suggest that how good is the translator reflects the efficiency of the reviser but to indicate that efficient translator means less revision is needed. The influence of FL proficiency in

reducing the amount of revision carried out in FL is in line with previous research (Al Ghamdi, 2010; Barkaoui, 2016; Chenoweth & Hayes, 2001). It is worth pointing that the increase in FL proficiency did not only influence females' revision patterns in FL but also in L1 as well. This again indicates that FL proficiency might be capturing a general language proficiency or some other general factors such as motivation. In order to confirm the precise nature of this effect (the effect of FL on L1 and FL revisions), however, future research needs to measure both L1 proficiency, and of motivation, in addition to the measure of FL proficiency. This would enable future research to test whether writers' L1 proficiency correlates with their FL proficiency. Given the positive effect of FL proficiency on the number on content revision indicates that better language proficiency in FL results in more content revisions and less language revisions. This implies the role played by FL proficiency in enabling writers to develop higher-level revision skills. This is in line with previous studies that reported the positive effect of language proficiency on content revision in FL (e.g., Lindgren et al., 2008).

Secondly, the results in terms of gender difference in the amount of revision carried out is quite puzzling and conflicts the argument made in the above paragraph that an increase in FL proficiency and the efficiency of the translation process would decrease the amount of revisions needed. Consequently, one expects that females would carry out less revisions than males since their FL proficiency and the efficiency of their translation process are higher than the males'. There are a number of possible explanations for this paradoxical finding. First, this could be due to the females' realization for the importance of producing texts that is mistake free, thus, they revised more frequently. This was actually reflected on females' responses to IRQ6 that they were more concerned about grammar, sentence structures, spelling and punctuation than males. This could partially reflect the influence of writing instruction at Rustaq College that stresses the importance of making a text that is grammatical mistake free. Second, it could be that males put less effort on the revision process, so they did not revise much compared to females. It can be concluded that females' motivation to produce good text and their awareness of the importance of text's correctness motivated them to revise more frequently than males. This is actually consistent with the remark made by Hayes (2012b) that "writers who are strongly motivated to produce high-quality text will be more likely to edit proposal language than are writers who

are less motivated" (p. 373). This implies that males, at least within this sample, seem not to make much effort on revision and editing their texts.

The process data informed this study that the amount of revisions carried out not only depends on the efficiency of translation process or language proficiency but also on the individuals' motivation and efforts to carry out revision process. This actually provides further evidence to the assumption made in section 5.1 and 5.3.1 that motivation is an important factor that accounts for gender differences in terms of text quality and writing processes.

## 5.4 Relating Text Quality to the Writing Processes

Writing in a foreign language reduces the quality of the text produced, as section 5.1 proved, so can differences in underlying writing processes, planning, translation and revision, account for the variation in text quality? In other words, how does the effect on quality happen through the writing processes? This section actually links the underlying writing processes with text quality.

One would expect that planning and revision processes are most likely to be related to text quality in L1 but not necessarily in FL. This is because FL writers are more concerned about language related issues, as it has been shown above. Thus, planning and revision processes are not directed to improve text quality or high-level thinking but to solve translation process problems. In terms of the correlation between type of planning and text quality, there are two main findings. First, research on L1 writing revealed that planning, particularly initial planning, improves text quality (e.g., Bereiter & Scardamalia, 1987; Kellogg, 1988). The current study provided enough evidence to support this argument as content planning before and during writing correlated positively with text quality in L1. Second, surprisingly, this kind of correlation was not applied in FL writing, although one expects that planning a head helps in reducing the cognitive load and this consequently improves text quality. This is because planning in FL is disrupted by thinking about translation process problems rather than thinking of and improving the content. This is because accessing linguistic repertoire is not automated in FL. Thus, language limitations in FL stop FL writers from thinking of planning their content effectively, which is important in producing better text quality. This received

further confirmation from the fact that the correlation between thinking time during formulation (proportion of pause time to writing time during formulation stage) and text quality is highly negative in FL. This indicates that planning during formulation might increase cognitive overload as two different processes are taking place simultaneously. This might prevent writers from engaging in more high-level thinking processes which consequently reduced the quality of their text. This further indicates that FL text quality is negatively affected by participants' constant pause during formulation stage. This is because their less well developed translation skills disrupted them from thinking about content and focusing more on language, which results in producing poorer text quality. The fact that the correlations between pause patterns and participants text quality in L1 and FL are significantly different seems to indicate that L1 writers are less likely preoccupied with translation process issues. Furthermore, this also forms kind of validation that P-burst is the most direct measure for translation taking into account that the mean length of P-bursts and thinking during formulation are negatively correlated in FL writing.

van Waes and Leijten (2015) maintained that although the relationship between writing fluency and text quality is a recurring topic in writing studies, no clear conclusion in terms of the relationship between these two aspects has been drawn. Section 5.1 suggests that the effect of FL proficiency on FL and L1 products could be for different reasons. The process measure, particularly P-burst, has shown that FL proficiency is directly related to the efficiency of translation process (P-burst) in FL but not in L1. The data showed that the three fluency measures were correlated with text quality and with each other in FL. However, the fact that the effect of FL proficiency on FL text quality was mediated by the efficiency of translation process (P-burst) but not by text length or production rate, when P-burst was controlled for, indicates two important things. First, P-burst is the most direct indicator for translation process and that rate of production and text length do not predict much about text quality. Second, the efficiency of translation process in FL accounts for the variation in FL text quality. Previous research also found that P-burst size is important predictor of FL text quality (e.g., Abdel Latif, 2013; Al Ghamdi, 2010; Spelman Miller et al., 2008). The process data indeed helped to go beyond the product data and explained the ambiguous product results. It confirmed that FL proficiency has its effect on FL text quality partly through an

effect on translation process (P-burst) in FL writing rather than just to motivation or general language knowledge. It also demonstrated that the influence of FL proficiency on L1 text quality must be due to other factors, like motivation or general language ability, but not through the effect of FL proficiency on L1 translation process. Furthermore, the non-significant correlation between text quality and translation efficiency in L1 indicates that fluency in L1 writing does not account for differences in L1 text quality. Additionally, the fact that the correlation between translation efficiency and text quality in L1 is significantly lower than the correlation between translation efficiency and text quality in FL further confirmed that translation process is partly determining text quality in FL but was not doing so in L1. This is because translation process is already automated in L1.

The relationship between revisions and text quality is more complex than it looks. There was a general trend that the participants of this study tended to conduct more revisions, when writing in FL. One might assume that conducting more revisions would most likely improve text quality (Hayes, 2012b). However, these kinds of revisions are not necessary helping in producing better text quality because they are mainly conducted to solve translator's and transcriber's related issues rather than improving the overall quality of the text. This was evident in the high percentage of language revisions (more than 98%) carried out in FL. These revisions actually reflect low level of language knowledge. Since the participants of the current study have limited FL proficiency, they focused more on language issues rather than improving the quality of their text. Similar findings were also reported by Stevenson et al. (2006).

The positive correlation between end revisions and text quality in FL, confirms the conclusion made in the previous paragraph. End revisions, which were carried out after the text was produced, suggests that participants' cognitive load is relatively decreased at this stage of writing. Therefore, the control of translation and transcription processes is likely to be less. This apparently allowed writers to allocate more cognitive resources to improve the quality of their text without worrying much about or interfering with translation process. However, this is not applied in L1. This is presumably because there is less cognitive overload when producing the L1 text. Thus, writers probably needed not to carry out revisions afterwards because they could carry them during text

production process. An important implication, therefore, for FL writing instruction is to train FL writers to carry out revision afterwards. This is apparently important to reduce cognitive overload and concentrate on translation and transcription processes during text production process on the one hand and to improve their text quality on the other hand.

Overall, the study demonstrated that text quality not only depends on how much language knowledge individuals have or how fluently language can be produced but also on other aspects such as content planning and individuals' ability to carry out end revisions.

## 5.5 Writing Beliefs

Comparing the data in this study with the data collected by Sanders-Reio et al. (2014) suggested that the students in this sample had generally similar beliefs to the US undergraduates studied by Sanders-Reio et al. except for transmissional beliefs. Although transmissional beliefs were weaker than the other beliefs, like the Sanders-Reio et al.'s (2014) sample, they were still significantly higher than Sanders-Reio et al.'s (2014) sample. The reasons for this are unclear. It might reflect a cultural difference or a difference in educational practice. Whatever the reason, this finding suggests that the students in this study may have approached their writing in a more transmissional way. The transmissional scale reflects Bereiter and Scardamalia's (1987) knowledge-telling strategy in which writers are concerned about presenting information and quotes written in sources like books without much engagement with or reflection on the topic. In this strategy the writer's main concern is to present information in correct language. This may explain why the writing in this study, in both languages, involved relatively little planning and content revising, and focussed mainly on translating thoughts into text.

Although the writers in this study appeared to otherwise hold similar beliefs to those in Sanders-Reio's study (2014), this study did not find similar results to previous research on writing beliefs in L1. Compared to Sanders-Reio et al.'s (2014) Baaijen et al.'s (2014), and White and Bruning's (2005) studies, which found significant correlations between writers' L1 text quality and writing beliefs, no equivalent results were found in this study between L1 text quality

and these beliefs. This raises questions about the generality of the findings from previous research. One possible explanation for this might be that the relationship depends on the kind of writing that is carried out. It may be that these beliefs have more of an effect for longer pieces of writing on more complex topics. Participants in Sanders-Reio et al.'s (2014) study had to write a 5- to 8- page document about learning theory; participants Baaijen et al.'s (2014) study had to write an article for a student newspaper discussing the pros and cons of the internet; and participants in White and Bruning's (2005) study had to write an extended essay interpreting and evaluating a short literary story. This possibility could be tested in future research by comparing the effects of writing beliefs across different topics and writing tasks.

This failure to find effects for the L1 writing task means that the effects for writing in FL should be treated with caution. Nevertheless, there was evidence that writing beliefs varied depending on language of writing, gender and language proficiency. Furthermore, in contrast to L1, there was evidence that writing beliefs for writing in FL were related both to writing processes and text quality.

First of all, the finding that writing beliefs varied depending both on language of writing and FL proficiency suggests that writing beliefs might be affected by how easy it is to translate thoughts into language. Thus, transmissional beliefs were higher for writing in FL than writing in L1, and were higher for writers with lower FL proficiency. In addition, females' belief that writing involves the development of understanding and involvement with the text was lower for writing in FL than writing in L1. A possible explanation for this is that writing in a foreign language involves less development of the writer's understanding and interaction with their text and that their thoughts develop through writing and more transmission of information. In other words, writing becomes a more knowledge-telling process.

Second, there was evidence that females had a stronger audience orientation than males regardless of language of writing, and, as I have already mentioned, that they also had higher transactional beliefs for writing in Arabic. This suggests that there may be gender differences in writing beliefs, which is not something that has been investigated in previous research. Females, in this population at least, may view writing as more about communicating and developing their understanding than males. This was also evident in females'

responses to the IRQ7, as females perceived writing as a communicative task. Given that females also produced better text quality than males, it may be that this is partly because of their different writing beliefs, as well as their greater FL proficiency. Clearly, this is a finding that should be investigated further in future research

In addition to this evidence for variation in writing beliefs for writing in a foreign language, there was also evidence for clearer relationships between writing beliefs, writing processes and text quality in FL than L1. Thus, the fact that recursive process beliefs were negatively correlated with amount of revisions suggests that these beliefs affect how the revision process is carried out for writing in FL. I have argued earlier in this chapter that the participants of the study failed to realise the recursive nature of writing, therefore, they tended to proceed their writing linearly. I explained that this is partially because FL writing process is driven by FL proficiency. Thus, these writers carried out more immediate, distant and language revisions in FL in order to solve translation process problems. The negative correlations between immediate, distant and language revisions in FL and recursive process beliefs further confirm this argument. These correlations also imply that the participants view writing as a language practice (where text should be written correctly) and not as iterative (recursive) process where writers “go through multiple, versions of their plans and drafts” and they “refine their understanding and their presentation of those understandings” (Sanders-Reio et al., 2014, p. 3). This argument received further confirmation from the positive correlation between recursive process and end revision in FL. This positive correlation suggests that as writers’ believed that producing several drafts is important to improve writing and understanding the more they revised afterwards (after producing their first draft), and the less they revised during writing (immediate and language revisions).

In addition, the correlations between audience orientation, P-burst length and amount of content revisions suggests that audience orientation beliefs affect how language is formulated and how revision is carried out. A possible explanation is that audience orientation reflects a more communicative view of the writing process and that this leads language to be produced in larger chunks, and for revisions to be focussed on the content of what is expressed. This implies that the focus for a writer with higher audience orientation is on

communicating content rather than on transmitting information in correct language.

These links between beliefs about writing and the writing process gain further importance in the light of the fact that these beliefs and writing processes were both correlated with text quality. Thus, higher text quality for FL was associated both with higher audience orientation and recursive process beliefs, and with greater P-burst length and more end revisions. This is consistent with the idea that these writing beliefs affect the effectiveness with which writing is carried out. For example, Sanders-Reio et al. (2014) explained that considering audience in writing requires clarity. This entails that information, concepts and arguments are logically and clearly presented and explained with details in order to produce a clear and an understandable text that meet readers' needs. Therefore, the participants who hold stronger audience orientation beliefs produced better text quality in order to communicate more comprehensibly with their readers. This conclusion received further confirmation from the fact that audience orientation is positively correlated to content revisions in FL. This indicates the participants' with high audience orientation beliefs engaged more in revising their content. This correlation suggests that considering audience in FL writing entailed the participants to modify their content to produce a comprehensible text for their audience. Bereiter and Scardamalia (1987) argued that knowledge transformer writers revise their text at the content level to satisfy their communicative goals. Furthermore, the fact that females had higher audience orientation beliefs than males suggests that this may contribute, in addition to their greater FL proficiency, to the higher quality of the text that they produce. Although the direction of these relationships cannot be concluded from these correlational findings, these findings suggest that future research should investigate whether changing beliefs about writing would have positive effects on writing performance.

This raises the question again of why the same relationships were not found for L1. It is hard to be sure about this without further research. However, one possibility is that the added problems of writing in a foreign language makes writing beliefs more important. Thus, for the simple writing tasks used in this study it may be that revision is not needed when writing in L1, and that communication is easier to achieve in L1. It may only be when extra effort is needed to write in FL that writing beliefs have an effect. If this is true then it

would be expected that the same kinds of relationships would be found for FL and L1 when writers are asked to carry out more extended and difficult writing tasks.

## 5.6 Summary

The product data showed that FL proficiency correlated to text quality in L1 and FL. The role played by FL proficiency in shaping FL text quality is consistent with the general expectation that knowing more vocabulary and handling complicated grammar structures enable students to write better (Schoonen et al., 2003). For example, Cumming (1989) emphasized the significant contribution of language proficiency in writing by stating that “As people gain proficiency in their second language, they become better able to perform in writing in their second language, producing more effective texts, attending more fully to aspects of their writing” (p. 121). However, product data by itself could not explain much how FL proficiency affected FL text quality. Furthermore, the fact that there was also a correlation between FL proficiency and L1 text quality was striking and opened up the door for a number of alternative possible explanations such as motivation and general language proficiency. This was clarified by the process data which showed that FL proficiency correlated with text quality for different reasons for the L1 and FL texts. The data process, clearly showed that difference in P-burst size (translation efficiency) is related to text quality in FL but not in L1.

The study clearly demonstrated that FL proficiency influenced both the translation process (how well language can be produced), as well as other processes like planning and revision. This is because the limitation in language proficiency interferes with other processes. For example, the high frequency of revisions in FL is associated with the weaker FL proficiency of the writers. The influential role of FL proficiency on FL writing process and product run counter to the argument raised by Zamel (1983) that writing proficiency is more determined by writers’ writing skills and strategies than their language proficiency. According to this study, FL writing efficiency is predominantly driven by FL proficiency more than their writing strategies or beliefs. Moreover, the results showed – at least for this sample of Omani students- that translation process is essentially dominating FL writing. This implies that improving FL proficiency reduces the focus on the translation process as

individuals got better FL proficiency; they turn more into writing in their L1. Thus, having good language proficiency helps writers to access and retrieve language knowledge automatically. It also helps to deal with more complex structure and apply more high level activities, e.g., organizing the text and considering audience, which eventually result in a better text quality. The data in the current study actually provided some evidence to support these conclusions. In addition to this, however, the fact that undergraduate Omani writers did not show much evidence of performing high level of writing skills when writing in L1 either indicates that these writers have less well developed writing skills in general.

Having said that, however, throughout the results, there were a clear interaction with gender, so it is not entirely about language knowledge. It is true that the effect of gender, females outperformed their males' counterparts in terms of text quality and some aspects of writing process, was partially a consequence of their good FL proficiency. However, the effect of gender sometimes was not mediated by FL proficiency. Therefore, gender difference might be attributed to motivation, strategy, and not only language proficiency.

As for writing beliefs, the study revealed that undergraduate Omani writers' writing beliefs are relatively similar to those of undergraduate writers in US studies by Sanders-Reio et al. (2014). The writing beliefs data also informed the current study that recursive process and audience orientation beliefs accounted positively for the variation in text quality in FL. Sanders-Reio et al. (2014) contented that these two scales reflect advanced writing skills.

# Chapter 6: Conclusion

## 6.1 Introduction

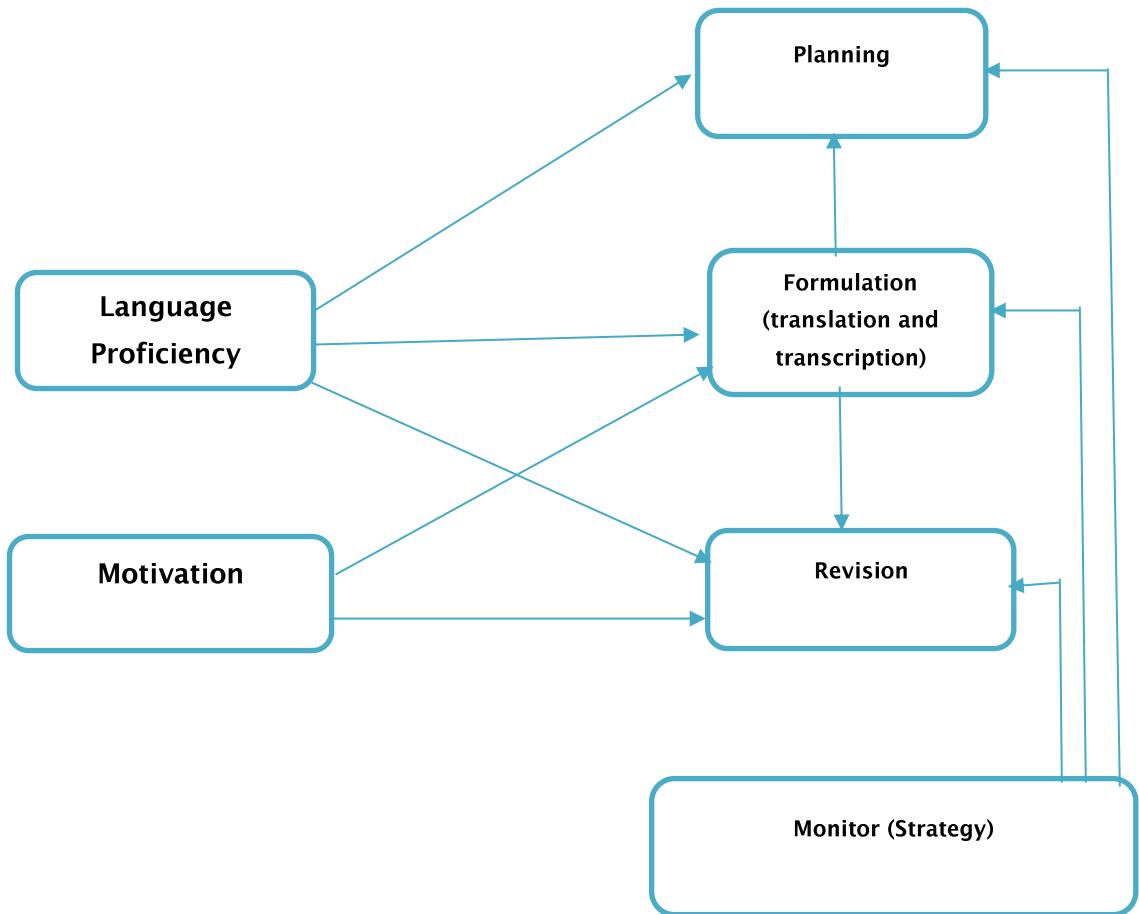
Using the cognitive writing process model proposed by (Chenoweth & Hayes, 2001, 2003; Hayes, 2012a, 2012b; Hayes, 1996) as a framework for the current thesis was helpful to approach, understand and explain L1 and FL cognitive writing processes of ELT undergraduate Omani students. This chapter presents the study main findings and how they contribute to our understanding to cognitive writing in general and FL writing in particular. In lights of these findings a number of implications and suggestions for future research are offered. A number of limitations have been identified and presented as well.

## 6.2 The Study's Main Findings

Referring to cognitive writing models (e.g., Chenoweth & Hayes, 2001, 2003; Flower & Hayes, 1980a; Hayes, 1996) is relevant at this point. These models have acknowledged the effect of knowledge- including language knowledge- and motivation on writing process. Figure 6-1 presents the main findings in light of these models. The current study showed that FL proficiency influenced all of the writing processes, e.g., planning, translation and revision, which eventually affected text quality in FL writing. The figure also shows that strategy (as represented by the monitor) and motivation also affect the way individuals approach their writing. In what follows the study's main findings are discussed in light of the classical cognitive models of writing (Chenoweth & Hayes, 2001, 2003; Flower & Hayes, 1980a; Hayes, 1996).

Overall, the study straightforwardly revealed that ELT undergraduate Omani writers are mainly determined and driven by their FL proficiency when writing in FL. The influential role of FL proficiency was evident not only in their text quality but also in the way they approached their writing process as shown in figure 6-1. This partially provides positive answer to the first, second and fourth research questions in terms of the effect of FL proficiency on FL writing process and text quality. In this sense, the study confirmed Stevenson et al.'s

(2006) “Inhibition Hypothesis”, in terms of the dominant influence of language aspects in FL writing.



**Figure 6–1: Main findings in the light of the classical models of cognitive writing**  
 (Chenoweth & Hayes, 2001, 2003; Flower & Hayes, 1980a; Hayes, 1996)

First, the study provided further empirical evidence that translation process is less good and more challenging in FL writing, as opposed to L1. This has its impact on FL text quality as more fluent writers tend to produce better text quality in FL. These findings provide an answer to the second and third research questions and suggest that (i) the translation process is directly influenced by FL proficiency, and (ii) that producing good text quality in FL depends on the writers’ ability to produce the text fluently (longer P-bursts).

According to Chenoweth and Hayes (2001, 2003), the translation process has a very important role in translating the conceptual content to language. While this process is relatively automated in L1 writing, it is problematic and challenging in FL writing. The analysis of the writers’ writing process clearly revealed that the translation process is less efficient in FL, as opposed to L1,

and with writers with linguistically lower FL proficiency. This is probably because the translation process is performing two different functions in FL writing. It is not only working to put the content into linguistic forms, but with the added challenges of searching for appropriate linguistic structures and words in a language they are less competent in (FL).

The most important feature of this finding was that, of all the measures of fluency, the length of P-bursts (the amount of text produced between pauses of two seconds or more) showed the strongest relationships with both FL proficiency and with text quality. This is consistent with the assumption that the length of P-bursts is the most direct measure of the translation process. Other measures of fluency, such as number of words produced per unit of time across the whole text, reflect higher level planning and revision processes as well as the efficiency of the translation process, and so do not provide as direct measure of the effect of the translation process on text quality. This has been a problematic feature of previous research into the writing process. For example, Ong and Zhang (2010) concluded that pre-planning reduced the fluency of text production on the basis that the number of words produced in an equal amount of time was reduced in conditions where writers were instructed to plan before transcribing the text. However, the writers in their experiment were instructed to devote different proportions of the total time to planning and transcribing (either 20 minutes planning, 10 minutes transcription; or 10 minutes planning, 20 minutes transcription, or 30 minutes transcription). Given that the instructions for the planning condition required participants to organize their ideas in note-form during planning (Ong, 2014), the planned texts inevitably produced less text in the same amount of total time. The apparent difference in fluency (as measured by words produced per total time) therefore simply reflected that, as instructed, writers spent different proportions of their time planning and transcribing. It did not reflect a difference in the efficiency of the translation process.

The findings of this study, by contrast, suggested that the efficiency of the FL translation process has a strong effect on the quality of text for the writers in this sample. This finding supports Spelman Miller et al. (2008), who also found a strong relationship between P-burst length and text quality in their sample of Swedish high-school students studying English (L2). However, the findings contrast with those of Revesz et al. (2016), who found no relationships

between P-burst length and text quality in their study of relatively advanced L2 speakers of English. One explanation for the difference in findings may be that the strength of the relationship between P-bursts and text quality depends on language proficiency. Perhaps the efficiency of the translation process only has a direct effect on text quality at lower levels of language proficiency, and is no longer so important once a certain threshold of language proficiency has been achieved. An important direction for future research is to establish the importance of the translation process in determining text quality as language proficiency in FL increases.

Second, the study found that the struggle with language related issues in FL is affecting other processes, as figure 6-1 shows. This is a consistent theme in previous research (see, Roca de Larios, Nicolás-Conesa, & Coyle, 2016, for a review). Most surprisingly, however, is the fact that FL writers' overwhelming emphasis on language is interfering with advance planning and disrupts writers' ability to perform more high thinking processes like organizing content and taking audience into account. In principle, this is consistent with the general hypothesis that different components of the writing process can interfere with one another (Kellogg, 1990; Roca de Larios et al., 2016; Stevenson et al., 2006). For example, Stevenson et al.'s (2006) "Inhibition Hypothesis", which mainly focuses on revision process, assumes that limitations in language knowledge in FL may inhibit writers to focus on higher-thinking processes such as conceptual revisions. The current study, indeed, confirmed this hypothesis not only in terms of revision but also in terms of planning. However, one would expect that advance planning process should help writers to reduce the cognitive overload while writing because writers can generate and organize their content during advance planning. Thus, they can concentrate on translation process during writing as expected by Kellogg's (1990) "Overload Hypothesis". However, the present study found that even during initial planning, FL writers were concerned to solve language related issues (finding the appropriate vocabulary) rather than thinking of text organization and audience. This had negative effects on text quality as the study revealed that content planning positively affected text quality in L1 suggesting partial answer to the fifth research question. Furthermore, Ong (2013) showed that extended content planning was associated with the generation of better quality ideas during planning. The fact that FL writers gave equal emphasis to content, vocabulary, organization and audience as their FL

proficiency improved further confirms the fact that FL proficiency is an important ingredient in FL writing process. This partially offers clear answer to the fourth research question that the translation process interfere with advance planning and that writers' FL advance planning patterns are moderated by their language proficiency in FL. This is exacerbated by the fact that ELT undergraduate Omani writers did not do much advance planning in both languages which is a characteristic of novice writers. This actually indicates that limitation in FL proficiency affected writers' writing process. However, there was some evidence that their approach in writing (their general writing skills) was at the novice level and this could influence their writing. This is illustrated by figure 6-1 that writers' strategies play a role in shaping writing process. As these strategies (e.g., planning and revision) were evident in both languages.

Third, FL writers' concern with FL language was also evident from their reluctance to revise their text more globally (making revision at content level) and their preference to carry out their writing process linearly. These might reflect FL language problems. However, these might also indicate that undergraduate FL writers generally have less well developed writing strategies, taking into account that this tendency was evident in both languages. This again suggests a positive answer to the fourth research question that translation's issues, which reflect language proficiency, had its impact on the other processes, e.g. revision. These results are aligned also with Stevenson et al.'s (2006) "Inhibition Hypothesis". Less advanced language proficiency reduced the amount of higher-revisions and increased the amount of language revisions. However, as the writers' FL proficiency developed, they became less inhibited to carry out more high-level content revisions and less language revisions. Having said that, the study also revealed that writers did not do much distant and end revisions in L1 either. This could generally indicates that these writers are relatively novices, as discussed later. This implies the necessity to train undergraduate Omani writers to improve their writing strategy. Perhaps most importantly in this respect, however, is the fact that FL writers, particularly, benefited from revision carried out after the first draft has been produced. This is consistent with Ong and Zhang's (2013) finding that FL writers produced the highest quality text when they were instructed to revise a freewriting draft rather than when they wrote a pre-planned initial draft. (Note, though, that this depended on the initial draft being removed during revision

so that writers had to rewrite their initial draft of text). This again supports the fifth research question that variation in text quality can be partially explained by writing processes.

Considering the specific nature of cognitive processes in FL writing, this study demonstrated that the translation process, which is dependent on FL proficiency, is dominating and determining other aspects of writing. The study found that translation process interfered with other processes of FL writing (e.g. planning). It also affected the outcome (final text) of writing because as long as this process is efficient the text the writers produced is of good quality in FL. Realizing this FL specific nature of writing, the current study is consistent with calls by the existing cognitive writing models (see, Roca de Larios et al., 2016) as well as writing instructions to better address this FL specific nature instead of taking it for granted that L1 and FL are similar. Writers might have the strategies to write in L1 or might not have them in L1, simply because they are relatively novice writers. However, regardless if they have them or not in L1, FL writers do need to develop different writing strategies when writing in FL to cope with the translation process' demands and to deal with the conflict between translation process and higher level thinking processes. The study proposes a number of strategies to overcome this conflict in section 6.3.3.

In light of the effect of FL proficiency on FL writing process and product, the study's findings are consistent with the automatization concept (Schmidt, 1992). The study provided enough evidence that being more competent in language means quicker and more automatic access to linguistic knowledge which resulted in a more efficient writing performance. The effect of automatization was evident in the participants' L1 writing as they produced better text more fluently, revised and paused less and spent less time to accomplish the writing task compared to their FL writing. It also accounted for producing better text more fluently, concentrating on content planning (rather than vocabulary), revising and pausing less with more proficient FL users. These results indicated that the more individuals are familiar with language the better they can access, retrieve and produce language. This provides an important complementary perspective to research by Revesz et al. (2016). Revesz et al. (2016) showed that providing content support (ideas to write about) enhanced the quality of the texts compared to when writers had to

generate their own content. They suggested that this was because content support reduced the burden on planning processes and enabled writers to focus their attention on linguistic encoding. The results of the present study suggested that the reverse is also true: the more efficiently and automatically that writers are able to encode content linguistically the more attention they are able to focus on content planning. In general, therefore, writing quality should be enhanced the more that different components of the writing process are automatized.

An important finding in this regard is observing writers to break away from being very concerned about language to thinking more on the communicative goal of writing. The study found that as writers' experience with FL increases, they become less concerned about language issues. This consequently leaves more space in the working memory to process more communicative goals like given more attention to text organization and audience as well as language before and during formulation process.

Addressing the main theme of this research, however, this study also suggested that writing process is not entirely dependent on language proficiency but also individuals' motivation towards writing should be considered. While the product and the process data clearly demonstrated the significant role played by FL proficiency in shaping FL writing the study's findings indicated that motivation is an important component in explaining FL as well as L1 writing. This was actually not anticipated to account for differences between writers. In particular, motivation helps to explain some aspects of gender difference in writing as will be explained in the following paragraph. These findings are indeed fundamental in expanding our understanding of writing in general and FL writing in particular.

Besides, providing further evidence about the effect of different components of the writing process on text quality, the study has added further evidence to the existing literature that adult female students are more proficient and more motivated towards writing than males. As mentioned in the literature review (section 2.7.5), gender differences in writing have been problematic because the literature has provided contradictory findings. This study has provided a consistent evidence for a gender difference in the writing performance of the students in this Omani sample. Perhaps more importantly, it has identified

some of the features associated with this difference and shown how their effects on text quality are mediated by writing processes.

The study revealed that females had better English language proficiency, were more fluent writers and produced better text than males in L1 and FL. The finding of gender difference is an added contribution to research, considering that gender difference have been relatively under-research in the FL writing process and that research has been largely limited to children in L1 writing research. The study found that the gender difference is partially a consequence of females' good FL proficiency. Having said that, perhaps the most important finding in this respect, is the fact that this difference was multiply determined. The study offered some evidence to suggest that motivation is an important factor that could account for the variation in writing between the two genders, at least within the participants of this study. Being more motivated than males, females wrote longer text for longer time and they were keen to produce text that is more accurate by revising more, as shown in figure 6-1. Another significant finding in this regard is also the way males and females perceived their writing. In contrary to males who perceived writing as a language act, females looked at it more as a communicative activity. These actually provided more elaborated answer to the first, second and fourth research questions regarding gender's effect on writing process and text quality. The study also found that females had stronger beliefs than males that writing involves taking audience into account, and involves the development of understanding. In this sense, the study provided new perspective in understanding gender difference with adult writers in L1 and FL writing, not only in terms of their final text quality but also in how they go on with their writing process and the way they view writing.

However, when considering this thesis, the issue of gender differences is quite complicated. This research is clearly showing that what were apparent gender differences could be largely explained by language proficiency (Olinghouse, 2008). This is important for future research claiming to establish gender differences. Are these difference in writing still related to gender or do they just reflect language ability? In which case, the question becomes, not so much why the females in this sample were better writers, but rather why did they have stronger language proficiency? Furthermore, the data suggested that there was evidence of other factors that might also account for gender

differences other than language proficiency. These included a range of possibilities including motivation, topic or researcher effect. For example, being a female researcher might affect male participants' performance. Males might act differently in the presence of male researcher. Equally, attitudes towards learning and writing might also account for gender differences (De Smedt et al., 2017; Pajares & Valiante, 2001; Troia et al., 2013). Furthermore, gender differences as revealed by the current study could only be related to the specific writing topics used in the study. More generally, there is the question of how gender roles vary across cultures and how this might affect both attitudes and skill development. The strongest implication of the present study is not so much that there is an intrinsic differences between the genders but rather to emphasize the need to explicitly assess effects of gender and to measure the factors associated with gender. Thus, it may be that the gender difference observed here is specific to this sample or to the Omani cultural context, but the fact that language proficiency has been explicitly measured, and that effects on writing processes have been explicitly identified, means that there is a clear target for future research and instruction. For example, the present study suggests that, for this sample, language proficiency in FL was the primary source of gender differences, and therefore that the gender gap might be reduced by improving FL instruction for males. In other contexts, while there might still be evidence of gender differences, it is possible that these are primarily because of motivation or attitudes towards education, with the implication that should be the target of instruction rather than language proficiency.

The study found that ELT undergraduate Omani students, in this sample, had generally similar beliefs to the US undergraduates studied by Sanders-Reio et al. (2014), except for transmissional beliefs. This supports the sixth research question. The study also revealed that writing beliefs varied depending on language of writing, gender and language proficiency, providing a clear answer to the seventh research question. Compared to previous research (e.g., Baaijen et al., 2014; Sanders-Reio et al., 2014; White & Bruning, 2005), which revealed significant correlations between writers' L1 text quality and writing beliefs, no corresponding results were found in this study between L1 text quality and the writing beliefs. However, in contrast to L1, there was evidence that writing beliefs were related to both writing processes and text quality in FL writing. This answers the last research question. The study provided some evidence

that audience orientation and recursive process correlated positively with the text quality. Furthermore, variation in writing beliefs also affected the ways the writers in this sample approached their writing. I believe that writing beliefs can be reflected through the strategies the writers apply when writing. For example, writers' who hold stronger recursive process beliefs tended to revise more at the end of their writing process and to carry out less immediate and language revisions. Also, holding stronger audience orientation beliefs made writers to revise their writing more at the content level. Figure 6-1 shows that strategy is an important component that influences writing process. However, although there are potentially interesting findings about writing beliefs, the findings were not that clear and there were no strong correlations between writing beliefs and writing processes and text quality. Writing beliefs might be an important factor as current research is suggesting (Baaijen et al., 2014; Sanders-Reio et al., 2014; White & Bruning, 2005), but measurement of these beliefs is still in its early stages of development and they are really not well-understood how to measure them very reliably. It is important to develop a better measure of these beliefs in the future.

Using keystroke logging to observe participants' writing process is an important feature of the current study. Until relatively recently "L2/FL writing research has not made much use of logged data yet" (Abdel Latif, 2009a, p. 310). This is one of the few studies, along with the research by Revesz et al. (2016) and Miller et al. (2008) which has used such data in FL writing research in general, and is a rare study in the Arab world in particular that has used such data to track writers' writing process.

Furthermore, the homogeneity of the participants is a strong feature of the study as all of them share similar cultural and educational background, went through same foundation program and their L1 is Arabic. Many previous writing process studies have tended to include writers with diverse background without taking into account the effect of this diversity in their findings. This indeed enables to compare the findings with other writing research in different FL contexts that has used FL groups who might have similar or otherwise different characteristics than those of the current study.

In more general terms, the study suggested that writers at the undergraduate level in Oman- at least within this study population- fit more into Flower's (1979) novice writers' category. Although the present study proved that writers

performed much better when writing in L1 and that writing performance improved as writers FL proficiency improves, the study also revealed that undergraduate Omani writers, within this study's sample, have very limited writing skills/strategies in general. Thus, their writing processes and products suffer a lot in both languages. The study found that the majority of the writers' lack the ability to make initial plan, process content, direct their attention to more global revision and consider their audience. Moreover, the study found that these writers' attention is more localized- that was reflected on the excessive number of immediate and language revisions they carried out. The study also demonstrated that these writers are reluctant to interact, engage with and move around their text to make more global changes. This could reflect the lack of awareness with Omani undergraduate students in realizing the recursive nature of writing- a problem that has been also pointed out by other FL and L1 writers in other contexts (e.g., Al Ghamdi, 2010; Stevenson et al., 2006; Thorson, 2000). This might also reflect that these writers failed to conceptualize writing as a communicative practice that enables them to achieve their rhetorical goals. In fact, these kind of practices suggest that Omani students lack general writing skills. Some recommendations to improve their writing skills are provided in section 6.3.3.

Furthermore, their text quality score was very average in both languages, as one would expect that they would score high in L1 at this age and this level of academic level. The study also revealed that the majority of the participants were not aware of the English writing conventions. For example, the study found that participants did not know how to divide their essays as some wrote their 300 words essay in a form of one paragraph. Although, these conventions are explicitly presented in the writing textbooks and taught to the writers' since they first joined the college, but it seems that applying these conventions is still an issue for them. This could be because they transferred the Arabic (L1) writing conventions when writing in English (FL). I think teachers should be informed to emphasize the differences between the two languages and raise their students' awareness about the unique writing convention of each language. Using genre-based approach in teaching English writing conventions would be of great value to learn academic English writing. Genre is basically about generating goals which are partially based on writers' knowledge and plan. FL writers might struggle to understand the goals towards which they should be writing and this might affect their writing process and output.

Writers might not have clear goals, so they do not know what to write. Genre run counter to the scope of the current study, but it is an important area for future research.

An important avenue to explore in accounting for these cross-language similarities is viewing them from a multicompetence perspective. Recent developments in second language writing research have started to shed light on multilingual writers' writing competences. Cooke (2008) defines multicompetence as "knowledge of two languages in one mind" (p. 17). Similarly, multilingual writing refers to "the ability to write in two or more languages" (Rinnert & Kobayashi, 2016, p. 265). Advocates of multicompetence argue that multilingual individuals' linguistic repertoire differ from the monolingual individuals combined knowledge of the same languages (Kobayashi & Rinnert, 2013). From a multicompetence' point of view, L1 and FL should not viewed as fixed systems but rather as "fluid repertoires" that might interact and overlap (Rinnert & Kobayashi, 2016, p. 267).

Cross-language similarities in writing, such as composing strategies, have been reported by a number of empirical studies (Cenoz & Gorter, 2011; Hall, 1990; Jones & Tetroe, 1987; Kobayashi & Rinnert, 2013; Manchón et al., 2009; Pennington & So, 1993; Stevenson et al., 2006; Whalen & Menard, 1995). For example, Kobayashi and Rinnert (2013) in their case study of a Japanese writer found that their participant, Natusa, used the same individualised writing patterns, such as focusing on similar aspects of content like colour or specific life events, when she wrote in Japanese (L1), English (L2) and Chinese ( L3). The authors concluded that these similarities in writing across the three languages strongly suggest "the possibility of shared writing knowledge across languages" (p. 6). Similarly, Cenoz and Gorter (2011) analysed the texts of 165 students writing across three languages (Basque, Spanish, and English) and found that their participants tended to use general writing strategies to approach the writing tasks across the three languages. Their conclusion indicated that "there is an underlying common multilingual strategy" that is used in three languages (p. 365).

Cenoz and Gorter (2011) stated that compared to monolingual speakers, multilingual individuals' linguistic repertoire have more resources which aid them to achieve their communicative goals. This indicates that rather than being two monolinguals, FL writers should be viewed as multilingual and

therefore some aspects of their writing skills in L1 can be used in FL and vice versa. This suggests that if writers do not have good writing skills in L1, they are more likely to have similar less developed skills in FL. Multilingual writers “can have similar strengths and weaknesses in different dimension of writing”, thus they use similar general strategy when approaching the writing task independently of the language of each composition (Cenoz & Gorter, 2011, p. 366). Given that the writers of this study had limited writing experiences in both languages and that they applied, to some extent, similar patterns of writing across Arabic and English, suggest that their writing competency guided their writing processes. This writing competency could be acquired in L1 or FL. Rinnert and Kobayashi (2016) argued that writers, specifically with limited FL writing and linguistic experience, tend to rely on their L1 writing experience to cope with their FL writing task. The findings of this study confirmed this argument. The participants relied heavily on their L1 writing experience and knowledge to accomplish the FL writing task without much attention to the English academic writing convention. This was reflected in the structure of their text which is probably due to their undeveloped linguistic abilities in FL.

Rinnert and Kobayashi (2016) pointed to the importance of language proficiency as an influential factor that affects writing. Since these writers’ FL linguistic proficiency level was less-developed, their writing processes and strategies are similar to those used when writing in L1. This can be explained as a compensating strategy that multilingual writers apply to ease and accomplish the writing task they are faced with (Cenoz & Gorter, 2011; Kobayashi & Rinnert, 2013). In this sense, these writers compensate for their limited linguistic and writing skills by drawing on whatever shared underlying knowledge available in their language repertoire to finish the writing task (Rinnert & Kobayashi, 2016). Therefore, their writing performances were relatively consistent across languages without taking into account the specific writing features of each language. Given that these writers’ L1 writing skills were not well developed, one would assume that developing their L1 writing skills should positively help in developing their FL writing.

These writers did not show much evidence of higher-level thinking skills even when writing in L1, such as considering audience, thus these skills were absent in FL as well. However, as they got more linguistically proficient in FL, their

higher-level thinking skills developed in FL. More interestingly and as a way of extending the concept of multi-competence, is finding how linguistic proficiency in FL affected L1 writing performance too. The fact that linguistic proficiency in FL contributed to the L1 writing composition in this study might suggest that the OPT (Oxford Placement Test) reflects general linguistic ability. It might also indicate that the writers' linguistic repertoire is wider compared to monolingual writers' one and this allows multilingual writers for more "boundary crossing" between languages (Kobayashi & Rinnert, 2013, p. 23). This indicates that as writers' FL knowledge evolves, their linguistic repertoire expands as well (Kobayashi & Rinnert, 2013). Consequently, these writers were able to gain more control over their writing by implementing more high-level thinking skills such as taking audience into account and focusing on content revisions.

Similar findings were also reported by Manchón et al. (2009) who revealed that level 1 participants, who had the lowest linguistic level in FL, did not show much variation across L1 and FL and no much use of higher-level thinking skills. They explained that their level 1 writers had less-developed writing competency in L1, thus they used similar skills when writing in FL. By contrast, level 2 showed some decrement related to FL linguistic level, whereas level 3 writing processes showed much larger variation in writing across L1 and FL in favour of FL. They explained that as individuals' language proficiency in FL developed, as the case with level 3 participants, they relied less on their L1 writing experience.

Rinnert and Kobayashi (2016) argued that multilingual writers have more advantages than their monolingual writer counterparts. They also argued that being able to write in more than one language can play a role in empowering writers in L1 as well as FL. Acquiring more knowledge and experiences expands writers' language repertoire which enables them to use the available resources across languages (Rinnert & Kobayashi, 2016). The traditional literacy practices emphasise heavily on separating languages and focus only on the target language in the classes. However, such practices do not make use of the powerful language and writing knowledge available to ease learning processes (Cenoz & Gorter, 2011). Therefore, an important implication for literacy practices is to encourage teachers to draw on the language and writing knowledge the students come up with in the classes.

## 6.3 Implications

### 6.3.1 Theoretical Implications

An important implication for the current study in understanding FL writing process model, in particular, is considering the importance of FL proficiency as an important variable that accounts for variation in FL writing. This actually raises an important question about how language knowledge affects thinking. Thoughts might be unclear and might disappeared while writing as a result of limitations of FL proficiency. Clear thinking helps to generate content and develop ideas over (Galbraith, 2009b). However, when it comes to FL writing, writers, particularly novices, do not interact much with their thoughts because they are very obsessed to get language right. Writing models have not taken into account how language represents thoughts. This study does not claim, however, that its findings directly proved this argument. However, the fact that the current study proved empirical findings that FL proficiency is an essential factor in FL writing on the one hand and the positive correlation between knowledge development and text quality in L1 but not in FL on the other hand raised this important question. In fact, how language represents thoughts and how this affects writing process and strategy have not been dealt with in the current writing models and research (Roca de Larios et al., 2016). There is also less research, particularly in FL, in the role of language in thinking during formulation process and that might be important to improve text quality (Roca de Larios et al., 2016). Galbraith (2009a, 2009b) and Roca de Larios et al. (2016) suggested that this is an important area for new research in FL that worth investigating in the future.

### 6.3.2 Methodological Implications

Although, keystroke data are quite difficult to interpret in terms of the underlying writing process, keystroke provided the current study with very important process data that helped to pin down the relation between FL proficiency and text quality. Relying on product data alone would not have told much about the nature of the correlations between variables. For example, the process measures have provided extra information in explaining the nature of the effects of FL proficiency on L1 and FL text quality. Keystroke data has also helped to support the motivation interpretation that accounted for some

aspects in this study like gender difference. Overall, keystroke data has helped to understand the relationship between product data and FL proficiency on the one hand and between gender and product data on the other hand. In addition, keystroke was combined by IRQ and this provided some extra valuable information, e.g., what the participants were thinking about during planning. The combination of these two methods to collect writing process data has been rarely used in previous research. This study implies that combining keystroke by IRQ was valuable.

### 6.3.3 Pedagogical Implications

Given that, the study provided enough evidence that having adequate language proficiency is important in improving the efficiency of FL writing, improving FL writers' language proficiency is essential. Pedagogically speaking, developing writers' FL proficiency is important to enable them to cope with their writing process demands successfully and produce a good text quality. The question remains, how this proficiency can be enhanced. This can be realized by addressing curriculum developer/designer to include, more language courses. When considering the participants of the current study, this can be achieved by teaching ELT students the educational course, such as educational psychology and educational foundation courses, in English instead of Arabic. Another important method that can enrich their FL proficiency during writing classes is using reading-to write method (Abdel Latif, 2009a). This strategy actually helps to develop their language proficiency. It also provides them with content to write about.

Closely related to the issue of providing content, the current study revealed positive correlations between content planning before and during writing with L1 text quality. Given also how FL issues affected the way FL writers' plan, this study suggests that providing FL writers, in particular, with enough content to write about is of great value in promoting their writing process and text quality. Both Ong and Zhang (2013) and Revesz et al. (2016) have shown that providing content eases the writing processes and enhances the quality of the written product. For example, Revesz et al. (2016) examined the effects of task complexity, which was operationalized as the absence versus presence of content, on L2 writing behaviours and linguistic complexity of 73 L2 writers. They found that in the high complex task, when no content support was

provided, L2 writers made more frequent pauses between sentences and more revisions. They also found that providing content resulted in greater lexical and syntactic complexity. Ong and Zhang (2013) and Ong (2014) also found that complex task, when writers were not provided with content support such as topic, ideas and macro-structure of the essay, resulted in lower lexical complexity and reduced the quality of the text produced. Providing such content to FL writers will definitely reduce the pressure caused by the writing process on the one hand and enable them to have something to write about on the other hand (Kellogg, 1994, 1988). Besides reading-to-write strategy, this can be done through encouraging students to generate their own content by a number of activities such as brainstorming, outlining and discussion with peers. Writers can even perform these activities in their L1 to ease the process of generating content

Related to content generation aspect, the present study revealed that FL undergraduate Omani students planned during formulation and tended not to devote enough time to make an initial plan before writing. The tendency of spending less time in initial planning was also apparent in L1 writing. This implies that planning activities should receive more explicit focus on L1 and FL writing instructions. Ong (2013, 2014) has shown that extended planning time enhances the quality of ideas generated during planning in FL writing, and that also enables writers to focus more on language encoding (Révész et al., 2017). Therefore, teaching FL writers to plan their text initially and concentrate on content planning is important to improve their final text. This is also important to reduce the cognitive overload caused by planning process during the formulation stage. This would enable writers to concentrate more on translation and transcription processes.

The study provided some evidence that some aspects of writing process depend on the strategy, so teaching these strategies to the FL students is of great value. For example, it seems that postponing revising the text after an initial draft has been produced is significant in producing good text quality. This could be because by the end of the writing process, translation process is no longer interfering and more cognitive resources are allocated to perform other processes like revision. Therefore, encouraging FL writers to have some time to read and revise their writing before submitting it will be useful to improve their text. Ong and Zhang (2013) also assessed text quality and found

that post-draft revision was particularly effective when the initial draft was removed and revision involved rewriting the initial draft rather than revising it.

Closely related to strategy, there was evidence that FL writers' beliefs about audience and that writing is a recursive process were positively related to writing FL process and text quality. Therefore, enhancing students' audience and recursive process beliefs in FL classes might improve students' writing performance. For example, considering readers when writing can be enhanced by raising students' awareness about the importance of clarity in writing. Furthermore, teaching instructions should enhance students' perception towards writing as an iterative process, rather than a language task, that entails going through multiple stages of revisions and editing.

In addition to improving FL writers' language knowledge and writing strategies, the study implies that motivation towards writing should also be addressed in writing classes. There is a clear effect, which looks like a motivation effect, which affected some aspects of the writing process. Therefore, it is important to increase students' motivation towards writing in order to increase the efficiency of their writing. Particularly, this research indicates that males were less motivated than females and that was evident in several aspects of their writing, e.g., revision patterns and writing time and their role as writers. Therefore, it is important to increase male students' motivation to writing and encourage them to make more efforts to improve their writing performance. One thing that can be done in this regard is to vary the writing topics to make more males' and females' topic, e.g., during exam and writing classes. In other words, writing instructions should work on students' motivation by providing them topics of their interests. Writing topic has been found to affect boys' writing performance (see Jones & Myhill, 2007; Williams & Larkin, 2013).

Keystroke logging can be a useful pedagogical instrument in improving students' autonomy and noticing. Students could also use keystroke to increase their awareness about their cognitive writing process and the issues they encounter while writing. The replaying function of keystroke enables students to reflect on and think about their writing patterns and performance. For example, a number of studies have shown that the replaying of the students writing using the replaying function helps to stimulate students to reflect on their writing process (e.g., Lindgren & Sullivan, 2003; Revesz et al., 2016; Sullivan, 2002). This actually enables them to notice different aspects of

their writing in which they were not aware about before. Spelman Miller et al. (2008) and Spelman Miller (2000) maintained that keystroke is an important pedagogical means for teachers as well as students. They argued that keystroke offers students the opportunity to have in depth discussion of writing with their peers. They also argued that it aids teacher to gain more insights about their students writing processes as it helps them in identifying the problems their students encounter in the course of writing. This might help to provide their students with necessary support to improve their writing process and text quality.

## 6.4 Limitations and Further Research

### 6.4.1 Limitations of Specific Features of Study

First, although keystroke provides considerable amount of quantitative data, this data alone does not reflect the underlying cognitive writing process directly (Baaijen et al., 2012). This affects the interpretation of what the writers do during pauses, for example. Pauses provide opportunity for studying and uncovering underlying writing processes as Matsuhashi (1981) pointed out that “pauses, moments of physical inactivity during writing, offer observable clue to the covert cognition processes” (p. 114). Keystroke provides details about number and location of pauses and revisions. However, the nature of the hidden processes in the writers’ mind during pauses and revisions cannot be approached by the mean of the keystroke data alone. Using IRQ was important and enabled me to obtain more insights about what the writers thought of before and during writing. However, there were some cases where the study could not gain much data about other important aspects of writing such as how the writers revised. Future research can extend the use IRQ by including more detailed questions. For example, IRQ’s questions can be more directly focused on planning and revision behaviours. Furthermore, keystroke data needs to be combined with qualitative data, e.g., stimulated recall interviews, in future research. This might help in gaining more insights about what is going on during pauses and why certain revision is carried out. The final comment of the last section (6.3.3) mentions the potential value of the replay function for the writers themselves. This function could also be valuable for collecting stimulated recall interviews as researchers can stop it at any pause

and ask writers about what they are thinking about. This opens up for a more qualitative approach that will be discussed in more details in section 6.4.2.

Second, using Oxford Placement Test (OPT) as an indicator of the participants' English language proficiency was important to highlight the aspects that can affect individuals' writing performance. However, previous writing studies have acknowledged that writing expertise, which is independent of FL proficiency, is an important predictor of writers' writing process and text quality. For instance, Cumming (1989) concluded, "writing expertise and second language proficiency are psychologically different (p. 118). Writing proficiency was not controlled for in both languages. The study showed that text quality and a number of writing process variables are significantly correlated across languages. In other words, there are some evidence that participants' writing performance and patterns were consistent across L1 and FL. This might be interpreted in terms of general writing abilities/strategies or motivation. Thus, controlling for and assessing writing skills in future research is worth considering. Having said that, however, I found it hard to find a general writing skills test. Previous research actually used the final product text (e.g., Abdel Latif, 2009a) or writers' professional experience (e.g., Sasaki, 2002) to assess writers' writing skills. It is fair to argue that evaluating the final product, for example, to determine writers' writing skills is inadequate. Therefore, having a more general test that assesses general writing skills and not only the final product is worth considering in the future.

Third, L1 proficiency was not assessed. There were few places where FL proficiency correlated to L1 text quality and processes and one might ask about these correlations. One argument that might explain these correlations is the effect of L1 proficiency which could account for variations in the writers' writing performance. Obtaining this proficiency level and including it in the analysis might help to get rid of the correlations between FL proficiency and L1 writing performance. This could be because FL proficiency might be related to L1 proficiency.

Fourth, current study's findings are consistent with previous research on gender difference in terms of females' superiority in writing over males. However, writing process research on gender difference is scarce, particularly with Adult FL context. So is gender difference in adult in writing process and text quality only related to the Omani context? Or is this a general theme and

females are generally more proficient language users and better writers than males. Relatively, related to gender difference, which is a key element in the current study, there might be no gender differences if males were given a topic of their interest, e.g. sport or cars, to write about. Similarly, there might be no gender differences in a different writing situation, e.g., public exam that determines their professional career. Considering the effect of topic on writing process and motivation towards writing is highly important in future research.

Fifth, closely related to the previous point, it is important to mention that females, who found to be more motivated in writing than males, scored also higher in FL proficiency test. It remains unclear how these variables, motivation and FL proficiency, are related. Does motivation lead to score higher in the English language test? Or, is being linguistically competent in FL results in more motivational attitudes towards language task such as writing? Thus, future research need to consider how these factors relate and interact with each other on the one hand and with the writing process and product on the other hand. It will also be valuable to have motivation test, as mentioned earlier in section 5.1 and chapter 4. The current study suggests that there are gender differences which are mainly related to differences in FL proficiency and possibly motivation. The study was able to pin down what they are. This study also implies that these factors are quite complicated and in order to research them, future research needs to consider all the aspects that are related to or which mediate them.

Sixth, participants' typing skills in both languages were not measured. Individuals might differ in their ability in typing and their typing skills might vary from one language to another. The limitation of FL writing fluency could possibly be due to writers' motoric skills (typing skills) and this might be because of writers' familiarity with the keyboard. This is particularly important considering the fact that keyboard laid out differently in Arabic. Personally, it is easier to write in English than Arabic because I got used to typing in English as a result of my study and my job (as a teacher of English language). However, it could be the other way around with other people. Thus, taking writers' typing skills into account in future research would definitely be valuable for computerized writing research.

Seventh, it has been assumed that argumentative task is more demanding compared to other type of writing (e.g., narrative) and that might affect writing

as writers might write less fluently and might take longer to plan and finish their writing (Beauvais, Olive, & Passerault, 2011; Kellogg, 2001). This is because the argumentative task involves high-level processes such as retrieving ideas, building argument and considering audience. Therefore, comparing writers' performance in different types of writing task is worth considering in future research. Furthermore, the findings of the current study were based on the analysis of two writing tasks, one in L1 and another one in FL. Further research might include several L1 and FL texts in order to validate the findings. Moreover, although writing topic was randomized across languages of writing, it was not directly tested by the statistical analysis because adding extra variables (knowledge of the topic in this case) would reduce the power of the statistical test.

Eighth although the sample size of the study is not considered small for detailed writing process research, including bigger sample size in the future research will definitely increase the power of the statistical analysis to identify differences between writing across languages, gender and FL proficiency. This is particularly important because this study revealed complex interactions and mediation effects between these variables, and to better detect and capture these interactions, a bigger sample size is important. There were actually few cases where I did not get significant interaction (or the significance level was marginal) and this could be because of sample size.

Ninth, given that the participants in the current research are quite early in their university career and do not have very advanced FL proficiency, low-intermediate language users, everything in their writing is determined by their FL proficiency. Future research should involve writers with higher FL proficiency levels as this might not be the case with more FL linguistically advanced writers.

#### **6.4.2 Reflection on General Approach**

Given that this is a quantitative process oriented research, one might ask about the value of using a more qualitatively oriented case study of individual writers to gain more insights about their struggle during writing and how they write rather than observing their writing process. As I have already mentioned, one of the limitations of the current study was the lack of specific information about the content of the thinking taking place during pauses and revisions. I

suggested that stimulated recall interviews could be used in future research to help to overcome this issue. A more general possibility would be to use the replay function (in keystroke) combined with stimulated interviews for a more qualitative analysis of the process, where dynamic interactions taking place. The interviews could contribute to highlight the social dynamics of the processes involved in planning, revision. They could also help to understand how individuals' decisions and attitudes influenced by writing beliefs and self-presentation. This actually will supplement the cognitive analysis carried out in this research with more information. This is not necessarily suggesting an alternative approach but to suggest that the two approaches work perfectly together.

Another area where this could be particularly relevant is writing beliefs. The current study did not reveal much conclusive results about writing beliefs, particularly in L1. This possibly could be because these beliefs have been treated as they vary along a simple dimension. In other words, these beliefs could not be captured by using scores on simple dimensions. For example, audience orientation scale, which assess writers' relationship with their audience and are likely to represent writers' feelings' towards their audience. However, the relationships are likely to be more ambiguous than rating it in this simple scores. For example, writers might be anxious about their readers, particularly in an assessment context. They might also want to impress their readers and these kind of feelings cannot be realised or captured by a fixed dimension. Rather they are dynamically interacting with specific attitudes, beliefs, specific writing task and the context of writing. Thus, a more qualitative approach could be more useful to gain more insights about these interactions.

## 6.5 Concluding Remarks

Closely related to the last point I mentioned in section (6.4.1), that the case might be different with more experienced writers with better FL proficiency, I feel that stepping back and reflecting on my own academic experience in writing this thesis is relevant. This study proved that ELT undergraduate Omani writers struggle a lot during the course of English writing. The study suggests that this is partially due to the fact of their less well developed English language proficiency and writing skills. Like them, I am FL writer, of course

older, more experienced and linguistically more proficient than them, who has faced many challenges throughout completing this novel genre of writing. Of course there is no way to compare a PhD thesis with a 300 word long essay, but the point I wanted to make is that writing is a hugely cognitive demanding task even for native speakers themselves. As a PhD student, I am required to submit 75000 word long well-established researched academic thesis with the added challenge of writing it in a language that I am not fully fluent in.

Following academic writing conventions that I was not very familiar with and that were slightly different from what I acquired through my previous writing practices whether in L1 or FL, was the main challenge I faced when I started this research. In one respect, I was a bit like the participants of this study, somehow concerned about language and how to express myself in correct English when writing. Having said that, however, I do believe that my struggle in writing at the first place is not attributed much to language issues, as my English language level is very advanced. The other aspect was related to being familiar with the English academic writing conventions. I was struggling, in particular, with two main issues that are actually considered as the focal elements in English academic writing, particularly PhD research writing. On top of that, I lacked the adequate skills to build arguments. And the second issue was I was not confident enough to be critical. I was more likely to fit with what Bereiter and Scardamalia (1987) characterized as knowledge-teller writers. My writing was very descriptive with limited sense of criticality. However, as part of the process of studying and conducting PhD research I have learned more about building arguments, being critical and reflective writer and reader and considering audience rather than being completely descriptive.

Subjectively, I think my writing fluency and skills have improved a lot as part of the learning process- through my supervisors' feedback and discussion and the courses and workshops I attended. However, the improvement in my writing skills could also be partially because my English language proficiency has improved. It is possible that the struggle and the difficulties I faced during writing this thesis were related to my FL proficiency. Maybe writing in FL is hard even for individuals who have advance FL skills. The fact that I am writing in a language that I am not fully competent in might get into the way of building argument and being critical. The second possibility, which is beyond the scope of the current study, is related to English academic writing conventions. I strongly believe that learning more about the English academic

writing conventions is an important ingredient that has affected my writing skills positively. The writing skills, such as building arguments and being critical, of international PhD students are expected to improve as a consequence of introducing and teaching them these conventions. However, the possibility that overseas PhD students' writing skills develop as a result of acquiring better FL proficiency is also valid. This actually raises an important question for postgraduates whether improving their FL proficiency or learning academic writing skills or maybe both is better for them. In other words, would they benefit more from further FL courses or introducing them to the FL academic writing genre or maybe both? This is actually an important area for future research with more experienced writers with better language skills.

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# Appendices

## Appendix A

### Writing Beliefs Inventory

#### الكتابه والاعتقادات المرتبطة بها

رمز المشارك: ..... Participant Code: .....

العمر: ..... Age: .....

الجنس: ..... Gender: .....

السنن الدراسية: ..... Year of Study: .....

التخصص: ..... Major: .....

This questionnaire contains 31 statements about aspects of university academic writing. For Each statement, please tick if you are Strongly Agree, Agree, Don't Know, Disagree or Strongly Disagree.

يحتوي هذا الاستبيان على 31 عبارة عن جوانب من الكتابة الأكademية الجامعية. ضع علامة بجانب كل عبارة اذا كنت توافق بشدة، توافق، لا تدري، لا توافق، أو لا توافق بشدة

There is no one correct belief of university academic writing. It depends on what you believe about university writing. Please, try to rate them as what you actually believe rather than what you think you ought to believe.

لا يوجد اعتقاد واحد صحيح عن الكتابة الأكademية الجامعية وإنما تعتمد على اعتقادك عن الكتابة الأكademية لذلك  
أرجو منك تقييمها حسب مفاهيمك واعتقادك وليس حسب ما يجب عليك اعتقاده

Remember your answers are **CONFIDENTIAL**; try to answer as honestly as possible.

ملاحظة: نتعامل مع إجاباتك بخصوصية تامة لذلك لطفاً قيم العبارات بصدق

No	Statement	Totally Agree أوافق بشدة	Agree وافق	Don't know لا أعرف	Disagree لا أافق	Totally Disagree لا أافق بشدة
1	Writing is a process involving a lot of emotion. الكتابه عملية تتضمن الكثير من العاطفة.					
2	The key to good writing is revising. المراجعة هي السبيل لكتابه جيدة.					

3	<p>It's important to select the words that suit your purpose, audience, and occasion.</p> <p>من المهم اختيار الكلمات التي تناسب هدف الكتابة، مناسبتها وقراءها</p>				
4	<p>Writing should focus on the information in books and articles.</p> <p>يجب أن ترتكز الكتابة على معلومات من الكتب والمقالات.</p>				
5	<p>Writing helps new ideas emerge.</p> <p>تساعد الكتابة على ظهور أفكار جديدة.</p>				
6	<p>Good writers are reader-friendly.</p> <p>الكتاب الجيدون هم قراء جيدين.</p>				
7	<p>Revision is a multi-stage process.</p> <p>المراجعة عملية متعددة المراحل.</p>				
8	<p>Good writers support their points effectively.</p> <p>يدعم الكتاب الجيدون أفكارهم بفعالية.</p>				
9	<p>Good writers are logical and convincing.</p> <p>الكتاب الجيدون منطقيين ومحقعين.</p>				
10	<p>The key to successful writing is accurately reporting what authorities think.</p> <p>السبيل إلى الكتابة الناجحة هو سرد أراء المسؤولين بدقة.</p>				
11	<p>Good writers anticipate and answer their audience's questions.</p> <p>يتوقع الكتاب الجيدون أسئلة القراء ويسعون للإجابة عليها.</p>				
12	<p>Good writing sounds natural, not stiff.</p> <p>تبعد الكتابة الجيدة فطرية وليس متکافنة.</p>				
13	<p>When writing, it's best to use proven formats and templates, and then fill in the important information.</p>				

	عند الكتابة من الأفضل استخدام صيغ ونمذج متعارف عليها ومن ثم تعبئه المعلومات في نفس القالب.				
14	Writing is a process of reviewing, revising, and rethinking. الكتابة هي عملية تنقح مراجعة وإعادة نظر.				
15	Good writers keep their audience in mind. يأخذ الكتاب الجيدون قراءهم بعين الاعتبار.				
16	Good writers make complicated information clear. يجعل الكتاب الجيدون المعلومات المعقدة واضحة ومبسطة.				
17	Good writers don't let their choice of words overshadow their message. لا يسمح الكتاب الجيدون لكلماتهم بأن تظلل وتعيق وصول المعلومة.				
18	Writing is often an emotional experience. الكتابة هي فالغالب تجربة عاطفية.				
19	Good writers adapt their message to their readers. يهيء الكتاب الجيدون رسالتهم للقراء.				
20	Writers need to immerse themselves in their writing. يحتاج الكتاب إلى أن يغمروا أنفسهم في كتاباتهم.				
21	Good writers are sensitive to their readers. الكتاب الجيدون مرهفي الشعور تجاه قراءهم.				
22	The most important reason to write is to report what authorities think about a subject. أهم سبب للكتابة هو نقل ما يظنه المسؤولين عن موضوع ما.				
23	Good writing involves editing many times. تتضمن الكتابة الجيدة عدة مراحل من التحرير.				

24	Good writers include a lot of quotes from authorities in their writing. يضم الكتاب الجيدون في كتاباتهم عدّة اقتباسات من المسؤولين.				
25	Writing helps me understand better what I'm thinking about. تساعدني الكتابة في فهم ما أفكر به بطريقة أفضل.				
26	Good writers are oriented toward their readers. الكتاب الجيدون موجهون باتجاه قرائهم.				
27	My thoughts and ideas become clearer to me as I write and rewrite. تصبح أفكاري وأوضاع عندما أكتبها وأعيد كتابتها.				
28	Good writers thoroughly explain their opinions and findings. يشرح الكتاب الجيدون آراءهم واستنتاجاتهم بشكل تام.				
29	The key to good writing is conveying information clearly. السبيل إلى كتابة جيدة يكون في إيصال المعلومة بوضوح.				
30	Writing requires going back over it to improve what has been written. تحتاج الكتابة إلى مراجعة ما تمت كتابته لتحسينه.				
31	Writing helps me see the complexity of ideas. تساعدني الكتابة لفهم الأفكار المعقدة.				

## Appendix B

### Immediate Recall Questionnaire (IRQ)

1. What did you think about before writing your essay? (Please rate the following items according to their importance to you)

NO	Items	Not very important	Not important	I don't know	Important	Very important
a.	The topic					
b.	The length of the text					
c.	The organization of the text					
d.	The person who would read it					
e.	The vocabulary that can be used					

2. Please rate how much you agree with the following statements

NO	Items	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
a.	Before I started writing, I created a mental plan for the whole content and organization.					
b.	Before I started writing, I created a written plan for the whole content and organization.					
c.	I created a written plan for each paragraph one after another					

d.	I created a mental plan for each paragraph one after another.					
e.	I planned sentences as I wrote.					

3. Please rate how much you followed your plans:

I didn't follow them	I rarely followed them	I do not know	I sometimes followed them	I always followed them

4. Please rate how much did you take into account who is going to read your written text

I did not take into account who is going to read my text	I rarely took into account who is going to read my text	I do not know	I sometimes took into account who is going to read my text	I always took into account who is going to read my text

5. Please rate how much your understanding of the topic, you writing about, has changed after writing

My understanding has decreased a lot	My understanding has decreased a bit	I don't know	My understanding has increased a bit	My understanding has increased a lot

6. Which of the following did you focus on more when writing? (Please rate the following items according to their importance to you)

NO	Items	Not very important	Not important	I don't know	Important	Very important
a.	Words and phrases are appropriate					
b.	Content is appropriate for the writing topic					

c.	Grammar and sentence structures are correct					
d.	Spelling and punctuation are correct					
e.	Organization of the content and text structure					
f	Content is convincing to the reader					

7. Please rate how much you agree with the following statements:

NO	Items	Strongly disagree	Disagree	I do not know	Agree	Strongly agree
a	My main concern was to present the information that I know about the topic					
b	My main concern was to express my own ideas about the topic to convince the reader about my point of view					
c	My main concern was to reflect my language skills in my writing, so I focused more in using appropriate words and correct grammar structure					

## Appendix C

### Writing Topics

**Topic one:** Write an essay to Rustaq Round-up Newsletter about your opinion on this topic. Do you agree or disagree with the following statement?

Administrative staff at Rustaq College are always helpful and offer efficient customer services. Support your opinion with example and details.

اكتب مقال موجهة الى (Rustaq Round-up Newsletter) حول رأيك في هذا الموضوع. هل توافق أو لا توافق على العباره التالية: الطاقم الإداري في كلية الرستاق دائمًا متعاون ويقدم خدمات فعالة. ادعم رأيك بالأمثلة التوضيحية والتفاصيل.

**Topic two:** Write an essay to Rustaq Round-up Newsletter about your opinion on this topic. Do you agree or disagree with the following statement? Co-education is the cause of low academic achievement for many students. Support your opinion with examples and details.

اكتب مقال موجهة الى (Rustaq Round-up Newsletter) حول رأيك في هذا الموضوع. هل توافق أو لا توافق على العباره التالية: التعليم المختلط هو سبب تدني المستوى التحصيلي لدى الكثير من الطلاب. ادعم رأيك بالأمثلة التوضيحية والتفاصيل.

## Appendix D

### Rating scale and procedure for assessing writing (*adapted from CAS Level 2 Writing Marking Rubric; unpublished document*)

	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
Task achievement	<p>Addresses assigned topic directly; coverage is comprehensive; no irrelevance.</p> <p>Meets minimum word limits</p> <p>If source material is used, it is referenced with an attempt at APA conventions</p>	<p>Addresses assigned topic but some points may not be covered or some irrelevance may appear</p> <p>Roughly meets minimum word limits</p> <p>If source material is used, some attempt is made at referencing</p>	<p>Addresses assigned topic but contains irrelevant points and some relevant points are not dealt with.</p> <p>May contain a small amount of copied material</p> <p>Not less than 50% of target word limit</p>	<p>Limited relation to the assigned topic: shows some attempt to address the issue but contains little relevant material.</p> <p>May be short.</p> <p>May contain substantial amounts of copied material</p>	<p>Answer bears no or almost no relation to task.</p> <p>May contain mostly copied material.</p>	<p>No assessable sample i.e. nothing legible on the page</p>

Organization	<p>Functional, complete introduction and conclusion, clearly prefiguring/summing up body</p> <p>Overall drift of ideas clear and development is linear</p> <p>Appropriate use of cohesive devices</p>	<p>Functional if limited introduction and / or conclusion</p> <p>Overall drift of ideas clear but development may meander or backtrack a little</p> <p>Appropriate use of cohesive devices</p>	<p>Limited/ineffective introduction and/or conclusion</p> <p>Reader can work out overall drift of ideas but development is not linear</p> <p>Some appropriate use of cohesive devices</p>	<p>Barely recognizable introduction and/or conclusion</p> <p>Overall drift of ideas unclear – reader forced to conjecture</p>	<p>Little apparent organization of ideas</p>	Baffling
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Grammar	<p>Shows range of structures required for the task</p> <p>Basic and complex structures largely error free.</p> <p>Errors do not interfere with expression of meaning</p>	<p>Shows range of structures required for the task</p> <p>Systematic errors in complex structures, basic structures largely error free</p> <p>Meaning is not obscured</p>	<p>Lacks the full range of structures to tackle the task – meaning not obscured but may cause simplification of ideas</p> <p>Errors in complex and basic structures</p>	<p>Lacks range for task – affects expression of meaning</p> <p>Major problems in basic constructions</p> <p>Meaning confused or obscured in places</p>	<p>Major problems in basic constructions</p> <p>Meaning obscured in many places – reader may struggle with overall sense</p>	<p>Almost no control of grammar at all</p>
Punctuation, spelling and mechanics	<p>Few spelling errors</p> <p>Punctuation may be simple but is correct</p> <p>Capitalization accurate</p> <p>Paragraphs indented</p>	<p>Occasional errors in spelling, punctuation, paragraph marking or capitalization but meaning not obscured</p> <p>Handwriting legible</p>	<p>Errors of spelling, punctuation, paragraph marking or capitalization.</p> <p>Handwriting legible</p>	<p>Errors of spelling, punctuation, capitalization, and paragraphing</p> <p>Handwriting illegible in parts</p>	<p>Dominated by errors</p> <p>Handwriting frequently illegible</p>	<p>Illegible or very difficult</p>

Vocabulary	Shows range of vocabulary required for the task – choice of vocabulary is accurate and fairly precise  Register is appropriate	Shows nearly the range required though some general words may be used or some circumlocution may be necessary  Register generally appropriate	Lacks the full range for the task – overall meaning not obscured but may cause simplification of ideas or local comprehension difficulties  Lapses in register appear  Some misuse of vocabulary may appear	Significant lacks in vocabulary either limit the answer to very simple ideas or cause overall comprehension difficulties  Lapses in register  Misuse of vocabulary	Lacks in vocabulary mean little or no attempt can be made at an answer	Almost no lexical resource

**TASK ACHIEVEMENT:** The criterion includes the aspects formerly covered in *Content* but also includes other aspects of the treatment of the assignment, including text length and plagiarism. It does not include marks for originality of content as this is felt to be too subjective. It attempts to answer the question: has the student attempted to construct a text, in more or less their own words, that attempts to address the question?

**ORGANIZATION:** This criterion covers the organization of text above the level of the sentence, so at paragraph and text level. It assesses structure i.e. division into functional sections (introduction – body – conclusion), functionality i.e. the extent to which the sections perform their jobs and linearity i.e. the extent to which the ideas flow in – to Western readers – a logical manner.

**GRAMMAR:** This criterion covers range, complexity and accuracy of grammar use. 'Range' refers to whether or not the text displays the structures actually necessary to carry out the task in. For example a task that required a writer to describe a sequence of events in a linear way (first A , then B, then C) would require use of the Past Simple and perhaps the Past Continuous. A more complex task would be to describe a sequence of events in a non-linear way (i.e. first B, then back to A and then forward again to C) and this would require use of the Past Perfect, as well as the other two tenses. 'Complexity' is related to range. In this rating scale the common – though contentious - distinction between 'simple' and 'complex' grammar is used. Simple structures would include one clause sentences, or *co-ordinated* two clause sentences (e.g. He lives in Muscat but he works in Nizwa), noun phrases with no more than three components (e.g. determiner-adjective-noun), single verb phrases, adverbs rather than adverbial phrases, Past Simple for narrative, Present Simple for description. Complex structures would include *subordinated* clause sentences, multi-item noun and verb phrases, multi-item adverbial phrases, conditional structures, Past Perfect in narrative, Present Perfect on the narrative/descriptive boundary, modal verb phrases.

**VOCABULARY:** This criterion also covers range in relation to the task but also considers three common consequences of a lack of range: the use of circumlocution, the simplification of ideas through the use of general words, misuse of words. It also considers register, by which is meant a choice of words appropriate to the type of text and the context of use.

## Appendix E

Example of Participants' English Text. Note that spelling mistakes were corrected.

In my point of view, sometimes the administrative staff at Al-Rustaq college help the Ss and sometimes not. In fact some of my friends told me that the costumer services in Rustaq college is not improved, because when they face some problems and ask the administrative for help they delay it or avoid to give the Ss the help that they want it. I will discuss here 2 main problems that related to the administrative staff in Rustaq College & to the costumer services.

First, problems in making the timetable. Each semester many Ss face some problems in having their timetable in time. It is important to say that when the ss go to the administrative staff or the people who are responsible about making the timetable they even don't listen to the ss and they said " we are busy, come after 10 min(s) or something like this. After that when the ss come again they shout on Ss and ask them to leave the office. Ss become angry because of this bad communication. The semester will start and some of the Ss don't get their timetable to know their classes of the semester. The Ss will wait for the timetable to be done, while his/her friends already took the first 2 classes of each subject. Trust in my words if we face the same situation we will hate the college and we will not have the motivation to complete our study.

Second, problems in having break to study for the mid exams. Most of my friends in IT and International business complain about that. They don't have enough time to well prepared for the mid exams, because they have to attend the classes and study for the mid exams at the same time. How can we attend the classes during the mid exams?. We are human being our mental lexicon will face some problems I mean huge problems in memorizing everything. The biggest problem here when we have exams for the whole week without any breaks between them. When the results decrease they will say Ss don't the ability or they don't study very well and that's not the truth of course. The administrative staff should make plan and follow some strategies during mid exams week to avoid the plagiarism because most of the Ss do not study very well because of the time, so he/she will follow the bad ways to pass the exams.

To sum up, the administrative must study Ss situation and make several plans and change the traditional strategies to make the Ss results perfect and avoid

any kind of bad habit formation. In fact Ss are the main focus in education process and if they follow the bad ways to pass the exams and the results come down every semester, so why we as Ss work hard and graduated from the secondary school to complete our higher education?. Trust in me this Q should be answer to have great Ss with bright future.

## Appendix F

Example of Participants' English Text. Note that spelling mistakes were corrected.

Co-education is a new system that applied in Omani schools recently. There are different point of views about this topic among Omanis.

In my opinion, co-education has many advantages. First of all, it helps students to learn from each other. For instance, male students can learn from females mistakes in the classroom. Moreover, co-education can be a chance for shy students to get rid of their shyness and anxiety. For example, teachers can arrange the classroom in a way that boys can sit with girls to answer activities together and discuss what they didn't understand in the lesson. Apart of that, teachers can ask both genders to work together in their projects outside the classroom. This way is good to encourage cooperation and group working. Furthermore, co-education helps both genders to be ready for future jobs. For example, it builds self-confidence and improves communication skills. Also, it enhances self-monitoring in learning. Thus, both genders will be aware of their progress and achievement; because they might be shy when they got low marks. So, co-education, raises student's awareness and responsibility. Both genders are responsible for their learning. They have to do their best to get high marks and improve their achievement.

I think co-education is interesting and useful system to improve the achievement of both genders. Males and females have the chance to meet and talk about their problems in learning. So, they can find clever solution for many issues as they are completing each other in and out the classroom. A part of that, the exciting of both genders in the classroom enhances the dynamic and atmosphere. Boys and girls might say jokes and funny things that will make them feel comfortable. So, this will increase their achievement and enhance performance.

All in all, co-education is an interesting way of learning. Both genders benefit from it. For example, males and females will work together, benefit from each other and share information. So, their performance will be improved.

## Appendix G

Your Ethics Submission (Ethics ID:19172) has been reviewed and approved

### **Your Ethics Submission (Ethics ID:19172) has been reviewed and approved**

ERGO [ergo@soton.ac.uk]

Sent: 17 March 2016 13:22

To: Al-Saadi Z.T.

Submission Number: 19172

Submission Name: The Effects of EFL language Proficiency and Writing Beliefs on L1 (Arabic) and EFL (English) Writing Processes and Products of Undergraduate Omani Students

This email is to let you know your submission was approved by the Ethics Committee.

You can begin your research unless you are still awaiting specific Health and Safety approval (e.g. for a Genetic or Biological Materials Risk Assessment)

Comments

1. Thanks for addressing the feedback and good luck with your research!

[Click here to view your submission](#)

Coordinator: Zulaikha Al-Saadi

## Appendix H

*A This version updated December 2013*

### SSEGM ETHICS SUB-COMMITTEE APPLICATION FORM

*Please note:*

- You must not begin data collection for your study until ethical approval has been obtained.
- It is your responsibility to follow the University of Southampton's Ethics Policy and any relevant academic or professional guidelines in the conduct of your study. This includes providing appropriate information sheets and consent forms, and ensuring confidentiality in the storage and use of data.
- It is also your responsibility to provide full and accurate information in completing this form.

1. **Name(s):** Zulaikha Talib Al-Saadi

2. **Current Position:** PhD student

3. **Contact Details:**

**Division/School:** Education

**Email:** \*\*\*\*\*

**Phone:** \*\*\*\*\*

4. **Is your study being conducted as part of an education qualification?**

**Yes**       **No**

**5. If Yes, please give the name of your supervisor**

David Galbraith

John Schulz

**6. Title of your project:**

The Effects of EFL language Proficiency and Writing Beliefs on L1 (Arabic) and EFL (English)

Writing Processes and Products of Undergraduate Omani Students

**7. Briefly describe the rationale, study aims and the relevant research questions of your study**

Reading and writing are the most important academic practices that help students to develop their knowledge about their disciplines (Lea & Street, 1998). University literacy practices depend to a large extend on formal written language (Thesen, 2001). Furthermore, writing is important for students at university level as a lot of assignments and research works depend on it (Bacha, 2002). In applied sciences colleges in Oman, writing in English is crucial and a prerequisite for students not just because English is the medium of instruction and communication at the College, but also because students are required to pass their written exam. Therefore, it is important to obtain a real picture of undergraduate Omani students EFL writing process. Depending entirely on studies carried out outside this context could be inadequate because one context varies from another in terms of pedagogy, motivation, purpose, attitudes and beliefs towards writing (Al haysony, 2008). Thus, exploring the EFL writing process of Omani undergraduate students and the variables influencing them is important to shed light on the EFL writing process and products in this particular context, taking into account that EFL writing process of Omani undergraduate students has never been investigated before.

Moreover, the role of FL linguistic knowledge in the FL writing process and product has been highlighted by some cognitive writing process models e.g., Chenoweth and Hayes (2001) and Hayes (1996). However, research on the role of FL linguistic knowledge has reported inconsistent findings. This suggests that further research needs to be carried out to explore the interaction between FL linguistic knowledge and FL writing process and products.

Furthermore, considering writers' writing beliefs is of great value because such beliefs reflect the additional motivational processes that may influence the composition process and text quality (Baaijen et al., 2014; White & Bruning, 2005). Relatively little research has investigated the effects of writing beliefs on the writing process and text quality in L1 (e.g., White & Bruning 2005; Baaijen et al. 2014) and none has investigated their effects on L2.

The study aims at comparing L1 (Arabic) and EFL (English) writing processes of Omani undergraduate students. It also intends to explore the influence of EFL language proficiency level and writing beliefs on students writing processes and products. The study intends to address the following questions:

1. To what extent are L1 and L2 writing processes and strategies similar or different in terms of processes, strategies and text quality?
2. Do EFL writing process and text quality of ELT Omani students change as their EFL proficiency level increases?
3. What is the relationship between EFL proficiency level and EFL compositions and the quality of the written text?
4. Do the ELT Omani undergraduate students' writing beliefs influence the writing process and text quality in L1 and EFL languages?

5. Do the ELT Omani undergraduate students' writing beliefs vary across the languages of composition (L1 and EFL) and EFL proficiency levels?

#### **8. Describe the design of your study**

A cross sectional/correlational approach will be adopted in this study. The data will be collected from the participants using the following tools: (i) a 100 multiple choice test (Oxford Placement Test), (ii) a 31- item Writing Beliefs Survey (WBS) (Sanders-Reio et al. 2014), which will be translated into Arabic, and (iii) a keystroke logging program where the participants will write on the computer twice, one in English and another one in Arabic (the writing sessions will be one week apart), and (iv) a 7 items Immediate Recall Questionnaire (IRQ), which will be translated into Arabic. Responses to both WBS and IRQ are ratings on 5-point Likert scales. The WBS and IRQ will be completed twice: once for writing in English and once for writing in Arabic. Order of writing sessions on the computer and questionnaires' completion will be counterbalanced.

#### **9. Who are the research participants?**

100 EFL students who are in the second and fourth year of their academic degrees at Rustaq College of Applied Sciences in Oman will take part in this study. The participants will be from both genders whose age ranges between 19 and 22 years. The participants are enrolled in English Language Teaching (ELT) major. The first language of the participants is Arabic and English is the medium of instruction at the college.

#### **10. If you are going to analyse secondary data, from where are you obtaining it?**

N/A

**11. If you are collecting primary data, how will you identify and approach the participants to recruit them to your study?**

The researcher will request the admission and registration office at the college to send emails, on the researcher behalf, to the students from the target group, including an information sheet and requesting them to volunteer for participation. The researcher will also speak to the students' teachers in order to explain the nature of the study and to take part in encouraging their students to participate in the study. Students who are willing to participate will reply to the researcher through email. The researcher will arrange time and place to meet the voluntary participants at the college to give them the information and the consent forms and fill in the questionnaires (WBS and IRQ) and take part in the writing sessions.

**12. Will participants be taking part in your study without their knowledge and consent at the time (e.g. covert observation of people)? If yes, please explain why this is necessary.**

No, the participants will be informed about the aims of the study during the call for voluntary participation phase. Also, the participants will be directed to read the information in the information forms that will be given to them before they start write on the computer answer the questionnaires. They will also be required to sign consent forms before answering any questions or writing anything on the computer.

**13. If you answered 'no' to question 13, how will you obtain the consent of participants?**

*Please upload a copy of the consent form if you are using one – or if you are not using one please explain why.*

Before starting any step in the study, an information sheet that includes information about the nature and purpose of the study will be distributed to the participants and they will be asked to read this sheet in order to understand the aims of the study. Also, a consent form will be provided to the participants and they will be required to read and sign it before taking part in the study.

**14. Is there any reason to believe participants may not be able to give full informed consent? If yes, what steps do you propose to take to safeguard their interests?**

No

**15. If participants are under the responsibility or care of others (such as parents/carers, teachers or medical staff) what plans do you have to obtain permission to approach the participants to take part in the study?**

The participants will be second and fourth year college students whose age ranges between 19 and 22 years. Thus, they are able to read and understand what they will be asked to do for this study and give their consent about their participation in this research.

**16. Describe what participation in your study will involve for study participants. Please attach copies of any questionnaires and/or interview schedules and/or observation topic list to be used**

Participants will be asked first to complete a test (Oxford Placement Test (OPT). This test takes about 50 minutes. One week later, the first writing session will take place. During the session the students will be required to: (i) fill the Writing Beliefs Survey (WBS) which is expected to takes about 10 minutes, (ii) write the English text (or Arabic, depending on counterbalancing) on a computer for about 40 minutes, and (iii) complete the Immediate Recall Questionnaire (IRQ) (to reflect on their writing experience) which is expected to take about 10 minutes. A week later, the students will follow the same procedures (e.g., fill in the Writing beliefs Survey, write on the computer and complete the Immediate Recall Questionnaire). However, they will write in Arabic (or English) and complete the WBS about their writing beliefs when they write in Arabic and complete the IRQ reflect on their writing experience in Arabic. Furthermore, the students will be asked to complete some background information in the questionnaires and the writing session e.g. gender and year of study.

**17. How will you make it clear to participants that they may withdraw consent to participate at any point during the research without penalty?**

The information provided in information form will clearly state that participants have the right to withdraw from the research at any time, and that there will be no follow-up communication.

**18. Detail any possible distress, discomfort, inconvenience or other adverse effects the participants may experience, including after the study and you will deal with this.**

Participants will be required to write on the computer twice and to reflect on their writing experiences. They will be reassured that their answers and written essays will be confidential and will be only used for the purpose of academic study.

Participants will not be asked to write their names when they answer the questionnaires or on the keystroke programme, thus their responses will be completely anonymous. The data that will be gained from the participants will be only used for research purposes. All

information will be treated as confidential and participants will not be identified through their responses and their written essays.

**19. How will you maintain participant anonymity and confidentiality in collecting, analysing and writing up your data?**

The responses to the questionnaires (WBS and IRQ) and written essays will be completely anonymous as participants' names will not be used and codes will be used instead, so participants will not be identified. The three digits of the student's number will be used for coding. This is to ensure that the relevant data can be retrieved if a participant decided to withdraw at a later date. All data will be confidential and participants will not be identified through their responses or written essays and the obtained data will be only used for research purposes.

**20. How will you store your data securely during and after the study?**

*The University of Southampton has a Research Data Management Policy, including for data retention. The Policy can be consulted at <http://www.calendar.soton.ac.uk/sectionIV/research-data-management.html>*

All data will be saved in the researcher's laptop which is protected by a password in order to be accessed. Only the researcher can access the data. The data will be saved using codes that are only understood by the researcher.

**21. Describe any plans you have for feeding back the findings of the study to participants.**

The researcher will present the study's findings and implications at the college where the study will take place. Also, the researcher' email will be provided on the information sheets and the participants are welcome to contact the researcher to find out the findings of the research.

**22. What are the main ethical issues raised by your research and how do you intend to manage these?**

The main ethical issue is preserving the participants' anonymity and confidentiality. This is managed by ensuring that participation is voluntary, and that the identity of the participants is not required. They also have the choice to withdraw from the study at any time.

**23. Please outline any other information you feel may be relevant to this submission.**

N/A

## **Appendix I**

### **Participant Information Sheet**

**Study Title:** The Effects of EFL language Proficiency and Writing Beliefs on L1 (Arabic) and EFL (English) Writing Processes and Products of Undergraduate Omani Students

**Researcher:** Zulaikha Al-Saadi

**Ethics number:** 19172

**Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.**

#### **What is the research about?**

I am a PhD student at the University of Southampton, the United Kingdom. I am conducting research about the writing processes of students who are learning English as a second language. This is designed to find out what different kinds of beliefs EFL learners in Oman have about writing in their first and second languages, and how these beliefs interact with their L1 (Arabic) and EFL (English) writing processes and text quality.

#### **Why have I been chosen?**

I am looking for second and fourth year students at the college who are majoring in English Language Teaching (ELT). This is so that I can investigate their writing beliefs, and their L1 and EFL writing processes and written texts.

#### **What will happen to me if I take part?**

The research involves answering a 100 multiple choice test (Oxford Placement Test) which is expected to take about 50 minutes. One week later, the participants will have the first writing session. During this session, the students will be asked to (i) fill in a 31 items Writing Beliefs Survey (WBS) which is expected to take about 10 minutes, (ii) write an essay (in either English or Arabic) on the computer which takes 40 minutes, and (iii) complete a 7 items Immediate Recall Questionnaire (IRQ) which takes about 10 minutes. A week later, the second writing session will take place. The same procedures that are applied in the first session will be followed in the second one, except

that the students will write the essays in the other language instead (either Arabic or English depending on which they did first).

**Are there any benefits in my taking part?**

Your participation will contribute to our knowledge and understanding of Arabic and English writing processes and written products which in turn helps to develop writing instruction in EFL contexts.

**Are there any risks involved?**

The two writing sessions, WBS, IRQ and OPT will take place during your normal classes at the college and your written essays and responses to the questionnaires and the test will be anonymous and confidential.

**Will my participation be confidential?**

The data that will be collected will be completely anonymous and confidential. Names are not required and the obtained information and data will be used for research and academic purposes only.

**What happens if I change my mind?**

Participation is voluntary and you have the right to withdraw from the research at any time.

**What happens if something goes wrong?**

In the unlikely event that you have a complaint, please contact the Head of Research Governance at the University of Southampton (02380 595058, [rgoinfo@soton.ac.uk](mailto:rgoinfo@soton.ac.uk)).

**Where can I get more information?**

If you have any questions or would you like further information, please contact me through:

e: [\\*\\*\\*\\*\\*@\\*\\*\\*\\*\\*](mailto:*****@*****)

t: [\\*\\*\\*\\*\\*@\\*\\*\\*\\*\\*](tel:*****@*****)

[\\*\\*\\*\\*\\*@\\*\\*\\*\\*\\*](http://*****@*****)

## Appendix J

### CONSENT FORM

**Study title:** The Effects of EFL language Proficiency and Writing Beliefs on L1 (Arabic) and EFL (English) Writing Processes and Products of Undergraduate Omani Students

**Researcher name:** Zulaikha Al-Saadi

**Ethics reference:** 19172

*Please initial the box (es) if you agree with the statement(s):*

I have read and understood the information sheet [15/3/2016] [0.3])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  
recorded and used for the purpose of this study

I understand that my responses will be anonymised in reports of the  
research

I understand my participation is voluntary and I may withdraw any time  
without my legal rights being affected

#### ***Data Protection***

*I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study.*

Name of participant (print name).....

Signature of participant.....

Date.....

## Appendix K

### Risk Assessment Form

January 2012

- Please see Guidance Notes for completing the risk assessment form at the end of this document.

**Researcher's name:** Zulaikha Al-Saadi

#### **Part 1 – Dissertation/project activities**

What do you intend to do? (Please provide a brief description of your project and details of your proposed methods.)

The main aims of my study are: (i) to compare undergraduate Omani students' L1 (Arabic) and EFL (English) writing processes and written texts, (ii) to compare the EFL writing process and text quality across two English proficiency levels (low) and (high), (iii) to compare the students' writing beliefs when they write in English and Arabic, and (iv) to explore the effects of writing beliefs on L1 and EFL writing processes and text quality.

In order to achieve these aims a cross sectional/correlational design will be adopted in this study. The data will be collected from the participants using the following tools: (i) a 100 multiple choice test (Oxford Placement Test), (ii) a 31- item Writing Beliefs Survey (WBS) (Sanders-Reio et al. 2014), and (iii) a keystroke logging program where the participants will write on the computer twice, one in English and another one in Arabic, and (iv) a 7 items Immediate Recall Questionnaire (IRQ). Responses to both WBS and IRQ are ratings on 5-point Likert scales. The WBS and IRQ will be completed twice: once for writing in English and once for writing in Arabic. Order of writing sessions on the computer and questionnaires' completion will be counterbalanced.

Will this involve collection of information from other people? (In the case of projects involving fieldwork, please provide a description of your proposed sample/case study site.)

100 EFL students from College of Applied Sciences in Oman will take part in this study. The researcher will send emails to the students from the target group, requesting them for voluntary participation. Students who are willing to participate will reply to the researcher through the email. The researcher will arrange time and place of the OPT and the writing sessions with voluntary participants. The participants will be provided with study's information and the consent forms before taking part in the study.

If relevant, what location/s is/are involved?

The study will take place at Rustaq College of Applied Sciences in Oman. Students will be asked to attend the two writing sessions, complete the OPT, WBS and IRQ during their regular classes.

Will you be working alone or with others?

I will be working in a normal college environment with groups of students at the college (where I used to teach).

**Part 2 – Potential safety issues / risk assessment.**

Potential safety issues arising from proposed activity?

No safety issues over and above those involved working a normal college environment.

Person/s likely to be affected?

N/A

Likelihood of risk?

Low likelihood, consistent with my normal working environment.

**Part 3 – Precautions / risk reduction**

Existing precautions:

I will comply with the standard health and safety regulations at the college.

Proposed risk reduction strategies if existing precautions are not adequate:

N/A

*CONTINUED BELOW ...*

#### **Part 4 – International Travel**

If you intend to travel overseas to carry out fieldwork then you must carry out a risk assessment for each trip you make and attach a copy of the International Travel form to this document

Download the [Risk Assessment for International Travel Form](#)

Guidelines on risk assessment for international travel can be located at: [www.southampton.ac.uk/socscinet/safety](http://www.southampton.ac.uk/socscinet/safety) (“risk assessment” section).

Before undertaking international travel and overseas visits all students must:

- Ensure a risk assessment has been undertaken for all journeys including to conferences and visits to other Universities and organisations. This is University policy and is not optional.
- Consult the [University Finance/Insurance website](#) for information on travel and insurance. Ensure that you take a copy of the University travel insurance information with you and know what to do if you should need medical assistance.
- Obtain from Occupational Health Service advice on any medical requirements for travel to areas to be visited.
- Ensure next of kin are aware of itinerary, contact person and telephone number at the University.
- Where possible arrange to be met by your host on arrival.

If you are unsure if you are covered by the University insurance scheme for the trip you are undertaking and for the country/countries you intend visiting, then you should contact the University's Insurance Office at

[insure@soton.ac.uk](mailto:insure@soton.ac.uk) and check the [Foreign and Commonwealth Office website](#).

## Appendix L

### RISK ASSESSMENT FOR INTERNATIONAL TRAVEL

All staff and students who are undertaking an overseas visit on any University business must leave **travel and contact details** with the School of Social Sciences by completing **Part I** of this form.

You must also carry out a **risk assessment** by completing **Part II** of this form.

Also ensure that you are familiar with the University's Travel Insurance Scheme, including the Summary of Cover, and ensure that you take a copy of the Summary with you. Details can be obtained from [www.soton.ac.uk/finance/insurance](http://www.soton.ac.uk/finance/insurance) under the 'Personal Accident & Travel' section.

Email [insure@soton.ac.uk](mailto:insure@soton.ac.uk) if you need further information and guidance on insurance matters, particularly to ensure you have adequate insurance cover.

Up to date travel information can be obtained from the *Foreign and Commonwealth Office*

website [www.fco.gov.uk](http://www.fco.gov.uk)

### **PART I – TRAVEL & CONTACT DETAILS FORM**

**Name:** Zulaikha Al-Saadi

#### **TRAVEL DETAILS**

**Destination(s):** Oman

**Intended Dates of Travel:** March 3<sup>rd</sup> 2016

**Mode of Travel:** By Air/ Oman Airline

**Approximate Flight/Train Details (Airline/train company, flight/train numbers, dates and airports/stations):** Airline: Oman Airline, Airports: Heathrow, date: March 3<sup>rd</sup> 2016

**Flight details:** The researcher will leave on March 3<sup>rd</sup> 2016 from Heathrow Airport at 8:15 pm and she will arrive Oman next day on March 4<sup>th</sup> 2016 at 7:35 am.

### **CONTACT DETAILS**

**Contact Details at Destination (Name, address, email, telephone):**

**Name:** Zulaikha Talib Al-Saadi

**Tel:** \*\*\*\*\*

**Address:** \*\*\*\*\*

**Email:** \*\*\*\*\*

**Designated School Contact Person (Name, Division)**

David Galbraith

Southampton Education School

University of Southampton

Building 32

Southampton

SO17 1BJ

United Kingdom

Telephone: +44 (0)23 8059 9491

Email: [d.w.galbraith@soton.ac.uk](mailto:d.w.galbraith@soton.ac.uk)

## **PART II – RISK ASSESSMENT FORM: OVERSEAS**

### **VISIT/FIELDWORK**

This section of the form is to help you assess significant risks of your intended overseas visit or field work trip and to make sure that adequate controls have been put in place.

### **ASSESSMENT OF RISKS**

<b>Destination(s)</b>	<b>6.6 Intended Dates</b>
Oman	March 28 <sup>th</sup> 2016 to September 30 <sup>th</sup> 2016

<b>Brief outline of activities to be undertaken</b>	The setup of the study requires 100 undergraduate Omani students to: (i) answer a 100 multiple choice test (Oxford Placement Test), (ii) fill in a 31- item Writing Beliefs Survey (WBS), (iii) write on a computer twice, one in English and another one in Arabic (the writing sessions will be one week apart), and (iv) complete a 7 items Immediate Recall Questionnaire (IRQ). Responses to both WBS and IRQ are ratings on 5-point Likert scales. The WBS and IRQ will be completed twice: once for writing in English and once for writing in Arabic.
---	---

<b>List significant hazards that might affect you</b>	The Study will take place at Rustaq College of Applied Sciences in Oman. The researcher is familiar with the college and the area since she is an Omani citizen whose hometown is close to the College and used to work in this college for almost two years. The researcher will travel by car to the college where she will conduct the study. Therefore, the hazards here are minimal.
---	---

### MEASURES TAKEN TO MINIMISE RISK

<b>Indicate control measures taken/to be taken (e.g. seeking health advice, checking the Foreign office site <a href="http://www.fco.gov.uk/">www.fco.gov.uk/</a>)</b>	The University of Southampton will have the researcher's contact details and address during the duration of her stay in Oman. The researcher will contact the supervisors by email and/or phone to update them about the progress of the research. The researcher will keep her mobile phone with her at all times in case of an emergency. The researcher will strictly follow the College's procedures and policy in relation to health and safety during her stay at the college.
--	--

### ARE RISKS ADEQUETLY CONTROLLED?

If NO, list additional controls and actions required	<b>Additional controls</b>	<b>Action by:</b>
--	----------------------------	-------------------

**QUICK CHECK:**

Have you assessed the risks for the overseas trip and are you **YES**  
satisfied that adequate measures and control have been taken?

Have you got details of the University's travel insurance scheme **YES**  
with you?

(available from [www.soton.ac.uk/finance/insurance/travel](http://www.soton.ac.uk/finance/insurance/travel))

Have you consulted the University's Insurance web pages for general **YES**  
information on travel and risk assessment?

[www.finance.soton.ac.uk/insurance/](http://www.finance.soton.ac.uk/insurance/)

Email [insure@soton.ac.uk](mailto:insure@soton.ac.uk) if you need further information  
and guidance on insurance matters.

Have you consulted with the Foreign and Commonwealth Office **YES**  
Website for the latest travel information? [www.fco.gov.uk/](http://www.fco.gov.uk/)

Have you notified someone of your travel **YES**  
itinerary and contact details abroad?

Have you made arrangements to contact the School

**YES**

to advise of your well being and any changes to your  
itinerary?

**Declaration:**

I declare that I have taken adequate measures to minimise risk to myself and to University property both in transit and during my overseas visit.

Signature: \_\_\_\_\_ Zulaikha \_\_\_\_\_ Date: 15 March 2016

Name: Zulaikha Talib AlSaadi

**Supervisor/Tutor (for students only):**

Signature: \_\_\_\_\_ Date: 15 March 2016

Name: David Galbraith

**NB:** Students should consult with their supervisor or tutor before any travel arrangements are made or before any work is carried out.

**School Safety Officer:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_

Please return a copy of the completed form to Jane Revell, FOS Office. (Building 58/2089, [j.revell@soton.ac.uk](mailto:j.revell@soton.ac.uk)). It is acceptable for staff to complete this form electronically, including inserting their name electronically in the signature field and returning the form by email. Students must submit a printed version which has been hand signed by their supervisor/tutor.

#### **Guidance Notes for completing this risk assessment form**

The purpose of assessing risks is to ensure everyone works safely. To carry out a Risk Assessment, ask yourself:

- How can the activity cause harm?
- Is it safe to carry out this activity without additional protection/support?
- If someone else is going to do the work, can they do it safely?

#### **Activity**

Give a brief outline of the activity/project including the methods to be used and the people to be involved

- Think about everything you are going to do, from start to finish
- Ensure that you complete the assessment before you commence any

work. If you are unsure if your proposed work carries any risk, go ahead and complete the form as the process could highlight some issues which otherwise may not have been aware of.

### **Potential Safety Issues/Hazards**

- Only list those hazards that you could reasonably expect to cause significant harm or injury
- Talk to people who have experience of the activity
- Will the activity involve lone working or potential exposure to violence? \* For more guidance see the Social Research Association website at [www.the-sra.org.uk](http://www.the-sra.org.uk) under Staying Safe
- Are there any significant hazards due to where the work is to be done?

### **Who might be affected?**

- List anyone who might be affected by the hazards
- Remember to include yourself, co-workers, your participants and others working in or passing through the area of activity
- Those more vulnerable or less experienced should be highlighted as they will be more at risk (e.g. children, disabled people or those with medical conditions, people unfamiliar with the area of activity)

### **Precautions/Risk Reduction**

- List the control measures already in place for each of the significant hazards
- Is the hazard dealt with by the School Health & Safety Policy, or a generic safety method statement?
- Appropriate training is a control measure and should be listed
- Is the risk as low as is reasonably practical?
- List any additional control measures/risk reduction strategies for each significant hazard (e.g. practical measures, training, improved supervision)

### **Risk Evaluation**

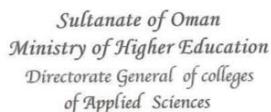
- With all the existing control measures in place do any of the significant hazards still have a potential to cause significant harm? Rank as Low, Medium or High

**Remember**

- Risk Assessments need to be suitable and sufficient, not perfect
- Are the precautions reasonable?
- Is there something to show that a proper check was made?

This information is based on “An Introduction to Risk Assessment” produced by the Safety Office and the Training & Development Unit of the University of Southampton.

## Appendix M



سَلَطْنَةُ عُمَانٍ  
وَزَادَةُ التَّعْلِمِ الْعَالِيَّ

التاريخ: 27/3/2016

الرقم 6 / 5 ، 47 / 2016- عدد

المحتوى

الدكتور / حمود بن عامر الوردي

عميد كلية العلوم التطبيقية بالرسانق

السلام عليكم ورحمة الله وبركاته ..

الموضوع: تسهيل مهمة الباحثة / زليخة بنت طالب السعدية

## The Effects of EFL Language Proficiency and Writing Beliefs on 'L1 (Arabic) and EFL (English) Writing Processes and products of Undergraduate Omani Students)

عليه يرجى التكرم بتسهيل مهمة الباحثة لإجراء هذه الدراسة، علماً بأن هذه البيانات والنتائج المستخلصة سوف تستخدم لأغراض البحث العلمي فقط.

شاكرين لكم حسن تعاونكم الدائم.

وتفضلاً بقول فائق الاحياء والتقدير

المدير العام

\*المدير العام المساعد للشئون الأكاديمية



## نحو تعليم عال ذي جودة عالية يلبي متطلبات التنمية المستدامة

سلطنة عُمان ص.ب: ٨٢ روى - الرمز البريدي: ١١٢ - هاتف ٢٤٣٤٠٥٨٠ / فاكس ٢٤٣٤٠٥٧٨

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