

Learners' Engagement with Written Corrective Feedback and their L2 Writing Performance



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ABSTRACT

This research study explored learners' engagement with written corrective feedback (WCF) and subsequent second language (L2) writing performance changes. A two-component intervention was implemented to reveal the influence of different learning environments and WCF delivery on the L2 writing performance. The first component explored the influence of using different modes on the learners' engagement with WCF; computer-mediated and handwritten CF were used in two separate classes.

The second component explored the influence of thinking-aloud (TA) as a mediating strategy on learner engagement with WCF within the different modes. Two groups were embedded in the participating classes and took part in the TA sessions to test TA effectiveness. Three skills were targeted in the first intervention: writing fluency, grammatical accuracy and grammatical competence. In the TA sessions, only the changes in L2 writing fluency were monitored.

To evaluate the effectiveness of the intervention, a mixed-method approach was used. A quasi-experimental design was applied to measure the learners' development in the three targeted skills. The corresponding quantitative results were then analysed by running a repeated-measures analysis of variance for the tests and also a t-test for the TA writing assignments. A grounded approach analysis was carried out to explore some of the qualitative datasets, namely the TA data and classroom observations data. Additionally, *a priori* themes were used to analyse the interview data.

The study revealed that the WCF mode did not significantly influence learners' engagement with WCF. However, using TA as a mediating means enhanced learners' engagement and improved their L2 performance. In addition, optimal conditions for the intervention influenced learners' engagement with WCF and enhanced their L2 writing performance. When the learners received meaningful WCF and engaged with it through learner-regulation strategies, agency and efficacy, their L2 writing performance was enhanced. Mediating strategies, such as TA, are recommended alongside affective CF episodes to encourage learners' constructive engagement with WCF through meaningful activities that stimulate their cognitive engagement without hindering their affective and social engagement.

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DEDICATION

This thesis is dedicated to the memory of my forever-loved late father; I love myself because you loved me unconditionally,
To my mother, who showered me with her blessings and prayers and gave me the strength to keep going,
To my caring counsellor and dearest friend Dr Amit, who kindly supported me during all the tough times! Thank you for the love and care you have shown me throughout this PhD journey and beyond.

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LIST OF ABBREVIATIONS

CF	Corrective Feedback
EFL	English as a foreign language
ESL	English as a second language
IC	The class that received indirect computer-mediated corrective feedback
ICG	The group that received indirect computer-mediated corrective feedback and the TA intervention
ICG*	The comparison group of five, selected from IC.
IH	The class that received indirect handwritten corrective feedback
IHG	The group that received indirect handwritten corrective feedback and TA intervention
IHG*	The comparison group of five, selected from IH.
KSA	Kingdom of Saudi Arabia
L2	Second Language
PNU	Princess Noura University
SCT	Sociocultural Theory
SLA	Second Language Acquisition
SLT	Social Learning Theory
SPSS	Statistical Package for the Social Sciences
TA	Thinking-Aloud
WCF	Written Corrective Feedback

CHAPTER 1 INTRODUCTION

1.1 Background, purpose and research problem

This research study investigated learners' engagement with written corrective feedback (WCF) and how it influences second language (L2) performance in an English as a foreign language (EFL) context. A quasi-experimental study with two experimental groups took place at a Saudi Arabian university to explore and explain these phenomena. There was no control group in this research study for ethical preferences (see 3.12). The choice of the topic was supported by a gap in the academic relevant literature (see 2.3.3 and 2.4.2) as well as the author's personal interest in learners' engagement with WCF and their L2 writing change. The population of EFL learners in the age group for this study is growing; there are concerns about their language proficiency after they have completed their general writing courses. As such, exploring WCF methods might help to understand the learners and target their learning needs. Hence, the current research study serves a need in the field of research and practice (see 1.6).

WCF in L2 writing has been discussed in the literature of L2 learning and Second Language Acquisition (SLA), which are treated similarly for the purpose of this research study. During the 1990s, corrective feedback attracted research beginning with Truscott's call to abandon the practice of correcting learners' errors because corrective feedback is not beneficial and could even harm learners and deter their learning (1996). Truscott stated that:

The best estimate is that correction has a small negative effect on learners' ability to write accurately, and we can be 95% confident that if it has any actual benefits, they are very small (Truscott, 2007, p. 270).

Some researchers added that corrective feedback is time-consuming for teachers, and that learners do not use it effectively in learning (Ferris and Hedgcock, 1998; Hairston, 1986; Leki, 1990; Polio, 2012).

In reality, however, learners expect to receive WCF and teachers offer at least one or two types of corrective feedback on a regular basis (Ferris and Roberts, 2001; Santa, 2006; Russell and Spada, 2006). Until now, the literature on learners' engagement with WCF and its influence on their L2 writing performance has been limited. Learner engagement encompasses cognitive, social and affective domains (Svalberg, 2009;

2012), each of which has an effect on how language and its components are processed and, as a result, how learning happens.

Choosing learners' engagement with WCF as a research focus was a result of exploring the related literature. There is a problem that needs investigation; the gap in the current understanding of learners' engagement and WCF makes this research an original contribution to the field (see 6.3). There seems to be a limited number of empirical studies conducted about learners' engagement with WCF and L2 writing development (see 2.3.3 and 2.4.2 for a summary of the current research).

The present study aims to delve deeper into how learners' engagement with WCF influences their L2 writing performance. A comprehensive understanding of how learners engage with the WCF they are provided with could help researchers and teachers alike. By studying these phenomena, researchers could indicate the type and amount of WCF that is preferred and also may be more likely to engage learners. As for teachers, understanding these phenomena could inform their practices and decisions. Engagement with WCF is not the ultimate, nor is it the only answer to the challenges EFL learners face with L2 writing. However, this topic is an under-researched area and therefore a suitable place to start a worthwhile, meaningful and interesting investigation.

1.2 Context of the research study

Ellis (2010) stated that understanding learners' interaction with WCF is not complete without paying due attention to their engagement. He also added that 'individual differences and contextual factors play an important role in this learning cycle' (Ellis, 2010, p. 344). While preparing to conduct this research study, I noticed that researchers had identified 'context' differently. Historically, earlier researchers in the study of L2 learning tended to isolate the learners from their context and explored the concepts in a vacuum (Larsen-Freeman, 2016 cited in King, 2016, p. xi). They justify their decision by saying that their aim is to reduce the complexity of the research by examining the processes apart from the learners who engaged with it. However, as a learner and a teacher of English as a second language, I am convinced that learning a second language could not happen without considering and understanding the context(s), namely self, peers and surroundings. Trying to separate the components is unrealistic and unreal (Briggs and Peat, 1989; Larsen-Freeman, 2012 and 2015). Learning a second language is a complex process, and this complexity is not only in the language itself, i.e. its grammar and linguistic forms but also in the learners, the policies that administrate

how teaching happens, and the overall learning and teaching culture and sub-cultures (Larsen-Freeman, 2016 cited in King 2016). I argue that the context(s) interact within the learner(s) and between them as well. In other words, context(s) nurture learning and SLA through the stages of language development (Larsen-Freeman, 2016 cited in King 2016).

Neglecting the context(s) provides a distorted picture of the learning situation (King, 2016). In other words, trying to understand or explore language learning in separation from the contexts within which the interaction with the target language happens would result in fragmented knowledge of the language learning processes, e.g. how and why specific methods work or do not work with specific learners in a certain learning environment. Since this research study intends to answer queries that focus on the ‘in what way’ and ‘for what reasons’ learners’ engagement with WCF and L2 performance differ, overlooking the context(s) would have demolished and weakened any results, contributions or suggestions reached in this research study (Larsen-Freeman, 2012; King, 2016).

In addition, analysing the complexity of the context(s) and the learner(s) requires due attention to what connects as well as what distinguishes or divides the components of the learning journey, i.e. the learners and the contexts (Larsen-Freeman, 2015; King, 2016). This research study acknowledges the learner-related factors concerning the language learning that challenge L2 learners and engage with their individual characteristics (Larsen-Freeman, 2016, cited in King, 2016). These characteristics are specific, and they continue to evolve during the learning journey as well. They interact with and are mediated through the complex contexts in which language learning takes place. More specifically, as other constructs of language development, learners’ engagement with WCF is influenced by and has an effect on the context it is researched within. For instance, learners’ willingness to read the teacher’s WCF depended on various circumstances of the learning situation (see 4.5.2). However, falling into generalisation without a closer look and proper investigation of the context and compare it to other contexts might lead to false recommendations (King, 2016). On these grounds, this research study aims to clarify how learners’ engagement with WCF shapes and constructs learners’ knowledge of themselves as well as their colleagues in the classroom to evaluate the intervention and alterations made in the way of providing the learners with WCF, and how they engage with them, in various contexts that are similar to the one studied here.

This research study explores and explains learners' engagement with WCF holistically. That includes considering the involved contexts where the learners' engagement with WCF takes place. Hence, the complex contexts in this research, namely the self-context(s), the others-context(s) and the learning-teaching context(s), are present and cared for in this research study (Ellis, 2010). They are cared for in planning, carrying out and managing data collection and data analysis methods too. This approach follows previous researchers who acknowledged the importance of the contexts and the complexity related to it. For example, Van Geert and Steenbeek (2005) criticise separating the learner from the context by assuming the two are independent of each other. Indeed, researching L2 development in a holistic way that includes all parts of the learning puzzle will yield interesting and useful results (Larsen-Freeman, 2015). The inclusion of the learners and context addresses the interplay between the two and allows for the emergence of unexpected turns during the learning journey (King, 2016). I believe it would also allow for the emergence of unexpected turns during the research journey.

The complexity of L2 learning is discussed by many scholars on different areas. For example, Larsen-Freeman and Cameron (2008) discussed the macro- and micro-levels of language learning. Ellis, with a different interest, investigated corrective feedback and engagement (2010). Svalberg has highlighted the learners' awareness and engagement with language in many research studies (2005, 2007, 2009, 2012). In addition, Svalberg and Askham (2016) explored language teachers' development. King (2016) discussed the dynamic interplay between the language and the learners, and he focused on emotional factors in a recent publication (King, 2016).

Mercer (2011, 2012, and 2016) discussed the dynamic systems within the learners as well as the complexity of learners' agency and how teaching influences learners. Handford (2016) investigated the dynamic interplay between language and social contexts in the language classroom. Finally, but importantly, Larsen-Freeman (2012, 2015) discussed the complexity of SLA and language learning in general and encouraged the acknowledgement of the learners' complexity within their complex contexts, which includes, in my view, WCF and learners' engagement (Ellis, 2010).

With the continuous and growing importance of English as a global language, especially in education and businesses, many Saudi universities are putting real investment in teaching their learners how to communicate effectively in both spoken and written English. In doing so, universities recruit the best available applicants and allocate an enormous amount of their budgets to the materials and the technologies that are being

offered. However, there is an ongoing debate about the mismatch between the amount of investment and the level of English mastery in the Saudi context (Al-Seghayer, 2011, 2014).

L2 education in Saudi Arabia still faces many challenges. In recent reports, the authorities have stated that serious problems still exist, such as the mismatch between the expected learning outcomes and the learners' L2 performance and also teaching and assessment strategies (Al-Bargi, 2019; Alghamdi and Siddiqui, 2016). Many explanations are possible, such as the gap in L2 teaching between school and university education, inadequate teaching, and poor testing and assessment policies, among many others. L2 learning, especially writing, in the Saudi system, faces all these challenges and is under-researched (Alhaisoni, 2012). Moreover, learners' engagement with WCF is less explored in the Saudi context, despite its relevance to L2 development and performance. Hence, the current study explores and explains a specific and much needed area of research.

AbuSeileek's study (2006) concluded that Saudi learners find L2 writing the most problematic skill to master. In another study, Al-Hazmi and Scholfield (2007) discussed the difficulties that Saudi ESL undergraduate learners in their third year of a four-year program encounter in various aspects of writing. They showed that the major problem was the dominance of traditional approaches in teaching writing skills, namely the functional product approach, in which the teacher focuses on grammar and language use. Moreover, Alhaysony's (2008) study indicated that learners do not have effective writing skills because their writing has not been responded to (i.e. corrected) properly.

Although many Saudis start learning English in primary school, the majority graduate from secondary schools with a low command of English. They then face challenges when attending universities, as most of the programmes and courses use English as the medium of instruction and also use English course materials. Previous studies have attempted to explore the causes of such an academic challenge (Al-Ahdal *et al.*, 2014; Al-Seghayer, 2011, 2014; Liton, 2012; Maherzi, 2011). Many reasons could lead to this weak achievement; one possibility that has not been investigated thoroughly is the learners' engagement with WCF and how it is enacted in their learning and L2 performance. Many local studies have suggested a need to change the teaching methods, the materials or the onset age of introducing English to students. However, learners' engagement with WCF has not been investigated either in a holistic manner or systematically in the current context.

There seems to be inadequate empirical evidence about learners' engagement with WCF in a Saudi context. Therefore, there is a clear need to investigate learners' engagement with WCF and how the intervention influences their L2 performance. Some areas that appear to require further investigation are strategies that could promote learners' engagement, especially with WCF; the influence of different WCF modes on learners' engagement with WCF; the degrees of learner engagement with WCF; and the factors that enable or hinder learners' engagement with WCF. In fact, many angles could benefit from further research to capture the complexity of learner engagement with L2 writing and WCF in this particular context.

One major contextual factor in this research study is the learners' first language, which is Arabic. Arabic is the official language in many countries, including Saudi Arabia, where this research study took place. There are many Arabic dialects, such as Iraqi, Saudi and Egyptian; one version, modern standard Arabic, is taught in schools and used by the official media channels because it is understandable by all Arab speakers (Holes, 2004). It is important to understand some features of the two languages, Arabic and English, including their origins, and also some of the differences between the two, especially in regards to their grammatical aspects; to explain some of the learners' justifications for the difficulties they encounter when writing in English.

Arabic and English are classified as members of different language families: Semitic and Germanic, respectively (Holes, 2004; Jassem, 2012). As such, each of these two languages have unique characteristics, including writing. Arabic script, for example, moves from right to left, whereas English script is read from left to right. This difference is likely the most obvious between the two languages, but it might not be the most significant of the errors that Arabs make in their L2 writing (Igaab and Tarrad, 2019; Jassem, 2012). In addition, Arabic contains 28 letters; some of them have three different shapes (or more) that depend on their location in the word: the beginning, middle or end (Thompson-Panos and Thomas-Ruzic, 1983; Thyab, 2016). Because Arabic letters are different from Roman letters, some learners might find it challenging to read their teachers' corrective feedback. Decoding teachers' handwriting may therefore be time-consuming and frustrating. In addition, Arabic has no capital case, which might explain Arab learners' common failure at mastering the capitalisation rules of English (Thompson-Panos and Thomas-Ruzic, 1983). Furthermore, some differences in the syntax and semantics of the two languages might justify other common errors among Arabic speakers learning L2 (Igaab and Tarrad, 2019; Jassem, 2012).

Arabic grammar is different from English grammar. At the sentence level, for example, the indefinite article (a/an) does not exist in Arabic, which explains its omission by Arab learners in both their spoken and written L2 production. There is a definite article in Arabic, 'Al', but it is used differently from the definite article, 'the', in English. More specifically, Arab learners have issues with possessive constructions, such as *the girl's hat*. In Arabic, this phrase would be structured as *Hat the girl*, which might explain this error in English as one that results from the interference of the mother tongue (Swan, 1997; Thyab, 2016).

Arabic has several types of pronouns. They are first divided into either explicit or implicit pronouns. The former consists of three types: attached, detached and reflexive. As the names suggest, the attached pronouns are combined with an agent word (either a noun or a verb), and they become one word, such as (كتابه), which pronounced 'ketabuhu' and means 'his book', with the 'hu' at the end being the attached pronoun that refers to the male singular. The detached pronouns do not attach to any word and they occur as a full word such as 'anta, hum, hoa', which means 'you for a male, them, and him'. There are 24 detached pronouns in Arabic, which are divided into nominative and accusative cases (Igaab and Tarrad, 2019). In Arabic, reflexive pronouns may be accusative and prepositional, but they do not take the nominative case (Igaab and Tarrad, 2019). Explicit pronouns in Arabic occur in relative clauses, whereas these pronouns are omitted in the same type of clause in English. This dissimilarity causes errors in L2 production, such as, 'who was the girl that I met *her* with you yesterday'?

In Arabic, implicit pronouns are understood by their context, but they are not written or spoken. Instead, they are replaced by detached pronouns. Implicit Arabic pronouns are always in the subject position and in the nominative case. These pronouns are not deleted from the sentence (Igaab and Tarrad, 2019).

As for the possible cause of the limited vocabulary used by Arab speakers, there are few English/Arabic cognates (Igaab and Tarrad, 2019). This distinction might increase the difficulties Arabs have in producing a sufficient number of words in their L2 writing. They also face problems in guessing and comprehending what is heard or read, so twice the effort of time and rehearsal is required to acquire and maintain English vocabulary (Igaab and Tarrad, 2019; Thompson-Panos and Thomas-Ruzic, 1983).

Understanding the aforementioned differences between Arabic and English is essential to accommodate for the complex contexts and the learners' individual differences (Horowitz, 1986; Liu and Brown, 2015).

The institution where this exploration took place is a female-only local college at Princess Noura University (PNU). The college offers diplomas and short courses in areas such as information technology, business administration and tourism studies. The learners, who are usually in their early twenties, study for a maximum of two years and a minimum of three months before they are awarded their certificates and are allowed to join the workforce.

PNU is a massive university that enrolls thousands of learners every year. Tackling such research issues at this university should be helpful not only to this group of learners but also to future learners as well as L2 teachers, researchers and decision-makers. The ultimate drive for this research is a desire to explore and understand learners' engagement and WCF using an innovative research design and a mixed-methods approach. The current analysis of these two concepts in a holistic manner in relation to each other was inspired by the gap in the literature and is also intended to satisfy the author's personal interest in L2 skill development and SLA.

At this college, learners receive 10 hours of English language teaching per week. Most of the enrolled learners exit the program with pre-intermediate and intermediate levels of English proficiency. Students find the courses challenging as English is the language of instruction. In fact, the lack of English proficiency, especially in writing, might cost some learners the opportunity to remain at the university or any higher education institute in Saudi Arabia. Carrying out a research study at PNU is helpful because the familiarity with the research context encourages and supports the researcher's involvement with the research site (see 3.11). The aim of this study was to explore and explain learners' engagement with WCF; therefore, being familiar with the culture of the college allowed the researcher to use the allotted time effectively to carry out the research study.

Another reason for conducting this research study at PNU is due to its overall welcoming culture. The senior management welcomes researchers who want to come to PNU to explore various educational topics as they realise the importance of understanding the current situation for future planning. PNU houses more than 15 colleges and is estimated to enrol up to 36,000 women per year. PNU is currently the largest women's university in the world (Profanter, 2014). Being a lecturer at the university was an important factor for choosing PNU for this investigation because the required access to the university was easily granted. However, no conflicts of interest or

bias towards or against this institution emerged while carrying out this research study (see section 3.11 and 3.12).

PNU particularly welcomes researchers who will provide useful findings in areas that matter to the university. As a result, supplying the university with the findings of this research study may help staff members to further explore the quality of procedures at the college, which they were keen to learn about. For example, the college has a unique acceptance system; learners are placed in courses without expressing any prior interest in them. To be more specific, most of these learners had applied for other programs at the university; if they did not match the minimum criteria, they were offered other paths to gain a qualification, namely one of the college's diplomas, which might influence their motivation. In addition, determining these students' success rates and identifying struggling learners and helping them improve has always been part of my teaching goal.

At the college, the learners expect WCF, and instructors continue to provide it; however, no documented research study has investigated or explained learners' engagement with WCF in such an EFL context. This thesis is an empirical study that explores these phenomena. It is an attempt to understand how these learners engage cognitively, socially and emotionally with WCF through different modes and via thinking-aloud (TA) as a mediating strategy. In the following section, the research aims and objectives are presented.

1.3 Research objectives and research questions

This research aims to answer the following objectives:

1. To explain and explore how learners engage with WCF when delivered through two different modes
2. To explore and justify whether and, if so, how the students' L2 writing performance changes when WCF is delivered through different modes
3. To explore how the learners engage with WCF through TA
4. To examine and justify the effects, if any, of TA on L2 writing development

The proposed research aims were developed through many stages of analysing the learning situation. While teaching EFL at PNU, I noticed a link between the learners' engagement in general and the changes in their language skills. For example, attentive learners managed to acquire better pronunciation compared to the others in classrooms. Based on this observation, I wondered if the students' engagement with WCF influences their L2 writing performance due to their increased awareness. To be more specific, in my grammar classes I noticed that when the learners were actively engaged with corrective feedback sessions, their awareness of their L2 performance increased, which gradually changed their performance as the teaching continued. It is not only the teaching but is also how they receive it and act upon it that matters. This change in their performance shapes their engagement and reflects on their performance more. I hypothesised that applying an intervention that increases the quality of the learners' cognitive, social and affective engagement with the teacher's WCF might reflect on the learners' L2 writing performance by increasing their awareness of the iteration between engagement with WCF and L2 performance change. To test these assumptions, a two-component intervention that included a TA technique and mode intervention was applied to answer the following research questions:

RQ. 1. How does the learners' L2 writing performance change (if at all) following WCF?

RQ. 2. What effects does TA have on L2 writing fluency, and why?

RQ. 3. Does the mode of WCF seem to affect the learners' L2 writing performance?

RQ 4. How do the learners engage with WCF during TA?

RQ 5. Does the mode of WCF seem to affect the learners' engagement with WCF?

The research questions were revisited, refined and reformulated during the piloting phase to fill gaps in the literature. Hopefully, exploring these objectives will open new doors to the way teachers and researchers understand WCF in the selected context and also worldwide.

1.4 Rationale for the research study

There is a shortage of studies that have been conducted with the aim of exploring and explaining learners' engagement with WCF and its influence on L2 performance using a framework that combines learning activities and corrective feedback modes. Therefore, this research study applied a two-component intervention to explore and explain learners' engagement with WCF and how it influences their L2 performance whereby they rewrite their drafts after the teacher has offered feedback while they TA about the corrections the teacher provided.

Few studies in the literature (Diab, 2005; Ferris and Roberts, 2001; Fukuta *et al.*, 2019; Han and Hyland, 2015) have examined learners' interactions with WCF and learners' engagement with WCF. However, the combination of cognitive, social and affective constructs of the learner's engagement with WCF remains under-researched (Ellis, 2010). To the best of my knowledge, there is a dearth of empirical studies that have measured the impact of mediating strategies on learners' engagement with WCF and L2 performance change for the purpose of determining to what extent mediating strategies are essential to the effectiveness of WCF. Thus, this study aimed to determine how the affordances of the two different corrective feedback and engagement environments (computer-mediated and handwritten modes) may influence learners' engagement with WCF and L2 performance change. In computer-mediated mode, learners write and engage with the writing and WCF using only screens. In the handwritten mode, learners use paper and pens to write and to engage with WCF.

While there have been many studies in a Saudi context that have investigated areas such as students' challenges at learning English, student motivation or the influence of personal factors (Al-Ahdal *et al.*, 2014; Alhaisoni, 2012; Alhaysony, 2008; Al-Hazmi and Scholfield, 2007; Alkhatib, 2015; Al-Seghayer, 2011, 2014), a literature review revealed that there is a dearth of studies on Saudi learners' engagement with L2 writing,

how it is shaped by WCF and its influence on any L2 writing performance change. Thus, this study is intended to fill these gaps in the literature by designing an intervention based on the learners' engagement and awareness cycle (Svalberg, 2009) and also the WCF framework (Ellis, 2010). In addition, the current study examined the development of learners' L2 performance following the intervention and their engagement with WCF and its associated tasks.

The current empirical research study is an opportunity to explain and explore the learners' engagement with WCF, and the WCF's influences on their L2 writing performance changes. It is considered innovative research because of the number of contributions it offers. For example, the study focuses on the L2 writing skill of low-proficiency learners. Previous researchers have stated that this weakness is high in this context (Alhaysony, 2008; Al-Hazmi and Scholfield, 2007), which signifies the importance of exploring the phenomenon.

This investigation combined different research instruments, including classroom observations, TA sessions, interviews and tests, in addition to experimenting. This theoretical contribution was designed to develop practical recommendations for pedagogical changes and to suggest theoretical reforms in the specific context and also in similar ones. Finally, although the study is limited to its participants, who are adult female learners in Saudi Arabia, and the findings are not intended for generalisation, the framework and the theories used might inform future studies (see 6.2, 6.3 and 6.5).

1.5 Significance of the research study

This quasi-experimental research provides empirical, theoretical and methodological contributions to the field of knowledge. The gaps identified in the literature (see Chapter 2) combined with the ongoing interest and debate about the two main areas of the current research have inspired me to address the research questions (see 3.3 for the research design).

A review of the literature (Chapter 2) revealed a clear need for a study that sufficiently explains the phenomenon of learners' engagement with WCF in the EFL language learning area, which presents an empirical contribution. Nonetheless, existing theories were also drawn together to provide a framework to inform a novel empirical study design.

Since this research study explored students' engagement in a learning context, the potential impact of engagement or disengagement on the learning outcomes and on the learners' perceived L2 performance also must be considered. Some scholars argue that only what the learners do (their behaviour) counts in terms of their learning outcomes (Astin, 1999; Kuh, 2003), while others highlight the importance of the cognitive efforts that learners need to invest in their learning to achieve higher levels of engagement and knowledge development (Biggs, 1987; Kearsley and Shneiderman, 1998). This debate highlights the complexity of learners' engagement from a theoretical angle. Hence, two frameworks described by Svalberg (2009) and Ellis (2010) were used to design a framework that is fit for the research aims and objectives and will hopefully fill a gap on a theoretical level, which is a theoretical contribution.

Moreover, on a methodological level, this research used a mixed-methods approach (Creswell and Plano Clark, 2007; Johnson and Onwuegbuzie, 2004; Tashakkori and Teddlie, 2010). The triangulation of different viewpoints and the collection of both qualitative and quantitative data resulted in the triangulation of the research findings and therefore increased the trustworthiness and validity of the research (Creswell and Creswell, 2017).

The mode of WCF and the learners' engagement with this WCF were tested as a variable in this study because of the rising use of technology in language classrooms (see 3.3 for the research design). Since many researchers desire that language teaching be enhanced by incorporating different types of technology in teaching and assessing L2 learners, testing these recommendations seems worthwhile and justified. This study thus set out to evaluate one application of technology in L2 teaching.

The main strategy employed to investigate learners' engagement in the current study is TA. This method is popular in educational research as it allows researchers to discover areas in participants' cognition that are not otherwise observable (Bowles, 2010; Lumley, 2005). The use of a TA strategy in an EFL context along with these two areas of research in the current study created a unique combination that lent a methodological contribution to the field of knowledge.

In addition, the research focuses on a little-studied population: adult Arab female learners. Hence, this study might offer the opportunity for some follow-up studies to test the research design in a wider population. Finally, this research study sought to make a practical contribution to the improvement of teaching practices by offering a development plan and recommendations based on research findings (see 6.3 and 6.5).

Overall, this research was based on a feasible gap that was nicely nested in the two areas of interest; it seemed achievable in the allowed amount of time; and it promised to contribute to the field of knowledge on many levels. Although the current study was limited to its context and participants, its design and the findings can inform other researchers and suggest further areas of exploration and enhancement.

1.6 Operational definitions of terms

This study uses the following terms as they have been defined in the literature. Some definitions combine different parts of ideas from various scholars. Other definitions have also been adapted to suit this research.

Written Corrective Feedback (WCF): WCF is the written responses, which may be formal or informal, from a teacher or peer, left on a draft or a final version written by a learner to help the learner correct his or her writing (Bitchener and Storch, 2016; Carless, 2015; Ellis, 2010; Ferris, 2003).

Learners' Engagement with WCF: according to Ellis (2010, p. 342), learners' engagement includes the ways learners respond to corrective feedback. Cognitive engagement refers to 'how learners attend to the corrective feedback they receive'. Social (behavioural) engagement entails communicating with others (Svalberg, 2009) and pertains to the learners' uptake or revisions elicited by corrective feedback. Affective (attitudinal) engagement is the learners' emotional responses to corrective feedback (e.g. anxiety) and attitudes (e.g. dislike) (Han and Hyland, 2015).

1.7 Overview of the thesis

This thesis is organised into six chapters as follows:

Chapter 1: Introduction. The current chapter includes the background, purpose and the research problem, as well as the context and rationale for the study. It introduces the research aims and objectives and questions. This chapter also presents the research gaps and potential contributions. It discusses the research significance and defines the main terms used in this research study.

Chapter 2: The literature review. As the name suggests, the chapter reviews the literature underpinning the study. More specifically, it includes a thorough discussion of teaching and learning how to write in a second language in EFL contexts; theories of Learners' Engagement (LE) with a focus on language teaching; language awareness;

Corrective Feedback (CF); WCF; the use of TA in education; and technology for WCF in the foreign language classroom. This chapter explains relevant learning theories and situates the current research within them, thus creating the theoretical framework of the study.

Chapter 3: Methodology and research design. The methods used are presented in this chapter, providing the rationale for the specific design, framework and methods. It contains the pilot study and its implications for the main study. Then, a description of the data collection procedure, the participants, the intervention, and the applied data analysis methods are included. The themes are also presented in relation to the methods of the data collection. Lastly, the researcher's role and the ethical considerations are defined.

Chapter 4: The findings. The fourth chapter presents the quantitative and qualitative analysis and findings of the research. In this chapter, the themes of the research study are described along with the related method prior to triangulating them in the discussion chapter.

Chapter 5: Discussion and amalgamation. The fifth chapter triangulates the findings of this research study and relates them to those obtained in previous research. Here, the research questions are addressed and discussed according to the findings.

Chapter 6: Implications, conclusions and recommendations. The final chapter contains a summary of the research, its limitations, its implications and also recommendations and suggestions for future research.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter begins by clarifying and justifying the chosen theory (i.e. sociocultural theory) by reviewing the existing learning theories and describing sociocultural theory's relation to L2 language learning. Then, the theories of engagement in learning and teaching are presented, with a focus on Svalberg's learners' engagement (2009). Next, corrective feedback in L2 writing is discussed, and the main types of WCF are presented. These include direct and indirect feedback and using codes for error correction. In addition, a summary of other corrective feedback types, such as reformulation, peer feedback and teacher-learner conferencing, is presented. Then, the mode of WCF used in this research (e.g. indirect-error corrections with codes) is discussed. In addition, previous empirical studies are reviewed. This includes reviewing the available research on the use of WCF in L2 writing and its implications for learners' performance and proficiency. A discussion of the similarities and differences between the current research study and the previous studies that have explored WCF is also presented to position the current research among other researchers' work.

In addition, the dominant approaches of teaching L2 writing are introduced, with a focus on product and process approaches. A historical background of these two well-known approaches is presented, and their characteristics, limitations, advantages and disadvantages are discussed. This section ends with a synthesis of the two approaches and how it is used in this investigation for the intended research purposes (see Research Question 3.2). Finally, this chapter briefly reviews the TA strategy introduced as a mediation tool in this research.

2.2 Reviewing the existing learning theories

Many learning theories were reviewed to develop an underpinning theory for this research. Among the philosophical and theoretical theories of learning, Piaget's theory of language development in cognitivism (Wadsworth, 1996) is often cited. Cognitivism highlights the importance of cognitive and affective factors in language development, but it is more focused on the language development of children (Mayer, 2005). Cognitive learning in Piaget's theory focuses on the implementation of a cognitive processing method as a mediating strategy that works on attention and awareness, hence its

similarity with the TA technique (Leow and Bowles, 2005). Piaget stated that cognitive learning consists of four stages: the sensorimotor period, the preoperational thought period, the concrete-operations period and the formal operations period (Wadsworth, 1996). According to Piaget (1973):

There is a constant order of succession. That is, in order to reach a certain stage, previous steps must be taken... thus we reach a hierarchy of mental structures which are built in a certain order of integration (pp. 10–11).

However, Piaget's work fell short of providing a viable account of many human learning abilities, such as language development. Nonetheless, cognitivism has attracted a lot of research in knowledge development (Ertmer and Newby, 1993; Mayer, 2005; Wadsworth, 1996; Zapanick and Wodarski, 2005). Language development researchers, such as Chomsky, discussed cognitivism in their work, especially in grammar learning (Chomsky, 1980; Chomsky and Halle, 1965). However, I preferred not to use the theory of cognitivism in this research study because of its limited application in adult L2 learning.

Another learning theory is humanism, which is a philosophy and pedagogical theory that views learning as a personal act carried out to fulfil the learner's abilities. The theory stresses the importance of experiments in learning, and it offers a cyclical model of learning, as shown in Figure 2.1. As cited in Forrest, (2004), Kolb (1984) named this model, 'the experimental learning cycle theory' and identified four stages of experimental learning: 1) active experimentation, 2) concrete experience, 3) reflective observation and 4) abstract conceptualisation. According to Kolb (1984), the learner can start the cycle at any stage, but the stages must proceed in order.

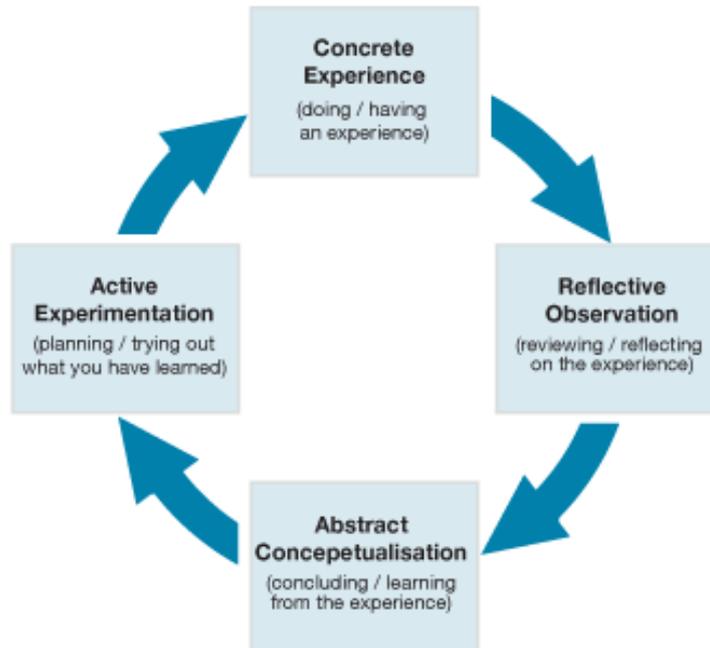


Figure 2.1 The Kolb Learning Cycle

Kolb's Learning Cycle (Figure 2.1) has received a great amount of criticism from educators and trainers (e.g. Forrest, 2004). The current research study also rejects Kolb's learning theory due to its assumption of a linear and simple 'cause and effect' mechanism. This mechanism does not seem to frame the complexity of the current research concepts or design, nor is it the best ascribed theory to research second language development.

Many scholars have discussed learning theories and learning strategies from a constructivist perspective, such as Piaget (Wadsworth, 1996), Dewey (e.g. 1957) and Bruner (1966). In the current research study, the Social Learning Theory (SLT; Bandura, 1977, 1986a, and 1997), the Situated Learning Theory (Lave, 1991, cited in Lave and Wenger, 1991) and Vygotsky's work on sociocultural theory (SCT) (1980, 1978) are examined. In the following sub-section, a summary of Bandura (1973, 1997) and Lave and Wenger's (1991) research is presented. This information is followed by an account of Vygotsky's SCT (1896–1943) and further justifications for choosing Vygotsky's approach as the underpinning theory for the current research study.

SLT was put forward by Albert Bandura. This theory suggests that people learn from one another through observation, imitation and modelling. SLT bridges the gap between behaviourism and cognitive learning theories because it incorporates attention, memory and motivation. Bandura (1977, 1986a, 1989, 1997) claims that people learn by

observing others' behaviour and attitudes, as well as the outcomes of those behaviours. He explained:

From observing others, one forms an idea of how new behaviours are performed, and on later occasions, this coded information serves as a guide for action. (Bandura, 1977, p. 22).

SLT analyses human behaviour in terms of continuous reciprocal or mutual interaction between cognitive, behavioural and environmental influences (Bandura and Walters, 1963). Bandura believes that for learning to occur, learners must show specific qualities: attention, retention and reproduction (Bandura and Walters, 1963). To emerge, these qualities require motivation, which is valued as a strong emotional factor in SLT (Bandura and Walters, 1977).

Attention is influenced by various factors that could increase or decrease the amount of attention paid to learning activities. These factors include distinctiveness, complexity and functional value. Distinctiveness is related to the way adult learners develop their knowledge during learning activities, which is managed by how they transform meaning and the quality of their engagement with the activity. Complexity relates to the design of the learning activity and the level of challenge it provides. As a general rule, learning activities are not meant to always be fun or easy in order to engage adult learners. Designing learning activities for adults should challenge learners without intimidating them (Brookfield, 1986). The functional value refers to the learning activity's meaningfulness and purposefulness and how it serves a learning need for learners and aligns with their learning goals. Purposefulness enhances engagement (Svalberg, 2012).

In addition, learners' characteristics, such as sensory abilities, arousal level, perceptual set and past reinforcement, modify their attention (Vernon, 1955). Sensory abilities refer to the learners' senses, which include the ability to see and hear and express ideas. The arousal level describes the learners' levels of alertness, awareness, response to distractions, stress and direction of their attention during activities (Vernon, 1955). The perceptual set is the learners' tendency to perceive or notice some aspects of the learning situation and ignore others. The concept of a perceptual set works in two ways. The first is to match the learners' expectations and focus their attention on particular aspects of the activity, in which case the learner is a selector (Vernon, 1955). The other way is when the learner knows how to classify, understand and name the activities and what inferences to draw from it, in which case the learner is an interpreter (Vernon,

1955). Only a few factors influence the perceptual set, which are the learners' expectations, their emotions, their motivation and the context (Vernon, 1955). Past reinforcement refers to the learners' experiences with the learning activities. Reinforcement may be positive or negative. Positive reinforcement strengthens the learners' response by offering a reward, while negative reinforcement strengthens the response by removing an unpleasant response. For example, praising the learners for completing the TA writing activity represents positive reinforcement, whereas a learner's perception that they have improved and therefore requires fewer corrections represents negative reinforcement. In both cases, the reinforcement makes it more likely that the target behaviour will occur again in the future (Merriam *et al.* 2020):

Learning from experience involves adults' connecting what they have learned from current experiences to those in the past as well to possible future situations (p. 185).

The learners' ability to remember what they paid attention to in the lessons or the learning situations is called 'retention'. According to Decker (1982), this retention process involves symbolic coding, mental images, cognitive organisation and symbolic rehearsal. Symbolic coding is the process by which individuals organize and reduce the diverse elements of a performance into a pattern of verbal symbols. In mental images, learners mentally mimic the learning experiences, which results in mental representations of the imagined targets (Lang, 1979). It is empirically well-supported that mental imagery enhances goal achievement (Knäuper *et al.*, 2009). Symbolic rehearsal is a process in which observers visualise or imagine themselves performing behaviours that they previously watched another individual perform (Bandura, 1977). Symbolic rehearsal is a cognitive process in which information is repeated over and over as a way of learning and remembering (Ormrod, 2017). The acquired knowledge that is gained could be created during social interactions with others (Bandura and Jeffrey, 1973) or through private speech as well. Replicating the acquired knowledge independently is referred to as reproduction (Knäuper *et al.*, 2009; Ormrod, 2017).

An emotional factor that gives learners reasons to imitate is motivation. Motives can relate to the past, such as the way learners imitate acts in traditional behaviourism. Motivation can also occur or increase because of a promised future, such as being motivated after imagining the benefits of a new skill or degree. In addition, motivation may be mediated by seeing and recalling a reinforced model.

Bandura (1977) posits that the world and a person's behaviour influence each other. Before Bandura, Berger et al., (1967) had created quite a stir with their book, *The Social Construction of Reality*, which emphasised that reality is not just 'out there' as an objective fact but instead is socially constructed by each one of us. More recently, it has been argued that we actively create our identity through language rather than the other way around (Canagarajah, 2014). Bandura's view, however, contradicts the behaviourist approach and instead asserts that people's environment causes their behaviours (Bandura, 1986b). He found the behaviourist approach very simplistic, so he suggested that behaviour shapes the environment as well (Bandura, 1973). Bandura also described personality as an interaction between three essential elements: the environment, behaviour and one's psychological processes or ability to mediate images in their minds or language (1973). This view creates a link to the present research, which investigates how and why learners' engagement with WCF is influenced by mediating strategies, among other factors. Bandura's SLT is related to Vygotsky's sociocultural theory and Lave's situated learning, which also emphasise the importance of social learning.

Lave (1988) proposed a Situated Learning Theory, which contrasts with classroom learning theories that involve abstract knowledge and offer teaching in isolation of any context. Lave argued that learning is embedded within activities, context and culture (1988). Furthermore, learning in Lave's theory happens mostly unintentionally rather than deliberately. Lave (1988) asserted that knowledge needs to be presented in authentic contexts and situations. She posited that social interaction and collaboration are essential components of situated learning. In other words, learners create a 'community of practice' to support and sustain their learning. As beginners develop and progress from the margin of a community to its centre through learning and constructing the specific knowledge assigned to their community, they become more active and engaged within its culture. Eventually, they assume the role of an expert in this field (Lave, 1988). Situated Learning Theory was developed further by emphasising the idea of cognitive apprenticeship by Brown *et al.* (1989), who claimed:

Cognitive apprenticeship supports learning by enabling students to acquire, develop and use cognitive tools in authentic domain activities. Learning, both outside and inside school, advances through collaborative social interaction and the social construction of knowledge (p. 40).

Lave's Situated Learning Theory was deemed unsuitable for the present investigation because the current research study uses a learning activity that is not authentic to the

classroom setting, namely the TA technique (see 3.8.2). Thus, the search for a theory that acknowledges the role of social interaction as well as the demand on individuals in learning and knowledge construction has continued. Hence, Vygotsky's SCT was explored.

As an approach to learning and mental development, SCT (Vygotsky, 1957, 1915) argues that human mental functioning is a mediated process that is structured by activities, cultural artefacts and concepts (Ratner, 2002). In this theory, humans utilise existing knowledge to create new knowledge that allows them to regulate their activities, and language is the primary means of mediation in all forms of communication.

Vygotsky believed that developmental processes happen through participation and interaction in communicative settings, such as family gatherings or peer group interaction, or in institutional contexts, such as learning institutions (e.g. schools or universities). SCT declares that although human neurobiology is an essential condition for higher-order thinking, the most important forms of human cognitive activity develop through social interaction and material environments or activities. In this research study, TA is used as a learning activity to activate cognitive engagement with WCF. There are theoretical principles and constructs of SCT that focus on language learning, such as mediation, as a central construct of SCT. In mediation, the subject, i.e. the learner, uses the mediating tool (i.e. TA and WCF mode) to reach a target or an object, such as engagement with WCF and L2 performance changes (Vygotsky, 1978). Vygotsky's triangle of mediation was found to fit the purpose of this research study. In this sense, language learners might mediate their knowledge through the application of the TA technique while revising WCF and rewriting their texts. They then use L1 and L2 to self-negotiate and self-edit. Nonetheless, other principles, namely internalisation, and the zone of proximal development (ZPD), were also reviewed as they were interwoven in the research design and context (Vygotsky, 1974 and 1989).

One form of mediation is regulation. According to Vygotsky, there are three stages of regulation: other-, object- and self-regulation. Self-regulation, as the name suggests, refers to a person's ability to accomplish activities with minimal or no external support (Lantolf and Thorne, 2006). This type of regulation is reached through internalisation, which indicates an individual's internal ability to employ resources that used to be forms of external assistance. Self-regulation is not a stable state. Some proficient users of the language re-access one or both earlier stages of development (e.g. other- or object-regulation) when challenged in a given learning situation. These other

stages of regulation involve another participant, such as an individual or a concrete or abstract object, like speaking in the first language or using a learning aid or strategy that might include the TA technique.

Vygotsky's proposal acknowledges the biological factors and the way they form the basis of human thinking. However, these factors remain insufficient to explain humans' ability to regulate their mental activities. This ability is made possible via the internalisation of culturally constructed mediating artefacts, which include language. Indeed, language is a powerful cultural artefact that humans possess to mediate their connection to the world, to each other and to themselves (Bandura, 1986a). Language gives humans the capacity to challenge their circumstances and enables them to express themselves verbally and through thinking of different topics and events, including entities that do not yet exist, in their first and second languages.

Humans have always used language to regulate their mental functioning. They usually do so through private speech. This process happens inwardly to mediate mental activities in preparation for communicating socially with others or, in language learning, while learning new forms. Private speech allows language users to appropriate the patterns and meanings of their speech and utilise them. Private speech is a method used primarily by children to mediate the language they are learning to use (Diaz *et al.*, 1992, 2014; Frawley and Lantolf, 1985; Wertsch, 1985). It was also seen amongst L2 learners (Frawley and Lantolf, 1985; Gillette, 1994; Lantolf and Genung, 2002).

Private speech has unique characteristics. For example, it is usually abbreviated, and its meaning is incomplete to listeners. Vygotsky (1974) argued that private speech is presented in such a form because it comes from shared knowledge, similar to social speech between people who have a shared knowledge. In the case of private speech, the speaker is assumed to know the topic addressed in the speech and is having difficulty determining what to do with it. Frawley (1997) argued that utterances used in private speech focus the speakers' attention on what needs to be completed, how to complete it and when something has been attained; these utterances then allow the learner to evaluate what has been achieved. He noted that different languages offer their users different linguistic options to perform these mental activities. For example, L1 English speakers use expressions such as, 'Oh!' 'Next', 'OK', 'Let's see' or 'There' (Frawley, 1997). Each of these terms has borrowed its function from its social meaning. Learners' use of L1 and L2 in private speech to internalise and construct their knowledge during learning activities, such as TA sessions, was noted and encouraged (see 3.8.2, 5.6 and 5.7).

Internalisation is the process that allows cultural artefacts, such as language, to take on a psychological function. Both internalisation and mediation are core concepts of SCT. Internalisation is an essential element in the construction of higher mental functions (Kozulin, 1999). It is a negotiated process that reorganises the relationship of the individuals and their social environment and generally carries it into future performance (Winegar, 1997). It accounts for the natural connection between social communication and mental activities and is the mechanism through which learners gain control over their physical brains (Yaroshevsky, 1989).

Vygotsky (1978) stated that humans' capacity to imitate the intentional activity of other humans is the key to internalisation. What Vygotsky meant by imitation, however, is not only the mindless mimicking associated with behaviourism or audio-lingual methods in language teaching. Instead, imitation contains goal-directed cognitive activities that could result in transformations of an original model to another. As Vygotsky stated, 'development based on collaboration and imitation is the source of all the specifically human characteristics of consciousness that develop in the child' (1987, p. 210). As such, imitation is 'the source of instruction's influence on development' (Vygotsky, 1987, p. 211). Although Vygotsky was clearly referring to child development and not language learning specifically or L2 learning, researchers nevertheless have applied these concepts to L2 learning (for example, Gillette, 1994; Lantolf and Genung, 2002). In this research study, collaboration was applied minimally during the CF episodes group discussions, where the learners used their group members to enrich their learning before conducting TA as a mediating tool.

According to Speidel (1989), there is a continuum between imitation and spontaneous language production in young children learning L1, in which delayed imitation appears as 'essential building blocks for spontaneous speech' (p. 63). This feature of imitation is linked to internalisation, and it usually occurs without other participants. For example, children produce L1 on their own after being prompted. There is no prior evidence of adult learners using the imitation process in L2. However, Gillette (1994) and Lantolf and Genung (2002) reported that adult learners stated they practised L2 patterns, which they heard in classes when they were outside the classroom or while engaged in everyday activities. Unlike children's language development, adult learners' choices of what to imitate follow their own agendas, which does not necessarily follow the instructor's agenda or teaching plan (Centeno-Cortés, 2003; Lantolf and Yañez, 2003; Ohta, 2001). Hence, pedagogical interventions that are applied to promote learning

must acknowledge the learners' preferences, goals and agendas as well as their levels of proficiency.

One of the main concepts of SCT is the zone of proximal development (ZPD). The most commonly used definition of the ZPD is as follows:

The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978, p. 86).

ZPD has attracted researchers in many fields of knowledge, including education and applied linguistics, for varied reasons. The first reason is the idea of assisted performance. Another reason for its use is the ZPD's ability to indicate what learners will be able to do independently in the future based on what they can do today with assistance, which are known as the developments achieved and the developmental potentials (Lantolf and Thorne, 2006). ZPD is useful as a model of the developmental process as well as a conceptual tool that can help researchers to understand aspects of learners' emerging capacities in early stages of improvement or development. When the ZPD is used proactively to predict learners' development, teachers might be able to create conditions for learning that may promote selected skills to develop in the future.

In the current study, learners' internalisation is expected to take place within their ZPD. Vygotsky (1978) explained that development appears twice, first on the social level and then on the personal or individual level. He added:

[I]t goes without saying that Internalisation transforms the process itself and changes its structure and functions. Social relations or relations among people genetically underlie all higher functions and their relationships (Vygotsky, 1978, p. 57).

Epler *et al.* (2013) stated that reflective practices, such as collaborative reflections and TA, could promote a more profound understanding. Therefore, learners use of TA to mediate and internalise their linguistic knowledge after constructing it with others in group learning settings, such as in CF episodes, could influence their L2 writing performance when they rewrite their paragraphs on their own. Although CF episodes were used to discuss common errors in general with all learners, the interaction also provides opportunities for the students to use ZPD during the TA sessions to engage in higher levels of cognitive processing and thinking about WCF, which bridges their

knowledge and allows them to engage in the learning activity on their own (Nassaji and Swain, 2000; Newman and Holzman, 2013).

Because of the complex nature of SCT themes, measuring learners' performance change or development within this theory requires collecting appropriate evidence. In other words, the evidence must have a reliable method of validation from either a historical or a theoretical perspective. The historical perspective could include previous studies that investigated the area, while the theoretical perspective might compare and contrast SCT with other theories in a specific learning situation. However, the type of studies included does not have to be limited to long-term longitudinal studies alone. In fact, language development requires different lengths of time for different individuals or groups. These time periods could be months or even years; but development or change may also happen in a very short time, such as in Aljaafreh and Lantolf's research (1994). In their study, learning to write in an L2 took place in a single weekly interaction between the researchers and the learners for just six successive weeks.

Learners' development can be observed in the levels of interactions they engage in. These interactions include the learners' use of private speech, as discussed later (see 2.4.2), as well as during their collaboration with other learners in learning activities. Evidence of development from this perspective is not limited to how the learners performed linguistically. The learners' performance might stay the same, but the frequency and quality of any assistance needed to perform appropriately in the new language declines, which indicates a positive performance change; for example, when the learners spend less time correcting their writing, this indicates progress. Following the same logic, learners who might show a similar developmental level in L2 interactions may demonstrate different levels of development when they are assessed on their independent performance. Therefore, traditional language tests that examine the learner's linguistic knowledge are insufficient evidence of language development in SCT (Vygotsky, 1978), which suited the current research design and believes.

2.2.1 Sociocultural theory (sct) concepts adopted in this research

SCT is used as the underpinning theory in this research study. SCT was deemed appropriate for this research for several reasons. First, it is an explanatory theory that highlights the roles of a language as a social and psychological tool, which provides a suitable umbrella under which to discuss the three constructs of learners' engagement with WCF. SCT explains how adult learners invest in mediation, regulation,

internalisation and the ZPD to learn a new skill from an existing one (Vygotsky, 1974 and 1989), which would help to explain the L2 performance changes due to the research intervention.

Moreover, SCT elucidates the learners' application of specific strategies that are linked to learning both in and outside the classroom, such as scaffolding, self-regulation strategies and processes and self-agency in learning, which were found important for the current research. SCT encompasses strands of other theories, which provided a clearer and vivid picture of the researched topic. For example, it helps to explain self-efficacy (Bandura, 1986b), among other affective and social features as well, within the classroom (Park, 2014). SCT encourages the measuring of learners' development not only by testing them for linguistic knowledge but also by using authentic tasks that are similar to everyday activities (Lantolf and Thorne, 2006), which aligns with my values as a language educator and researcher.

More importantly, SCT acknowledges mediation as a strong tool in learning. At the same time, it does not separate individuals from their social environment. It argues that individuals emerge from social interaction and, as such, they are always social beings (Lantolf and Thorne, 2006), even when they are performing activities that do not involve direct social interaction, such as a TA technique. The theory is deemed complex, unstable and useful to explain individuals' self-scaffolding and self-learning and editing when an appropriate mediating strategy is utilised, such as in TA and the two modes of WCF. In fact, this research began after an observation that led to a hunch that a mode and mediation strategy, such as TA, could influence learners' engagement with WCF, which was then proposed and tested. There is also the assumption that learners' awareness iterates with their engagement with WCF and promotes their L2 performance. The clear complexity of this iteration could be dealt with via SCT. In the aforementioned case, SCT was deemed well-suited to be employed in the current research study to explore and explain these suppositions and justify the researcher's stance.

2.3 Engagement theories in learning and teaching

Many researchers have discussed engagement in teaching and learning, even if it was not clearly labelled as engagement (Bigg, 1987; Kearsley and Shneiderman, 1998; and Marton and Saljo, 1976). Kearsley and Shneiderman's (1998) work on engagement theory framework is particularly interesting as it discussed the use of technology in learning and teaching. Marto and Saljo (1976) described two different levels of cognitive

engagement, while Biggs (1987) explained the affective challenges associated with learning and how they might influence the acquisition of knowledge. Svalberg's (2009) engagement construct highlights the complexity of the three domains of engagement. This section presents a summary of the aforementioned research studies.

2.3.1 Engagement theory

Kearsley and Shneiderman's (1998) engagement theory is a framework for technology-based teaching and learning. This theory states that for learning to happen:

Students must be meaningfully engaged in learning activities through interaction with others and worthwhile tasks [and] that technology can facilitate engagement in ways which are difficult to achieve otherwise (Kearsley and Shneiderman, 1998, p. 1).

This statement highlights the similarities between the engagement theory and other learning theories, be they language learning or general learning theories. For example, it emphasises the use of meaningful, worthwhile learning activities to maintain engagement, which aligns with constructivist approaches to learning and instruction (e.g. Bruner 1966). It also acknowledges peer interaction as an essential source of learning, which aligns with theories of collaborative learning (e.g. Dillenbourg, 1999) and situated learning theories (e.g. Lave and Wenger, 1991). In addition, engagement theory is similar to theories of adult learning (e.g. Cross, 1981; Knowles, 1970, 1975), as both schools of thought focus on experiential learning and active, self-directed learning. These latter ideas share similarities with agency (Mercer, 2006) and self-regulated learners' strategies (McPherson and Zimmermann, 2002; Zimmermann, 1998), as well as the role of language learners as active agents in their own learning (Svalberg, 2009).

A few concepts of engagement theory attracted my interest as a learning approach that accounts for the learner's needs. For example, engagement theory suggests that learning activities are more likely to engage learners in active cognitive processes if they involve planning and social skills. Kearsley and Shneiderman (1998) stated that these skills force learners to clarify their thinking, verbalise their ideas and elaborate on their answers, thereby facilitating the emergence of solutions and the construction of knowledge through learning activities. Being actively involved in learning activities frees the learners from the mercy of the learning environment and actively engages them in creating and making use of affordances (Svalberg and Askham, 2014).

Furthermore, engagement theory stresses ‘the value of making a useful contribution while learning’ (Kearsley and Shneiderman 1998, p. 2). The emphasis on an authentic learning context is central in engagement theory, and it is often related to increased learner motivation and satisfaction. Learners’ emotions are caused and influenced by the cognitive challenges they face. These two constructs overlap and are difficult to separate in the language learning field (Svalberg, 2009). In addition, engagement theory emphasises the use of authentic and relatable projects or learning activities from the learners’ context to enhance their engagement and improve their learning. This idea is still under-researched in language learning (Tian and Lowe, 2013). Engagement theory implies that allowing learners to choose from learning activities enhances their sense of control over their learning, which in return increases their interest, value and engagement and thereby allows the learners to exercise agency (Mercer, 2006).

Engagement theory also stresses the role of technology in learning. Kearsley and Shneiderman (1998) believe that technology can facilitate all aspects of engagement. For example, they state that using communication technologies, such as email or videoconferencing, can increase peer interaction. They add that technology can facilitate searching for and accessing information while learning. The researchers argue that ‘technology provides an electronic learning milieu that fosters the kind of creativity and communication needed to accomplish engagement (Kearsley and Shneiderman, 1998, p. 6). This concept is also applicable to other fields of knowledge, such as language learning. Helping language learners to find ways to increase their L2 use might make remembering and knowledge construction more efficient and effective. However, these views are yet to be validated in L2 learning.

Marton and Saljo (1976) studied the differences in the outcomes of learning as a result of different levels of engagement. They concluded the following:

It seems very likely that there are corresponding differences in the process of learning, i.e., in the way different people set about learning (Marton and Saljo, 1976, p. 7).

In their study on university students in Sweden, they identified two different levels of processing that are based on the students’ engagement with the tasks they had been assigned to do, which they called deep-level and surface-level processing (Marton and Saljo, 1976). Their qualitative analysis of the students’ thinking, which could be described as the learners’ cognitive engagement with the learning activities, focused on

the process of learning more than its outcome. In their study, students who applied deep-level processing retained what was learned longer and could more easily apply what they had learned to other tasks (Marton and Saljo, 1976). They also found ‘marked inter-individual differences in the types of learning process that students engage in when confronted with learning materials’ (Marton and Saljo, 1976, p. 7). The two different levels of processing were clearly distinguishable, and they delivered two different levels of learning outcomes. A deep level of learning is typified by an intention to understand and seek meaning, which leads learners to try to relate new concepts to their existing understanding, to distinguish between new ideas and existing knowledge and to critically evaluate and determine key themes and concepts (Fry *et al.*, 2008). This approach is influenced by the learners’ intention to gain maximum meaning from their studies, which they achieve through a deep level of cognitive engagement while learning (Prosser and Trigwell, 1999). In contrast, a surface-level approach to learning is typified by an intention to complete the task without linking it to the current knowledge and without any obvious real change in the performance (Fry *et al.*, 2008). Surface-level engagement:

Results from learners’ intention to offer the impression that maximum learning has taken place, which they achieve through superficial levels of cognitive processing (Fry *et al.*, 2008).

Researchers recommend deep-level processing because of its positive influence on learning retention (Fry *et al.*, 2008; Marton and Saljo, 1976; Prosser and Trigwell, 1999). In the current research study, deep-level engagement was achieved by asking the learners to justify their errors and explain grammatical forms and the reasons behind their errors. Learners who failed to deeply engage with their writing on any of these aspects are considered to show surface-level processing and therefore also a surface level of cognitive engagement. Learners’ levels of engagement were determined during the TA sessions (see also 4.3 and 4.4.2).

Biggs (1987) investigated student approaches to learning and studying. He identified specific affective challenges that ESL learners face, which arguably also apply to EFL learners as well. For example, Biggs (1987) stated that unlike United States (US) learners, ESL learners lack the strategies to deploy. Hence, their struggles with tasks are caused by their inability to plan their learning and use previous knowledge in future tasks. Moreover, many of these learners create other barriers to their affective engagement by telling themselves that the tasks are very difficult, which interrupts their cognitive engagement; they either finish the task poorly or ignore it entirely. Biggs concluded that

teachers should aim to teach the student some techniques for engaging with the learning tasks (1987). Although some of the techniques he suggested were low-level, such as rote learning, they might benefit ESL learners by supporting them emotionally and strengthening their affective engagement. It is hoped that this process can save the learners from feelings of helplessness and also create a safe environment to try and enhance their learning by supporting them affectively and allowing them to engage cognitively without risking their self-esteem or social value (Alshwiah, 2017) (see also 5.5).

2.3.2 Engagement and language learning

Engagement has been studied as a collaborative dialogue (Storch, 2008; Taguchi and Kim, 2014). In the current study, it refers to learners' engagement with the teacher's WCF. This position combines the two concepts as they were introduced by Ellis (2010) and Svalberg (2009). In the literature, the learners' engagement with the tasks indicates their perceptions of and satisfaction with the intervention (Perie *et al.*, 2005). Examining the learners' engagement in the present study might reveal how introducing particular interventions influences the learners' performance in language learning activities when these interventions are presented as mediating means for L2 language learning. The learners' engagement with the WCF was tested in the current study when they used the TA and WCF modes to improve their writing skills.

According to Svalberg and Askham (2014), there are three domains of engagement: cognitive, affective and social engagement. These domains overlap and interact. The names of these domains indicate what is going on during engagement episodes in terms of cognitive processes, feelings and attitudes and interaction. The affective domain refers to the learners' feelings towards tasks and the language. It is recognised through the learners' willingness to participate and become autonomous in their learning. The social domain refers to learners' behavioural readiness to interact. This domain becomes evident from the learners' interaction with and scaffolding of others (Svalberg, 2009). In the current study, however, social engagement is measured differently (See 4.5.2, 4.6.1, 5.6 and 5.7).

Cognitive engagement comprises an individual's cognitive processing of the task at hand and how he or she individually constructs knowledge regardless of whether verbal interactions take place with others. Engagement with language is essential in language learning, as Svalberg (2009) indicates. Engaging with the language enables the

learners' development of their language skills and their reconstruction of knowledge about these skills. Interaction is an important factor in learning. Social engagement with language is powerful and also immensely helpful for most learners. Nonetheless, some learners are also good at learning on their own with less active participation in class discussions (Svalberg, 2009).

2.3.3 Learners' engagement

Learners' engagement is part of engagement with language. The latter concept and its associated sub-concepts have attracted widespread research interest in the language learning field (e.g. Ahn, 2016; Ainley *et al.*, 2006; Baralt *et al.*, 2016; Kearney and Ahn, 2014; Kearney and Barbour, 2015; Pekrun and Linnenbrink-Garcia, 2012; Platt and Brooks, 2002; Skinner *et al.*, 2009; Svalberg, 2007; Tan, 2011).

Svalberg (2009) pointed out that language researchers had not operationally clarified engagement, and it is used as a research construct without an operational definition. For example, Batstone (2002) regarded engagement as part of the contextual conditions of learning. Thus, he called it 'contextual engagement', which was further divided into 'communicative context engagement' and 'learning context engagement' (Svalberg 2009, p. 1). In contrast, Hyland, F. (2003) investigated engagement in the context of teacher feedback and student revision of that corrective feedback yet did not operationally define the term.

The working definition of engagement with language in the context of language learning, as proposed by Svalberg (2009), is a cognitive, affective or social state and process in which the learner is the agent and the language is both the object and means of communication. Therefore, the learner's engagement is a state where the learner is cognitively, affectively and socially (behaviourally) engaged in a learning activity. Figure 2.2 is a demonstration of this concept:

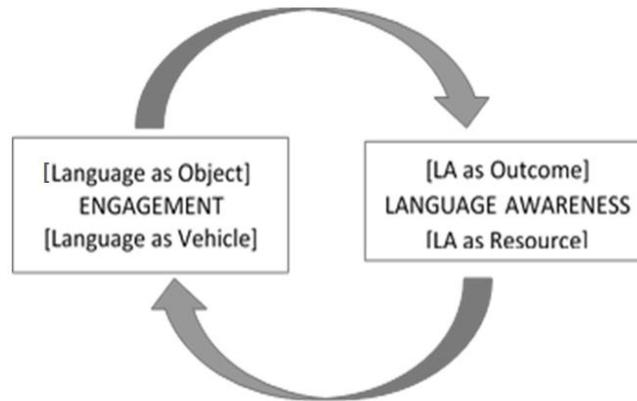


Figure 2.2 The engagement and language awareness cycle (Svalberg, 2009, p. 247).

The three domains of engagement (cognitive, affective and social) play a fundamental role in learners' engagement with language in the classroom. Learners who are less engaged are risking their L2 language development as well as the degree of their language awareness (LA). In the literature, language awareness is defined as the learners' sensitivity to a language and also their explicit knowledge about the features of a given language (Svalberg, 2007, 2012). There is a promising link between learners' engagement with WCF and learners' awareness from one side and their performance change on the other that was observed in this research study (see 5.2).

Engagement has also been discussed in the field of corrective feedback. For example, Ellis's (2010) discussion of engagement refers to the ways in which students react to corrective feedback. According to Ellis (2010), some of the factors that affect engagement are individual factors, contextual variables and the types of corrective feedback provided to the learners. Although Ellis (2010) did not refer to Svalberg's construct of engagement with language and the language awareness cycle (2009), the similarities between the two frameworks are still noticeable. Ellis (2010) emphasised that engagement can be considered from three different perspectives: a cognitive, behavioural or affective perspective. He added that the threefold distinction is applicable when investigating corrective feedback, either oral or written.

According to Svalberg (2009), one of the dimensions of learner engagement is cognitive engagement. This dimension describes the learning processes, or what happens in the learner's cognition while they construct their knowledge about a targeted skill. The qualities of cognitive engagement promote thinking at various levels and of various types (Svalberg, 2009, 2012; Wright and Bolitho, 1993). Hence, cognitive engagement could

also enhance the way learners engage with WCF in a specific language-learning task, which this study explores through TA and WCF.

Svalberg (2012) described a cognitively engaged learner. For example, engaged learners present ‘heightened alertness’ and focused attention on tasks. During the process of learning, cognitively engaged learners develop focused reflection and problem solving. Focused attention is the ability to concentrate on a particular task (Atkinson and Shiffrin, 1968). Aware learners are more focused, and they are also likely to pay attention to details while constructing their knowledge (Svalberg, 2009). Being alert does not require the learner to talk and express ideas all the time. In fact, some learners use other strategies to engage with learning activities, such as observing other learners silently notice how other learners and language users use the language (Qi and Lapkin, 2001; Svalberg and Askham, 2014).

In Ellis’ framework (2010), the cognitive perspective explains how learners act on corrective feedback (e.g. noticing gaps or revising their texts and avoiding similar mistakes in future compositions). The behavioural (or social) perspective addresses how learners behave when they receive corrective feedback, including how learners interact with their peers or with the instructor after receiving corrective feedback. The affective perspective refers to the learners’ initial attitudes toward a certain learning activity or the type of corrective feedback provided. It also describes the learners’ emotions when they act on corrective feedback (i.e. disliking a specific activity or being reluctant to rewrite or reformulate as per the WCF provided). The affective perspective in corrective feedback remains under-researched, which is surprising because corrective feedback is criticised in the literature for how harmful it can be to learners and their L2 development as well (Ellis, 2010).

In the field of corrective feedback, cognitively engaged learners are more likely to use feedback to enhance their language production and to avoid similar errors in successive tasks. Cognitive activities benefit individuals as well as groups while they work through L2 learning activities (Sato and Ballinger, 2016). Groups who encourage cognitive engagement among their members via scaffolding are more likely to achieve their learning goals. In the field of corrective feedback, Ellis (2010) suggested that providing cognitive engagement along with corrective feedback during revision and then using the corrections to overcome errors might promote learning outcomes. However, cognitive engagement needs to be evaluated within the holistic framework of learners’

engagement to elaborate on its potentials, which the current research study is aiming to achieve.

Learners' social (behavioural) engagement can emerge between a learner and other learners (e.g. peer interaction) or between the learner and the teacher (Sato and Ballinger, 2016). Social engagement is influenced by many personal and social characteristics that form a learner's profile. For example, supporting others, interacting effectively and negotiating meanings about the language during a language task are signs of a positive social engagement (Sato and Ballinger, 2016). Peer interaction is vital for social engagement, and it promotes L2 development as well as learning in general because learners are social beings who learn better from one another's experiences while testing their own hypotheses and constructing their own knowledge (Dewey, 1957; Dewey and Dewey, 1915). This concept might also apply to using corrective feedback group discussions to promote learning from peers and in using peer input to scaffold one's knowledge (Boggs, 2019). Many studies have shown a link between aspects of classroom interaction regarding corrective feedback and L2 improvement (Long, 2014; Sato, 2007, 2013; Sato and Ballinger, 2016; Sato and Lyster, 2012, Storch, 2008; Varonis and Gass, 1985). Nonetheless, exploring social engagement within its holistic framework (i.e. learners' engagement) might reveal more of its benefits, which the current research study aims to uncover.

Affective engagement is a key characteristic of an engaged learner and is assumed to enhance learners' awareness (Svalberg, 2009). Learners' affective engagement (e.g. emotions) has been addressed in research on motivation, willingness, positive attitude, purposefulness, enjoyment and autonomy (Aagård *et al.*, 2003; Arnold and Brown, 1999; Benson, 2001; Dewaele *et al.*, 2016; Dörnyei, 2005, 2007; Lier, 2007; Little, 2007; Reeve, 2012). Affective engagement in second or foreign language learning is important because it motivates the learners to look for information, increase their language use and concentrate on their learning goals. This type of engagement might help the learners remain socially active, use mental processes effectively and take initiatives (Svalberg, 2009). Yet affective engagement is unlikely to work on its own; it also requires the other two domains for fruitful results to be reached. Likewise, investigating learners' affective engagement with the WCF could serve an important role in L2 writing performance if explored within the holistic framework of learners' engagement and WCF.

2.4 Feedback in L2 classrooms

One of the widely agreed-upon definitions of feedback in the teaching of writing is the teachers' input regarding the writer's composition, which they can use for revision (Keh, 1990). Feedback is also defined as the information provided by teachers to help the learners enhance their performance (Nicol and Macfarlane-Dick, 2006). Corrective feedback indicates to the learners that their use of the targeted form is inaccurate (Lightbown and Spada, 2013). In the current research study, corrective feedback is limited to the teacher's indirect corrections to the learners' writing with the aim to mediate their engagement with their writing to improve their L2 writing performance.

Feedback is an important issue in L2 teaching and learning, both in research and in practice. Learners expect WCF, and teachers are willing to provide their learners with it (Alkhatib, 2015; Ellis, 2010; Mubarak, 2013). This section discusses issues related to feedback in L2 writing. First, a historical background of feedback is presented, and then different types of feedback are listed, with a focus on the characteristics, advantages and limitations of each type. After that, critical elements in feedback and research are covered, with an emphasis on the effectiveness of the different types of corrective feedback. Finally, a summary of previous studies that lists their similarities and differences is offered, followed by a section that positions the current study in the current literature and justifies the use of WCF as a tool to improve learners' writing skills.

There are several different types of feedback. This section offers a discussion of the feedback types along with some examples. In addition, their characteristics and limitations are also presented. This discussion focuses on WCF, with a greater emphasis on the direct, indirect and error correction code methods. Other feedback strategies, including reformulation, teacher-learner conferencing and peer feedback, are also described. Finally, computer-mediated feedback is discussed.

2.4.1 Corrective Feedback

Corrective feedback (CF) has been extensively investigated in language teaching and learning (e.g. Chaudron, 1986, 1987; Han and Hyland, 2015; Hyland, 1998, 2000; Hyland and Hyland, 2006a; Latham, 1997; Long, 1997; Oliver, 2000). CF is considered an integral part of L2 teaching and learning; it involves exposing the learner to the teacher's and peers' feedback, written or oral or both (Bitchener, 2008, 2017; Goldstein, 2006).

Ellis (2010) proposed the following framework (Figure 2.3), which he saw as ‘a heuristic that could inform research’ (p. 344).

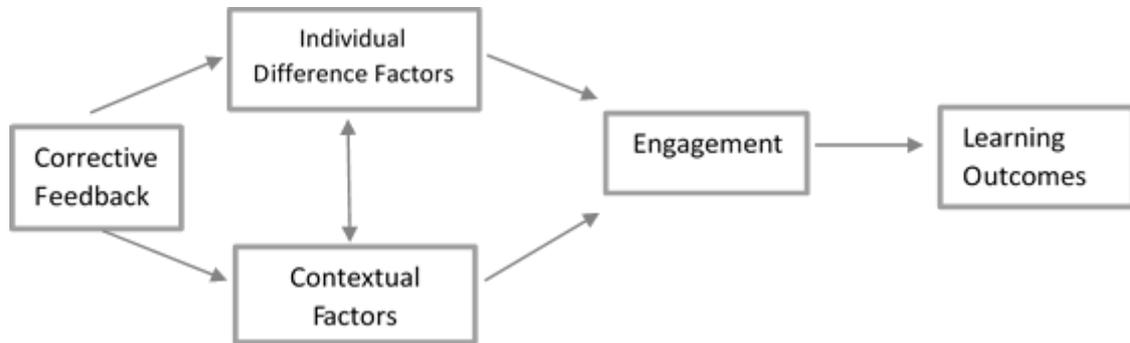


Figure 2.3 Ellis’s corrective feedback framework (2010, p. 344).

In his framework, Ellis suggests that learners’ engagement with CF is governed by individual differences and contextual factors. He adds that any study of the complexity of these factors is not complete without considering the learners’ engagement, which he also describes as multifaceted, e.g. cognitive, affective and behavioural (or social). He concludes that exploring the complex factors and nature of the components of his framework could inform research on CF, both oral and written, which influences learning outcomes. On these grounds, this research study acknowledges Ellis’s framework as a stepping stone to illustrate the importance of learners’ engagement with WCF. This research study is focused on WCF. It explores the complexity of learners’ engagement and explains the links between WCF, learners’ engagement and L2 writing performance changes.

2.4.2 Written Corrective Feedback

WCF research is a well-established subfield of second language studies (Alkhatib, 2015; Chandler, 2003; Ferris and Hedgcock, 1998; Hairston, 1986; Leki, 1990; Lizotte, 2001; Mubarak, 2013; Robb *et al.*, 1986). Previous studies have focused on some aspects of engagement with WCF, such as depth of processing, i.e. cognitive engagement (Storch and Wigglesworth, 2006, 2010; Wigglesworth and Storch, 2009, 2012), the use of WCF in the revision process (Hyland, F., 2003) and learners’ attitudes toward WCF (Alkhatib, 2015; Lee and Schallert, 2008). The combination of cognitive, behavioural and affective aspects of the learner’s engagement with WCF is still under-researched (Ellis, 2010).

Many studies have discussed learners' interactions with WCF. These studies typically examine one or more of the following concerns: the types of WCF that the learners preferred, their reactions to the teachers' WCF, the difficulties learners have with WCF, and how learners act on (i.e. engage with) the provided WCF (Cohen, 1987; Diab, 2005; Ferris, 1995b; Ferris and Roberts, 2001; Fukuta *et al.*, 2019; Hedgcock and Lefkowitz, 1994; Hyland and Han, 2015; Leki, 1991). In the following section, these studies are summarised in chronological order and compared to the focus of the current research study.

Cohen (1987) focused on learners' attitudes, reactions and problems with WCF. Two hundred seventeen participants were surveyed in that research study. The learners reported that they had read and attended to the teacher's WCF. However, they struggled to understand or use the teachers' comments when they were ambiguous, such as the words 'confusing' or 'not clear'. The conclusion was as follows:

The activity of teachers' feedback as currently constituted and realised may have more limited impact on the learners than teachers would desire (Cohen, 1987, p. 66).

Cohen's study involved L1 users, yet some of the recently conducted research in L2 found similar results in their studies (Alkhatib, 2015).

Leki's study (1991) focused on learners' concerns with the errors in their compositions and also their opinions about the best way for teachers to provide CF. One hundred university ESL learners were surveyed to answer the research queries. The learners were found to be very concerned about their writing errors. They aimed to have as few errors as possible. They also reported that their teachers should concentrate on language form errors. Moreover, the learners favoured a comprehensive approach of WCF over a selective one. Over 67% of the surveyed learners preferred explicit error corrections, which agreed with the findings of other researchers who explored lower-level learners (e.g. Mubarak, 2013).

Learners' attitudes, preferences and reactions toward WCF were explored by Ferris (1995b). First, ESL college learners (N=155) were surveyed. The learners stated that they read, benefited from and paid attention to their teachers' WCF. They believed that feedback on the language's form was the most important to focus on. They indicated that they sometimes experienced problems in understanding their teachers' WCF. Learners also stated a strong preference for a combination of praise and constructive feedback, which shows a solid link between emotions and cognition. These two factors

were found to be essential for constructive engagement with WCF (see 5.6). Constructive engagement is ‘an integrative method for actively involving students in the learning process’ (Lieberman *et al.*, 2001).

Hedgcock and Lefkowitz (1994) investigated the differences in writing contexts and students’ motivation for an EFL class and a group of ESL learners who were attending a US university. The 247 learners were asked about their attitudes toward teachers’ WCF and how the teachers’ WCF affected their views of text quality and their writing processes. In general, participants were concerned with grammatical accuracy. They reported being occasionally confused when interpreting teachers’ corrections. The paper concluded the following:

Instructors’ reported response habits might exert a strong influence on the views of L2 writers about the priority of precise accuracy over the transmission of meaning, and vice versa (Hedgcock and Lefkowitz, 1994, p. 299).

Students’ preferences regarding WCF were also investigated by Ferris and Roberts (2001). The participants in their study were university ESL learners (N = 73) who responded to a questionnaire. The responses indicated that the learners favoured an indirect type of WCF. They considered language form error correction to be a serious matter that negatively affected their writing. This finding agrees with Truscott (1996), who discussed how CF could harm learners instead of benefiting them (see also Ferris, 1999; Ferris and Helt, 2000; Truscott, 2007). Nonetheless, their justifications were not convincing, as many learners want and ask for CF, and many researchers and teachers believe in its importance. For example, Diab’s (2005) research study investigated learners’ opinions about ‘what constitutes effective WCF’ for EFL university learners (N=156). The findings revealed that most learners wanted to have as few errors as possible in their writing. They believed that teachers’ WCF should cover a whole range of writing issues, such as language form, organisation, the content of the text and the writing style. Most of the participants favoured explicit WCF. They wanted the teachers to locate the errors and give direct corrections. A significant percentage of the learners (63%) reported that they carefully read all their teachers’ feedback. This finding contradicted many other studies where the learners stated that they only read and cared about their grades.

Mubarak (2013) investigated the feedback and teaching practices of L2 writing in an EFL context in Bahrain. He also explored teachers’ and students’ beliefs about feedback using interviews and questionnaires. The study also examined the effectiveness

of two types of written corrective feedback: direct corrective feedback in the form of corrections of errors next to or above the original errors, and indirect corrective feedback in the form of error underlining. Mubarak (2013) used a mixed-methods approach to carry out his study. It involved classroom observations and a quasi-experimental study with three tests (pre- post- and delayed post-tests). The participants were university students who were divided into three groups: experimental group A received direct corrective feedback; experimental group B was given error underlining; and control group C was offered no corrections but instead rather simple and summative comments on performance. The findings showed that there were several problems in the teaching of L2 writing and feedback methods in the targeted context. The quasi-experimental study indicated that even though the students improved in the course of the experiment, neither type of corrective feedback had a significant effect on their accuracy, grammatical complexity or lexical complexity in writing, and that there was no difference in the effectiveness of the types of feedback. His interviews and questionnaires showed that the students preferred direct corrective to indirect corrective feedback. They also showed that the teachers and the students valued feedback and believed it was beneficial. Mubarak's research study (2013) was held in a very similar context as the one of the current study. He taught the groups himself and carried out the data collection, which might have weakened the data collection accuracy, especially the classroom observations. In addition, the learners were his own students, so their responses in the interviews might have been influenced by the power he had over them. Nonetheless, the research design, limitations, recommendations and suggestions for future research were informative for the current research.

Hyland and Han are well known in CF research. Their 2015 publication describes a study in which they investigated learners' engagement with WCF. Four learners from a Chinese university participated in a naturalistic case study to investigate learners' cognitive, social, and affective engagement with teacher WCF. The effectiveness of revision was inconsistent with the depth of processing, which indicates the complex relationship between cognitive and social engagement. Individual differences were found in each of the researched cognitive, social and affective dimensions of engagement with WCF. These differences might result from the learners' beliefs and goals and also could be due to the interactional context in which WCF was received and used.

In her research study, Alkhatib (2015) investigated the beliefs and practices of writing tutors regarding written corrective feedback (WCF) at a Saudi Arabian

university. The central focus of this work was the relationship between teachers' beliefs and practices regarding the provision of WCF in students' L2 writing; the factors that prevent teachers from enacting their beliefs into practices; and the relationship between students' preferences and teachers' WCF practices. Ten writing tutors and 30 students at an English Language and Literature department participated in that study. Semi-structured interviews were carried out to better understand the teachers' beliefs and the students' preferences. To capture the teachers' actual WCF practices, these teachers were observed while they taught writing over an entire semester. The teachers were observed while providing feedback on their students' writing, and they were asked to TA. Their TA protocols were examined, and the teachers' feedback on student writing was also analysed. In addition, stimulated-recall interviews were conducted to understand the factors that influenced teachers' WCF practices.

Alkhatib's study (2015) showed congruence and tensions between teachers' beliefs and practices. Teachers' beliefs were greatly congruent with their practices regarding the amount and focus of WCF. Conversely, the teachers' beliefs were incongruent concerning the explicitness of WCF, the use of positive feedback, and the source of WCF. Students' preferences were not in alignment with teachers' practices regarding the explicitness of WCF, the focus of WCF, and the provision of positive feedback. Finally, although students valued teachers' WCF and placed great importance upon it, they faced difficulties understanding some of their teachers' comments. The study was carried out in a similar context to the present one, and it also provided some implications that are useful for both teachers and researchers in the field of language teacher cognition and WCF. As Alkhatib did not teach the groups herself, the research validity and trustworthiness increased. Her approach of observing and not teaching was also followed in the current research study.

Kurzer's study (2018) investigated the role of dynamic written corrective feedback (DWCF; Evans *et al.*, 2010; Hartshorn and Evans, 2015), which is a mode of providing targeted, and individualised grammar feedback in English as a second language (ESL) writing classes. The researcher applied a quasi-experimental design to investigate DWCF at three different levels of developmental ESL writing classes across three terms with 325 students. The findings of that study suggest that multilingual students became better at self-editing, and they are better able to compose paragraphs that are grammatically more accurate after taking classes that supplement grammar instruction using DWCF than those who take classes with a focus on traditional grammar

teaching. Moreover, specific error categories were investigated (as per Bates *et al.*, 1993). The results were significant and indicated that DWCF may be an effective pedagogical intervention to improve linguistic accuracy across all error types at each language level. The current study seconds what Kurzer (2018) described: the importance of targeting a specific error each time and giving individualised and tailored WCF to learners. Most importantly, the findings promoted self-editing as a method of L2 development, which was also evident in the current research.

In their recent paper, Fukuta *et al.* (2019) investigated written languaging with indirect feedback in writing revision. Their paper examined the effectiveness of feedback. More precisely, they tested whether and how indirect feedback helps learners engage in languaging and also if the effects continued with the writing of a second new piece on the same topic. Forty learners engaged in a three-stage writing task. They wrote the first draft, and then they revised with languaging either with or without feedback on specific errors. The learners were then asked to submit a second draft. The texts were multi-dimensionally assessed for grammatical complexity, grammatical accuracy and fluency. Their findings revealed that the learners focused more on grammar when they received feedback. They succeeded at more error correction than when they did not receive feedback. The learners' fluency improved, and they enhanced their performance in accuracy slightly but did not demonstrate an improvement in complexity. Furthermore, the learners stated that written languaging with feedback did not show superiority to written languaging without feedback in the area of skills improvement. These findings suggest that metalinguistic correction prompted by feedback might not always be beneficial. However, languaging may have a positive effect on overall writing quality. The findings agree with other researchers (Kang and Han, 2015; Suzuki, 2012).

Fukuta *et al.*'s (2019) study supports some of the justifications in the current research design (see 3.3.2). For example, the direct CF was excluded from the CF types because indirect CF is more likely to engage learners cognitively with their writing under the current research conditions. More precisely, the current research uses TA to engage learners with WCF. The concept behind languaging is about using the language so that it 'conveyed an action - a dynamic, never-ending process of using language to make meaning' (Swain, 2006, p. 96). Languaging refers to the cognitive process that happens in the brain to understand the language forms. This method is similar to the concept of TA, which focuses on self-negotiating the meaning in order to improve the outcome of the performance. Hence, TA's influence on any L2 writing performance change might

as well direct the learners' attention through self-editing and self-improvement, which is worth exploring. Fukuta *et al.* (2019) also acknowledges language as an object and medium that can be reflected on, discussed and used at the same time (Svalberg, 2009, 2012). The participants in Fukuta *et al.*'s (2019) study used their L1 to make sense of English as their L2, which is similar to using L1 in private speech and TA in the current research study.

The above studies have shown to some extent how learners' intake or engagement with CF influenced the participants' engagement and learning performance. The findings of these studies highlight a need to conduct more empirical research to investigate WCF through the learners' experiences in a holistic manner. Overall, reviewing the literature revealed a need to determine 'in what way' and 'for what reasons' learners' engagement is influenced by specific mediating tools or strategies and not others. Explaining these phenomena through the TA intervention and the modes intervention is the aim of the current research study (See Chapter 3).

2.4.3 Types of Written Corrective Feedback

There are two main categories of WCF: direct and indirect WCF. In direct CF, the learners' attention is directed to the error, e.g. by underlining it, and they are provided with a solution for it. In other words, the teacher shows the learners where they made errors, and she provides the correct form. In this type of correction, the teachers may cross out or omit errors in the learners' original compositions. They might also rewrite a word, phrase or a sentence to providing the correct spelling, structure or form on the learners' paper. Direct CF may also take the form of adding any missing items to the original text, such as prefixes, suffixes, articles, prepositions or words (Ferris, 1998).

Direct WCF is mostly associated with grammar, which covers a variety of issues in learners' writing. This type of WCF aims to help learners improve their performance in future writing tasks (Bitchener and Ferris, 2012; Shintani and Ellis, 2013). Ferris (2002) argued that this type is most useful to treat prepositions and other issues of idiomatic lexis errors. In addition, direct WCF is reportedly useful in the final stages of the writing process (Ferris, 2002). The learners' proficiency is an essential element for a teacher to consider when deciding on the right amount of direct WCF, as less proficient learners are less capable of benefitting from direct WCF to improve their thinking about L2 writing (Ferris, 2002; Shintani and Ellis, 2013).

In indirect corrective feedback, the learners' attention is directed to the location of errors without being given the exact correction (Bitchener and Ferris, 2012). The teacher circles, underlines or highlights the errors on the learners writing to indicate the locations of errors without offering corrections. The learners are therefore required to search for the correct answers for their errors (Ferris, 2002). In other words, indirect CF engages the learners in their writing by encouraging them to think about their errors and find the correct forms rather than simply being provided with corrections. More specifically, indirect CF directs the learners' attention to their errors in order to make them work on them without giving them ready answers.

Using codes in error correction involves using symbols, such as '^' for a missing item, and abbreviations, e.g. 'WC' for word choice. These indications show the learners the locations and the types of errors in their compositions (Hendrickson, 1984). Codes are an implicit form of correcting learners' writing. Researchers have found that the use of codes in error correction allows teachers to provide effective implicit feedback by maintaining the usefulness of error corrections for learners while at the same time minimising the negative emotional impact on learners because this process limits the use of red marks on their work (Hyland, 1990; Harmer, 1991). The presence of many red marks on student writing has been found to increase learners' anxiety and discourage them from trying to improve their drafts (Mubarak, 2013).

In earlier research, Ferris (1997, 2002) surveyed learners' preferred types of feedback. She found that the learners' valued teachers' use of codes and concluded that learners viewed implicit WCF as more effective than other types. In addition, Corpuz and Rebello's research (2011) indicated that teachers had a similar preference; they reported that implicit CF that uses correction codes gave learners better opportunities to look up their errors. This process might increase the usefulness and effectiveness of WCF as a means to engage the learners with their own writing.

There are a few other types of WCF in the literature. Each of these types has its strengths and limitations. Table 2.1 summarises some of the most frequently used types of WCF.

Table 2.1 Other Types of Corrective Feedback

Method Definition and Aim	Advantages	Limitations
<u>Reformulation:</u> A technique where a native speaker or an experienced user of L2 works on improving the	Can create useful discussions between learners that might improve their writing (Hedge, 2000).	Time-consuming (Hairston, 1986). Encourages imitation, which can limit learners' creativity (Luchini and Roldan,

<p>writing of L2 learners. Reformulation, or recasting, aims to make the writing more native-like while keeping the ideas of the original text. Reformulation is normally followed by a discussion of an example of reformulated text to spot the differences before writing a second draft (Allwright <i>et al.</i>; 1988; Cohen, 1989; Levenston, 1978; Myers, 1997, Tocalli-Beller and Swain, 2005).</p>		<p>2007). Less useful for low-proficiency-level learners (Jimena <i>et al.</i>, 2005). questions non-native teachers' abilities to teach writing (Mubarak, 2013) Impractical for large classes (Mubarak, 2013)</p>
<p><u>Teacher-learner conferencing:</u> Discussions held between the teacher and the learners, as either individuals or groups. They can happen face to face or via the internet on platforms to correct the learners' writing. This approach first appeared in L1 composition CF and then was transferred to L2 methods of CF (Freedman and Sperling, 1987; Williams, 2002).</p>	<p>Can improve L2 writing through clarified and focused CF (Hyland, 2000; Patthey-Chavez and Ferris, 1997; Zamel, 1985). Might encourage learners' engagement.</p>	<p>Time-consuming (Mubarak, 2013) Intimidating for some learners for emotional or cultural reasons (e.g. psychological pressure, authority issues) (Mubarak, 2013) Might not be useful for low-level learners, mainly if the discussion is limited to using L2 only (Belk, 2012; Goldstein and Conrad, 1990; Hyland and Hyland, 2006b; Powers, 1993).</p>
<p><u>Peer feedback:</u> Learners' interacting with each other about their writing to provide CF that could lead to L2 writing improvements. It was originally introduced into L1 contexts originally. Later, it was copied to L2 strategies (Hyland and Hyland, 2006b).</p>	<p>It has social and cognitive advantages that can improve the learners' ability to revise their writing and evaluate others' writing as well (Hyland and Hyland, 2006a; Mendonca and Johnson, 1994; Rollinson, 2005; Villamil and de Guerrero, 1996).</p> <p>Helps learners develop excellent communication skills (Villamil and de Guerrero, 1996).</p> <p>Highlights and improves the writing processes, not just its final product, if used timely (Hyland, 2000).</p> <p>Improves learners' analytical abilities and therefore their own writing (Caulk, 1994; Leki, 1990; Mittan, 1989; Rollinson, 1998).</p> <p>Develops learners' self-confidence and accountability (Leki, 1990; Mittan, 1989).</p>	<p>Lengthy and time-consuming (Rollinson, 2005). May cause conflicts or discomfort, especially in multi-cultural classes, which might limit its usefulness and expected benefits (Allaei and Connor, 1990; Carson and Nelson, 1994, 1996; Nelson and Murphy, 1992). Learners might not accept criticism from their peers (Amores, 1997). Peer CF might be superficial and limited to surface issues (Keh, 1990). Depends on individuals' levels of proficiency and is not very useful to beginners, which leads to questionable CF (Connor and Asenavage, 1994; Horowitz, 1986; Leki, 1990). Some learners doubt the value of peers' feedback and therefore hesitate to use it (Ferris, 2003a; Flower, 1994; Spear and Spear, 1988).</p>

As shown in Table 2.1, each of these methods has its limitations and advantages. Some of these limitations made the aforementioned approaches unsuitable for the current research study. Therefore, I chose an approach that could be realistically applied in the

research context, for practical and cultural reasons, not only during the research study but potentially also afterwards.

2.4.4 Limitations of Written Corrective Feedback

Researchers have discussed WCF limitations extensively (e.g. Bitchener and Ferris, 2012; Corpuz and Rebello, 2011; Hendrickson, 1984). Indeed, many drawbacks are associated with direct and indirect feedback and error-correction codes. Some concern the teachers, while others are related to the learners. For the teachers, these methods are energy- and time-consuming. Teachers could spend many hours marking and adding WCF notes that the learners sometimes do not even read and often do not apply them to their future writing. This is a waste of valuable resources that could have been better used. In addition, teachers might suffer negative feelings, such as frustration, demotivation and hopelessness, when the learners repeat the same errors regardless of the amount or type of WCF provided.

On the learners' side, detailed, prolonged and repeated WCF can cause embarrassment and harm the learners' self-esteem (Mubarak, 2013). It could create an emotional barrier to improving their writing if they feel they are not making progress or are unable to address their writing issues appropriately. As for the use of error correction codes, Corpuz (2011) claims that they are limited and do not address all problems or errors that may be present in learners' writing. However, familiarising the learners with the meanings of the codes and creating a correction plan that targets only a few errors for every writing topic might help teachers and learners overcome this limitation. In addition, keeping an updated copy of the codes within reach might be beneficial when initially applying this method to make it easier for the learners to work on the later drafts (Ammar and Spada, 2006).

Some teachers are hesitant to use indirect WCF because they believe their learners might be unable to understand the errors and unable to correct them due to their limited proficiency, even if the errors are underlined (Bitchener and Ferris, 2012; Corpuz and Rebello, 2011; Hendrickson, 1984). However, repeated errors indicate an issue with language development that should be addressed. In other words, these situations require assessment and analysis in context to create a tailored correction plan for each learner. These plans could also be used to develop future teaching and learning methods or to assess current theories of teaching and learning in different contexts, especially in EFL contexts (Al-Seghayer, 2011).

2.4.5 Technology and WCF

Due to the increasing use of technology in everyday life and learning, using technology in L2 classrooms is becoming more popular. Some researchers assume that technology might lead to improving L2 learning and teaching through the implementation of pedagogical changes (Plomp *et al.*, 2007). Different types of modes and computer-mediated features are discussed in the literature (AbuSeileek, 2012; Cox *et al.*, 2000; Howard *et al.*, 2015; Kopcha, 2012; Lin *et al.* 2013).

There are different types of computer-mediated written corrective feedback. One is fully automated corrective feedback, which has emerged in the last two decades. This type of feedback is generated by software that recognises grammatical and usage errors and corrects them (Ware and Warschauer, 2006; Wilson *et al.*, 2014). It is used to enhance the learners' performance by providing them with immediate WCF on their writing. This type of WCF integrates technology into teaching. It has gained some popularity because it reduces the teachers' workload. Automated feedback saves them the time they used to spend correcting and modifying learners' writing (Chen, 1997; Yao and Warden, 1996). However, it is not perfect, and it has some reported limitations.

One of the significant limitations of this approach is the few research studies that support its usefulness. Hence, there is a growing demand to conduct more research about the practical use of automated feedback. Researchers are already raising questions, such as, 'Is faster feedback provided by an automated computer system better than the typical handwritten corrective feedback provided by the teacher'? (Ware and Warschauer, 2006; Hearst, 2000).

I would argue that one of the limitations of automated WCF is its limited ability to involve all the learners' domains of engagement with WCF. The levels of engagement vary between learners and even in the same learner at different points in time. Researchers on this topic are optimistic about its effectiveness on learners' writing (Sauro, 2009; Shintani, N., 2016; Shintani and Aubrey, 2016). However, there is still very little literature on automated computer-mediated WCF. Further investigation is needed to evaluate this type of feedback compared to regular feedback.

Another type of computer-mediated WCF involves the teacher using some of the features of Microsoft Word to correct the student writing. In the current research study, the technology used is a computer-mediated feature called 'Track Changes'. This feature is available in Microsoft Word 1997 and later versions. Track Changes is employed by

L2 teachers to provide their learners with direct and indirect WCF, and it is useful for both. Track Changes allows the teachers to choose between marking the error only, marking the error and providing a direct correction or marking the error and providing a hint to the learners to think about their errors. These markings appear in the margins of the document in a different colour, which makes them more accessible. For example, to correct, 'she ~~go~~' in a direct form, the wrong verb is deleted, and the correct form of the verb, 'she goes' is supplied to the learner. In indirect corrective feedback, the same error is highlighted either with or without commenting. To correct, 'she go' in a direct form, the wrong verb is deleted and the correct form of the verb is supplied to the learner: 'she ~~go~~ goes'; in indirect corrective feedback, the same error could also be highlighted and given a short comment about the error. For example, the previous error would be marked, 'subject-verb agreement' or 'SV'. The integration of technology has been tested in the area of WCF before (e.g. Ene and Upton, 2014; Ferris, 2012; Ho and Savignon, 2007; Tuzi, 2004).

According to the literature consulted for this section, the Track Changes tool is mostly used to provide peer WCF on classmates' writing (AbuSeileek, 2006; AbuSeileek and Abualsha'r, 2014; Caws, 2006; Duff and Li, 2009; Ho and Savignon, 2007). Most of these studies adopted Vygotsky's (1978) sociocultural theory (see 2.2.1). Sociocultural theory indicates that learners who interact with other learners can achieve more compared to when they work alone, which also agrees with Dewey's theories of learning (1957, 1915). The literature on using Track Changes for peer WCF is promising; however, peer WCF is beyond the focus of the current study. This research study explores learners' engagement with the WCF provided by the teacher. The following section reviews the most common approaches to teaching L2 writing: the product approach and the process approach, and a synthesis of these two approaches, is explained.

2.5 L2 writing teaching: theories and approaches

Researchers have different views of how teaching theories should be applied in L2 classrooms. Hyland (2003) states that theories on teaching L2 writing should be enthusiastically adopted into classroom practices. Other researchers, such as Ferris and Hedgcock (2005), confirm that L2 writing lacks a conclusive theory that could be used in the processes of teaching and learning. They add that despite the significance of L2 writing as an area of study, a lot of work on the applicability of the theories is still required before claiming that a comprehensive theory of L2 writing has been formed.

Some researchers argue that teachers' understanding of the field of L2 writing is incomplete. For example, a study conducted in 2000 found that the field of L2 writing requires better understanding because the learners lack the knowledge of how to learn and the teachers fail to provide a working approach that could contribute to better learning of L2 writing (Cumming and Riazi, 2000), which could raise questions about the learners' engagement with teachers' corrective feedback as well (Ellis, 2010).

While learners and teachers are struggling, researchers also face the question of how writing should be taught and have concluded that the question is difficult to answer. For example, Hyland addressed this issue by stating that writing research does not provide suitable answers to this question (2002). In other words, researchers and teachers alike are far from framing a best possible approach to teaching L2 writing. In reality, teachers, not researchers, are held responsible for choosing a suitable approach carefully. Truscott explains that what is evident in research might not be evident or applicable in classroom practices (2007). One of the issues researchers address in the field of L2 learning is the interference of the mother tongue (Igaab and Tarrad, 2019; Swan, 1997; Thompson-Panos and Thomas-Ruzic, 1983; Thyab, 2016). Arabic, as the mother tongue of the participants in this research study, had certainly influenced their learning (see 1.2).

In the next sub-sections, the two most famous approaches of L2 writing teaching are presented: the product and process approach. A synthesis of the two approaches, which is used to teach in the research context, is also provided.

2.5.1 The product approach

The product approach combines structural linguistics and the behaviourist learning theory, which attracted many researchers in the 1960s (Silva, 1990). Kroll (2001) called it the product-oriented approach. Other researchers, especially in the US, call it the traditional paradigm for teaching writing (Berlin, 1987; Mubarak, 2013).

The product approach, as the name suggests, focuses on the formal text units or the grammatical characteristics of an output text. In this school of thought, writing is viewed as a product that matches the learners' knowledge of the conventions of the target language, namely linguistics, vocabulary, syntactic patterns and cohesive devices (Badger and White, 2000; Hyland, 2003; Pincas 1982). In order to achieve the goals of the product approach, learners are usually provided with writing models to imitate before they are evaluated (Ferris and Hedgcock, 2005). Teaching in this approach is divided

into four stages: familiarisation, controlled writing, guided writing and free writing. The following section summarises these stages.

A. *Familiarisation*: This stage aims to familiarise the learners with writing by exposing them to grammatical and lexical exercises that provide them with a model text. Some of the supporters of this school state that grammar is an essential element of L2 writing teaching; however, the way that grammar is incorporated with other components of writing makes a difference in reaching the desired effectiveness (Frodesen and Holten, 2003). In this technique, teachers set writing tasks that direct their learners' attention to text organisation while at the same time working on grammar and text structure (Raimes, 1983). While learners prepare for the task, the teacher presents language items to them. Then, the learners have to connect what they plan to write about with the linguistic tools that are needed for the task in hand. Hence, this technique aims to connect the objectives of a given writing task to the tools or forms needed to achieve these objectives.

B. *Controlled writing*: In this stage, the learners utilise fixed writing patterns using substitution tables to practise what they already know or to discover new possibilities by trying. Figure 2.4 shows some examples.

There are	Y	types kinds classes categories	of X	: A, B, and C. . These are A, B, and C. are A, B, and C.
The	Consists of	Y	categories classes kinds types	. These are A, B, and C. : A, B, and C.
X	Can be divided into classes	Y	categories classes kinds types	. These are A, B, and C. : A, B, and C.
A, B, and C are	kinds types categories	of X.		

(Hamp-Lyons and Heasley, 1987, as cited in Hyland, 2003, p. 4)

Figure 2.4 A Substitution Table

C. *Guided writing*: In this stage, the learners are given model texts to imitate, such as a letter to a friend, an email or a personal statement, which they can use as an example (Hyland, 2003).

D. *Freewriting*: In this stage, the learners write using the writing skills they developed through the earlier writing development stages.

Researchers describe stages B, C and D as a sequential technique or a controlled to free technique of learning to write (Raimes, 1983). In this technique, the learners are involved in a series of learning activities that develop their progress from practising sentence writing to paragraphs writing (Manchón, 2012). The teachers ask the learners to copy or manipulate language items, such as changing the forms from statements to questions, from past to present tense or from active voice to passive voice. Ideally, teachers shift to free writing or a higher level of writing when the learners have mastered the writing skills required in the first three sequential stages.

For example, in a product-approach writing class, the learners would first be familiarised with several items to describe a setting, such as their bedrooms. Next, the teacher would introduce the adjectives and the prepositions used to describe bedrooms. Then, the teacher would read a model text and draw the learners' attention to its features. After that, the teacher would shift to the controlled writing stage, where the learners develop simple sentences using a substitution table to describe their bedrooms. In the guided writing stage, the teacher could present a picture of a bedroom and ask the learners to describe what they see in the picture in full sentences. Finally, the learners could describe a bedroom or any other setting using their own words and imaginations by following the instructions they were given. The product approach is teacher-centred. It treats the development of the learners' writing output as a direct result of the teacher's input (Badger and White, 2000) and emphasises the written text and the linguistic knowledge of the writers.

Low-level learners need a writing approach that recognises not only their linguistic knowledge but also their attempts to improve their writing, such as the functional approach, which is normally used in EFL contexts. The functional approach is a form of product approach used to teach writing that was introduced in the 1960s. The functional approach is influenced by the product approach but focuses on functions in writing. Raimes (1983, p. 8) describes the functional approach as 'paragraph pattern writing' because learners are taught to divide their writing into sections: first an introduction and then the body and conclusion. The functional approach aims to acquaint learners who come from diverse cultural backgrounds with the features of English L1 writing through simple exercises (Raimes, 1983). As the name implies, the functional approach teaches the learners to focus on the purpose of writing a specific text and its rhetorical functions. Learners write effective paragraphs by developing their writing from a topic sentence until they have produced a cohesive and coherent paragraph. They

are taught that each paragraph is a unit that combines sentences to convey a specific, meaningful message to the reader. It is the writers' responsibility to make their writing clear and understandable and also easy for readers to navigate. Advocates of this approach support functionally oriented textbooks. Figure 2.5 shows examples of the contents page of a textbook that uses the functional approach.

Jordan (1980, 1990, 1999)
Unit 1 Structure and Cohesion
Unit 2 Description: Process and Procedure
Unit 3 Description: Physical
Unit 4 Narrative
Unit 5 Definitions
Unit 6 Exemplification
Unit 7 Classification
Unit 8 Comparison and Contrast
Unit 9 Cause and Effect

Figure 2.5 A Functionally Oriented Syllabus (Jordan, 1990, cited in Hyland, 2003, p. 7)

As seen in Figure 2.5, the units describe the functions of the texts. The textbook is divided into sections to help the writers express a precise function. The writing exercises usually comprise generating a text from an outline or imitating a model text provided by the teacher or by the textbook. The product approach emphasises the structure and lexis when correcting learners' writing. In other words, it focuses its corrections on the form. Feedback on the form is provided as written or oral comments (Ellis, 2010). Some researchers have declared that focusing on form in WCF is essential because it can improve learners' performance and help them achieve their goals (Ellis, 1994; Lyster, 1994; Swain and Lapkin, 1998, 2002). The grammar correction approach corrects learners' errors by either providing the correct form directly on the writing or by indirectly guiding the learners to correct their errors by underlining or circling the incorrect forms and leaving it up to the learners to find the correct forms. An additional approach is to use error codes to engage learners with WCF. In this method, teachers write specific codes such as 'WO' to indicate a word order error, 'WW' to indicate a wrong word or 'VT' to indicate a verb tense error. The last two methods are most likely to increase the learners' cognitive engagement with their writing, whereas direct WCF limits this engagement by offering the correct answers and therefore requiring no effort on the learners' part.

Focusing on the form of written text has been used widely, and most teachers are familiar with it. There are credible advantages of this practice when correcting learners' writing using the product approach. First, teachers can use it for large classes because it saves them time and energy, as focusing on form while marking the learners' writing is easier for teachers. The product approach is useful in some cases, especially when the accuracy of the target forms is essential for their use and meaning, or when forms are the main goal of teaching. Some researchers argue that lower-level learners can benefit from a focus-on-form strategy because it directs their attention to forms that are wrong and helps them eliminate their errors (e.g. Mubarak, 2013; Tribble, 1996).

Although teachers have focused on form for many years when providing WCF on L2 writing, this tendency and the product approach it is associated with has some limitations. First, it neglects learning strategies and cognitive processes of writing (Ferris and Hedgcock, 2005). Instead, the focus is on forms and the use of vocabulary as the leading indicators of writing development. Neglecting the writing processes that learners go through when they write, such as mind mapping, drafting, revising and editing, may result in missing some of the changes that occur to the learners' L2 performance. Noticing the process may also influence learners' cognitive awareness of their performance (Ferris and Hedgcock, 2005).

In addition, this approach limits the learners' understanding of what to consider as good writing because they are guided to write for syntactic and grammatical accuracy but not for content or ideas (Hyland, 2003). Other researchers have argued that grammar teaching cannot improve writing abilities because the two are not processed the same way. In contrast, some researchers, such as Hinkel and Fotos (2001), concluded that grammar teaching can be helpful and productive in ESL and EFL writing classrooms. In contrast, Hudson (2001) adopted a cautious stance and suggested that further research be carried out in this area before making these claims.

One of the limitations of the product approach is the misleading assumption that applying grammatical rules can result in good writing. In reality, writing requires a lot more effort (Hyland, 2003; O'Hare, 1973; Pincas, 1962). In addition, the product approach restricts learners' creativity by teaching them to imitate text models. Researchers feel that this approach promotes the use of fixed patterns as a substitute for thinking while writing (Hyland, 2003; Pincas, 1962). The product approach is usually applied in Saudi Arabia due to the teaching approach that is common. A teacher-centered approach is popular and favoured, and teachers tend to focus on the correct use of

grammar and vocabulary when they teach, as well as when they provide WCF to learners (Alhaysony, 2008; Al-Hazmi and Scholfield 2007).

2.5.2 The process approach

The process approach appeared as an answer to the limitations of the product approach pedagogies (Miller, 1993). It had a strong influence on L1 and L2 writing instruction and research (Coe, 1987; Miller, 1993). Before this approach, researchers used to focus on grammar teaching, grammar correction and writing mechanisms, but they started researching the cognitive processes of writing during the 1970s and 1980s. They were convinced that analysing aspects of writing other than grammar would help them to understand the cognitive processes the novice writers engage in (Alkhatib, 2015; Zamel, 1976). Instructors also started to recognise these processes as an essential step of acquiring writing skills (e.g. Matsuda, 2003). Researchers developed this model to challenge the culture of imitation and the lack of creativity in writing that the product approach had created and also to investigate writing as it develops (Miller, 1993; Tribble, 1996).

The process approach advocates the identification of different stages of writing. These stages include strategies that lead learners to a completed text without focusing only on linguistic knowledge. Instead, learners shift their thinking while they write to the skills and strategies they must apply to progress through their writing stages and finish the task successfully: pre-writing, generating ideas, planning, drafting, editing and revising (Goldstein and Carr, 1996; Hedge, 2005; Meriwether, 1998; Reid, 1993). Hedge (2005) proposed a framework that illustrates the process approach L2 writing stages (Figure 2.6).

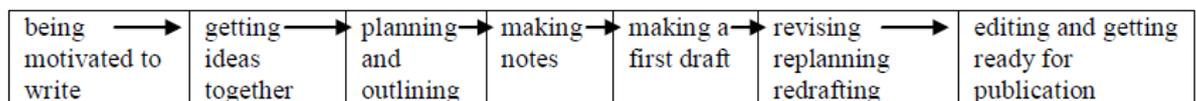


Figure 2.6 Hedge's framework to illustrate the process approach L2 writing stages

As the framework suggests, the writing stages in the process approach involve emotions (e.g. motivation) and cognitive processing (e.g. drafting, editing). In addition, many researchers agree that writing is a recursive process that requires planning, revising and editing more than once until a writer arrives at an acceptable piece of writing (Coffin *et al.*, 2005; Raimes 1985; Smith, 2013). The following illustration in Figure 2.7 shows the writing process as recursive (Coffin *et al.*, 2005, p. 34).

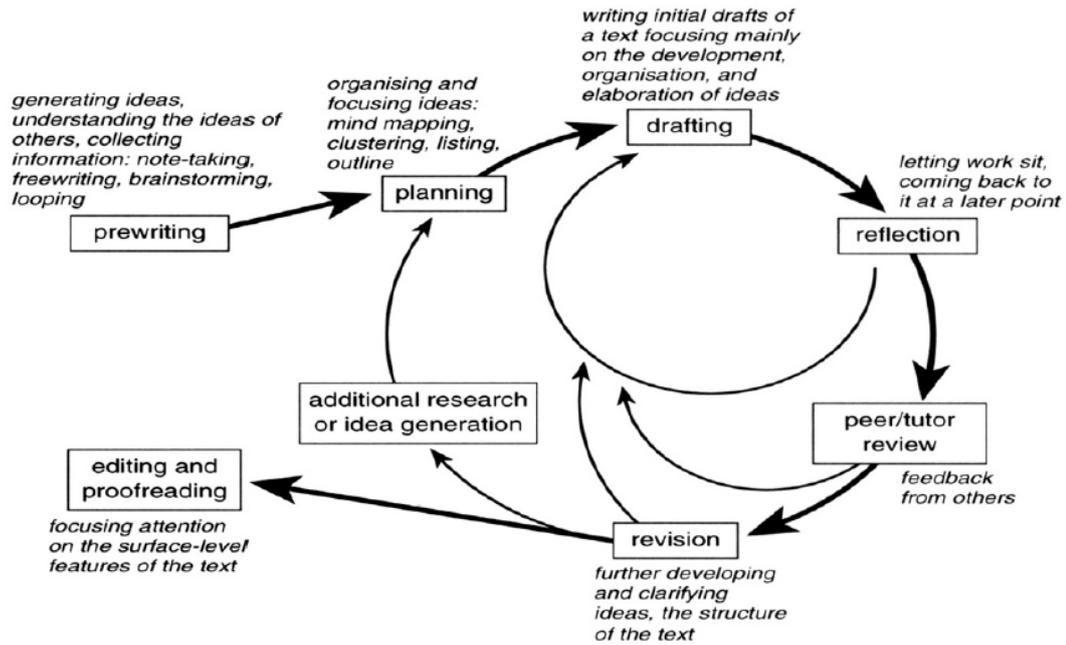


Figure 2.7 The Recursiveness of the Writing Process – Coffin *et al.* (2005, p. 34)

Many researchers who see writing as a process and as progressive agree with the illustration in Figure 2.7. Researchers have stated that teachers could recognise skilled and unskilled learners by looking at their writing outlines (e.g. Bechtel, 1979; Bereiter and Scardamalia, 2013; Emig, 1971; Flower and Hayes, 1981a, 1981b; Metzger, 1976; Mischel, 1974; Mubarak, 2013; Perl, 1980; Pianko, 1979; Stallard, 1974; Stein, 1986). This quality of writing is neglected if the teachers focus only on the final product.

Research has shown that L2 writing processes are not only recursive but also multidimensional (Pennington and So, 1993). When writing in a second language, learners often shift from thinking in L1 to writing in L2 (Pennington and So, 1993). These characteristics justify choosing learners' engagement and awareness cycle (Svalberg, 2009, 2012) as a focus for research. They also validate Ellis's corrective feedback framework (Ellis, 2010), as Ellis acknowledges the multidimensional nature of learners' engagement in CF, which positions the current research within these aligned theories. In fact, process-based classroom pedagogies emphasise two elements: awareness and intervention (Kostelnick, 1989). Awareness is related to activating the learners' realisation of their writing processes and to the different types of writing approaches or genres. The intervention outlines the teacher's expected involvement during the writing, which is giving the learners the tools and required guidance to write and self-edit through

revision in order to improve their writing. These elements are incorporated in the current study about WCF.

In a process-based class, the learners start by generating ideas through brainstorming and mind mapping. These activities allow learners to identify the outline of their text and list the relevant vocabulary. Learners can brainstorm as individuals or in pairs or groups, which is proven to enhance their accuracy and fluency (Dobao, 2012). They can do that quietly on paper or aloud through a shared pre-drafting activity (Raimes, 1983). These thoughts are then developed into a plan or an outline of the assignment. Unlike the teacher in the product approach who frequently gives detailed feedback on learners' writing, the teachers who adopt a process approach encourage the learners' independence by asking them to correct their drafts either in pairs or individually. Hence, the teacher's role in a process-based classroom is to facilitate writing and to promote learning (Badger and White, 2000), which agrees with the proposed explanation of the process-oriented teachers' role in guiding their learners through writing strategies such as brainstorming, planning, drafting, peer discussions, and several stages of editing (Hedge, 2005; Hyland, 2003).

In the process approach, researchers assert that writing development happens unconsciously because of the awareness and explicit practice of writing skills (Badger and White, 2000). In this model, learners are empowered by being encouraged to decide on the direction of their writing and also by being held accountable for improving their performance by working on their writing alone or collaborating with others (Jordan, 1997). These concepts align with the views on learner agency (Mercer, 2011), self-regulated learners (McPherson and Zimmermann, 2002; Zimmermann, 1998) and Bandura's detailed discussion of learning as a social activity (1977; 1986; 2002), which made using the process approach more likely in this research study. Flower (1989) and Flower and Hayes (1981a) identified the main cognitive writing processes as 'planning, writing and reviewing'. Hence, the focus of the process approach is to enhance the learners' performance in planning, writing and reviewing their texts independently. Teachers aim to do this using some feedback strategies, such as 1) learner-teacher conferencing, 2) peer feedback and 3) reformulation (see 2.4.3 for details) as part of the revision culture associated with the process approach (Hyland, 2003; Wallace and Hayes, 1991).

The process approach has many advantages, such as motivating learners to convey their ideas and increasing their creativity. It is likely to promote teacher-learner

and learner-learner interactions and discussions about their writing, which in return might improve cognitive and social learning and L2 writing performance. In addition, writing conventions become the focus of the feedback sessions. Hence, learners pay attention to their own cognitive processes instead of imitating a model or merely displaying their linguistic knowledge (Freeman and Freeman, 2004).

However, this approach has some limitations. First, it is not time-efficient and is difficult to apply in large writing classes. If teachers use this approach to fit CF into their work schedules, they usually experience an extra workload and more time-pressure, as do the learners. On a practical level, this approach requires a lot of drafting, marking and repetition of these stages, which might discourage teachers from implementing it. Furthermore, some learners might be discouraged from writing, as they may consider revision a failure because they do not understand how this approach works (Corpuz and Rebello, 2011).

One of the pedagogical limitations of this approach is its inability to provide clear principles for the teaching of L2 writing skills. Hyland (2003) stated that this method might be intimidating in some cultures where students are sensitive to self-exposure. Hyland (2003) highlights a valid point in the current research context; this approach is rarely used in Saudi adult-learning contexts as the learners are sensitive and consider criticism of their work to be a form of personal attack. These disadvantages justify the minimal use of the process approach in Saudi Arabia. Teachers tend not to focus on the writing process but instead on structure, grammar and vocabulary (Alhaysony, 2008; Al-Hazmi and Scholfield; 2007). Some teachers ask students to brainstorm at the beginning of a writing task, but they do not proceed with an intervention, such as asking the learners to submit their drafts and then follow their writing with correction and enrichment procedures. Because of time limitations, teachers struggle to find the time to facilitate the writing process in their learners' first compositions. Teachers often therefore do not encourage learners' engagement through cognitive tools that could promote engagement with WCF. Mediation is implemented in this research through a TA strategy, which is part of the intervention in this research study (see 3.7.2).

2.6 Thinking-aloud (TA) in language-related research

The TA strategy is a well-established method of verbal reports in the second language learning literature. The TA technique allows participants to reflect upon their language learning and to report on it while they are carrying out a planned learning

activity. It is different from reporting on the learning activity after the activity has finished, which is known in the literature as retrospective reporting (Bowles, 2010). Both means of verbal reports are essential because they allow researchers to gain access to non-observable data about the language learning that is crucial to understanding the involved cognitive processes. The learners' access while thinking aloud is limited to their short-term memories. Although the learners are talking about the present, it is still valuable to understand their cognition while learning L2 (Lumley, 2002).

Researchers in language-related fields have an ongoing debate over the use of observable and non-observable data in assessing learning. For example, some researchers have adopted Selinker's (1972) views on focusing analytical attention only on observable data, i.e. language production. In Selinker's views, only the learners' production data should be used in formulating theories and conducting research about SLA. However, other researchers, such as Corder (1973), disagree with this view and have argued that only a fragmented view of the language learning puzzle could be achieved from learners' production data. Corder (1973) stated that there are many processes in language learning that are not directly observable. According to Corder (1973), these processes can only be comprehended by understanding how language learning works and what learners think of their language production as a process. Corder (1973) believed that introspective methods were appropriate for eliciting such data from language learners. Despite the historical debate over the use of verbal reports, many L2 learning researchers have utilised different types of verbal reports including TA, and have stated that they have been able to find out more about these fields by utilising such methods (e.g. Bowles, 2010; Davis and Bistodeau, 1993; Leow and Morgan-Short, 2004).

Moreover, unless researchers use verbal reports and ask learners to describe what they face, they will have to rely on inferring the reasons behind the common errors or choices made by learners. These assumptions can be flawed or misleading. More specifically, if researchers ignore verbal reports, they will have to use learners' language production and errors to assess their language learning. Gass and Mackey (2007) pointed out:

Understanding the source of second language production is problematic because often there are multiple explanations for production phenomena that can only be assessed by exploring the process (p. 26).

If researchers assume that they know what learners are thinking about while they learn based solely on their production data, they are definitely at risk of missing some

significant parts of what is going on in the learners' cognition. Verbal reports, such as TA, enable researchers to gain access to cognitive processes that are otherwise inaccessible. This feature of TA supports the choice of this method as an intervention for language mediation while learning to write in the current research study.

Due to the ability of verbal reports to provide insight into learners' cognitive processes, they have been used in several areas of L2 research, including L2 reading and writing (e.g. Cavalcanti and Cohen, 1990; Cohen, 1987; Cohen and Cavalcanti, 1987; Gass and Mackey 2000, 2007; Hosenfeld, 1976, 1977, 1979, 1984), L1 and L2 strategies (e.g. Chamot and El Dinary, 1999; Davis and Bistodeau, 1993; Nevo, 1989; Yamashita, 2002), L2 assessment strategies (e.g. Cohen, 2000; Norris, 1992), translation studies (e.g. Enkvist, 1995; Faerch and Kasper, 1986; Jaaskelainen, 2000; Kern, 1994); interlanguage pragmatics (e.g. Cohen and Hosenfeld, 1981; Kasper and Blum-Kulka, 1993); oral interaction research (e.g. Mackey and Gass, 2000; Nabei and Swain, 2002), L2 attention and awareness studies (e.g. Bowles, 2003; Leow, 1997b, 1998a, 1998b, 1999, 2000, 2001a, 2001b; Rosa and O'Neill, 1999), and implicit and explicit knowledge of language (Ellis, 2004; Hu, 2002). These studies used different types of verbal reports, including TA protocols (Bowles, 2010).

TA is less frequently utilised to investigate language learners' cognitive processes in relation to WCF. One of the studies that investigated TA's usefulness was carried out by Sachs and Polio (2007), who applied TA to examine how L2 writers used corrective feedback on compositions. Since understanding and using teachers' WCF in writing improvement is difficult to observe and is also a complex process, TA was employed to advance understanding of the cognitive processes by which the learners engage with WCF. There are, however, concerns about the ability of participants to attend to the task and report information at the same time (Ericsson and Simon, 1993). These concerns were covered by the following interviews (see 3.7.2 and 3.7.4).

Johnson (2003) has discussed some of the difficulties of conducting TA sessions. First, these sessions are time-consuming for both the participants and the researcher. TA sessions take a prolonged amount of time in all their stages, from planning, training, applying, transcribing and then analysing the protocols. However, time was not a primary concern in the current study. Second, TA relies heavily on the participants' ability to produce the required reports. As expected, participants vary in how they perform TA (see 3.7.2).

The literature advises researchers to give their participants a general statement about why they are being asked to think-aloud, i.e. report their thinking verbally, and train them on how to do so (Bowles, 2008, 2010; Bowles and Leow, 2005; Ericsson and Simon, 1984; Leow and Morgan-Short, 2004; McDonough, 1995; Rosa and Leow, 2004). There are two preferences concerning such training or warm-up activities in the literature. A group of researchers has implemented arithmetic problems (e.g., subtractions) as warm-up activities (Addamegh, 2003; Bowles and Leow, 2005; Leow and Morgan-Short, 2004; Sanz *et al.*, 2009), whereas others (e.g., Bowles, 2008) used short verbal problems. Each has its advantages and disadvantages. In the former, participants practised a non-verbal task in preparation for carrying out a verbal task, which did not seem appropriate for the current research (Addamegh, 2003). The verbal warm-up tasks, in contrast, had the advantage of being more similar to the operational tasks, so the learners can smoothly transition from the practices of verbalisation to the operational study (Bowles, 2010) (see 3.7.2 for the TA training in this research study).

In summary, this research investigates learners' engagement as a complex, unstable and gradual process that is influenced by stimuli such as TA and WCF mode. It also reflects my beliefs about the nature of the language-learning journey, which I see as a cognitive process that is immensely influenced by personal, contextual and social factors, among which are learner-engagement related factors. In other words, language learning does not happen to learners; instead, they make it happen by engaging with the language and its components, such as its users and the culture of the target language. They also make learning happen by using and investing in the learning opportunities that are offered to them, such as TA sessions. This concept agrees with the idea of learners being active agents in their own learning (Svalberg, 2009). It also aligns with Ferris's findings about the learners' capability to make decisions to improve the outcome of their learning in light of CF (2006). In addition, this approach values errors and acknowledges corrective feedback as important stepping stones in language learning (Ellis, 2010; Ellis and Barkhuizen, 2005; Fang and Xue-mei, 2007). The following chapter (Chapter 3) presents the research design and methodology.

CHAPTER 3 RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The primary purpose of this research study was to explore L2 writing performance in low-level learners when WCF was delivered and engaged with differently. Hence, the learners' engagement and their L2 performance in the two participating classes, IC and IH, and their two embedded groups, ICG and IHG, were analysed and compared multiple times during this research study. For the aforementioned purposes, a mixed-methods approach was employed in quasi-experimental research to answer the research queries.

Using a mixed-methods approach was not an aim in itself; it was deemed suitable for this research study because of its nature, the research questions and the research design (Creswell and Plano Clark, 2011). One benefit of using mixed-methods in social research is expanding the research scope to cover the necessary aspects that need highlighting and analysing (Greene, 2007). This chapter presents the research design, the data collection methods and the data analysis methods. After that, the themes are described; and the preparation for triangulation is stated. In addition, the participants are described, and the researcher's role is stated. The trustworthiness and validity of the research study is also discussed. This chapter includes the ethical considerations of this research study as well. Finally, the research questions are restated.

3.2 Research questions

As stated earlier (see 1.3), an intervention with two components was applied. The first component was introducing TA as a learning activity, while the second was using two different modes to provide and correct learners' writing (computer-mediated and handwritten CF) to answer the following five research questions:

RQ. 1 How does the learners' L2 writing performance change (if at all) following WCF?

RQ. 2 What effects does TA have on L2 writing fluency, and why?

RQ. 3 Does the mode of WCF seem to affect the learners' L2 writing performance?

RQ. 4 How do the learners engage with WCF during TA?

RQ. 5 Does the mode of WCF seem to affect the learners' engagement with WCF?

The following table (3.1) provides an overview of the research, including the research questions, the participants in each intervention, the methods of data collection and the analysis used to answer each research question.

Table 3.1 The research questions, methods of data collection and analysis approaches

Research Questions	Aim	Component of the Intervention	Participants	Data collection methods	Data analysis method
RQ 1 How does the learners' L2 writing performance change (if at all) following WCF?	To explore and explain the influence of using different WCF modes on the learners' L2 writing performance	Mode	IC: IH	Tests	Mixed measure ANOVA (quantitative data)
RQ 2 What effects does TA have on L2 writing fluency, and why	To explore and explain the influence of TA on the learners' L2 writing fluency	Mode and TA	ICG: IHG ICG: ICG* IHG: IHG*	TA writing assignments	t-test (quantitative data)
RQ 3 Does the mode of WCF seem to affect the learners' L2 writing performance	To explore and explain the influence of mode on the learners' L2 writing performance	Mode	IC IH ICG IHG	Tests TA writing assignments	SPSS (quantitative data-descriptive analysis)
RQ 4 How do the learners engage with WCF during TA?	To explore and explain the influence of TA on the learners' engagement with WCF	TA	ICG IHG	TA sessions and observation Interviews	Grounded approach Thematic analysis (qualitative data)
RQ 5 Does the mode of WCF seem to affect the learners' engagement with WCF?	To explore and explain the influence of modes on the learners' engagement with WCF	Mode	ICG IHG	Classroom observation Interviews	Grounded approach Thematic analysis (qualitative data)

* denotes comparison groups that did not participate in TA sessions

As shown in Table 3.1, the research study aims to combine objective truth, which is found in the quantitative data, and subjective truth, from the qualitative data. The amalgamation of these two types of data is thought to enrich the findings, discussion and recommendations.

The TA and WCF mode intervention in the current research study involved two classes and two embedded groups. The first class (IC) and its group (ICG) received indirect computer-mediated WCF through the Track Changes feature in Microsoft Word, while the second class (IH) and their embedded group (IHG) received indirect handwritten CF (see 3.6.2 for the recruitment process of the research participants). The following section introduces the elements of the research design.

3.3 Elements of the research design

After defining the research problem and formulating the research questions, the other elements of the research design had to be considered in order to plan the intervention. These elements are the epistemology, theoretical perspective (paradigm), methodology and research methods (Crotty, 1998; Liu and Brown, 2015). Figure 3.1 summarises the epistemology, theoretical perspective, methodology and research methods used in this research study.

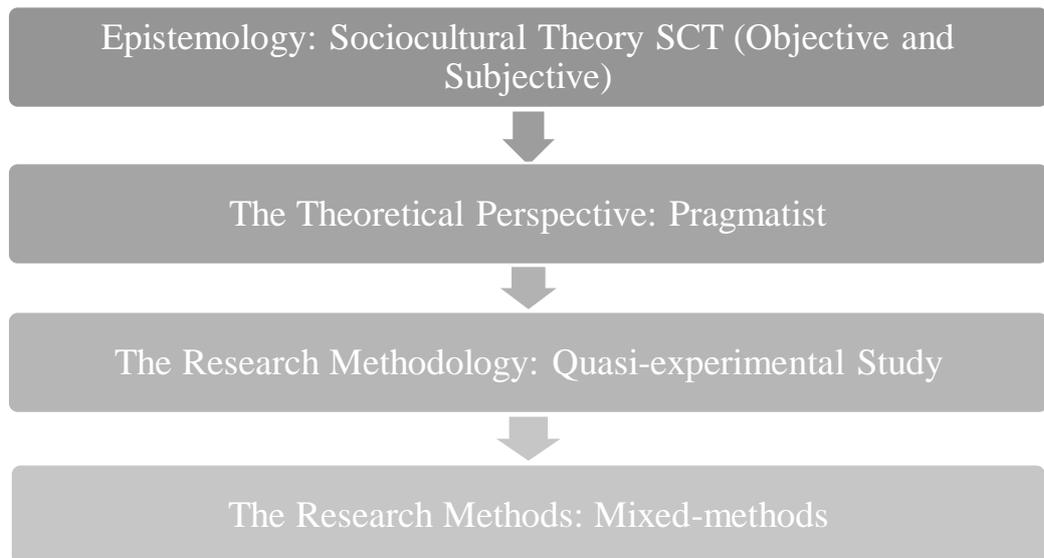


Figure 3.1 The Components of the Current Research Design

Epistemology is the study of how a phenomenon is investigated (Freimuth, 2009). As shown in Figure 3.1, this study is rooted in sociocultural theory (Vygotsky, 1978, 1989). It amalgamates objective reality and multiple realities. The objective reality was measured by exploring and explaining the learners' engagement and their L2 writing performance using tests and TA writing assignments, which the learners submitted every week during the TA intervention as quantitative data. These data were grounded in

numbers and percentages, and they were described and analysed statistically, hence their objectivity (see 4.3). Other numbers, such as the learners' attendance, and TA-related quantities, such as the completed tasks and the returned assignments, were also considered when analysing the learners' engagement with WCF. These findings addressed the current research study's queries about TA and mode as a means of engaging the learners with WCF and explained the constructs' complexity (Feilzer, 2010; Gray, 2013). The multiple realities, which were the learners' positions and experiences with WCF, were explored through the qualitative methods (e.g. the interviews and the classroom and TA observations).

The research paradigm (Crotty, 1998; Morrison, 2012) is pragmatist (see 3.3.1). The methodology, i.e. the strategy behind the choice of specific methods (Crotty, 1998) for the current research study, is quasi-experimental, without a control group. A mixed-methods research design has been chosen to help answer the research questions (Crotty, 1998).

3.3.1 The research paradigm

The research paradigm helps in choosing a suitable methodology and research methods. It covers the understanding, values and techniques common to members of a community, and the appropriate research methods for investigating an issue (Kuhn, 2012). An appropriate research design is required here to examine, explore and justify the different ways in which the learners' engagement with WCF changed during the intervention. It is also essential to explore the differences in L2 writing performance after the intervention.

The use of one paradigm in this research would not have been helpful. To be more precise, using the positivist paradigm in isolation of other paradigms would not have provided enough answers to the research questions because it would have involved quantitative data alone. Using objective measurements alone would not have explained the engagement with WCF, nor would it have allowed an exploration of the learners' experiences (Carey, 2013; Crotty, 1998; Lin, 1998; Phillips *et al.*, 2012; Tashakkori *et al.*, 1998). Similarly, the interpretivist paradigm that underpins qualitative methods would have failed to provide precise measurements of the effectiveness of the different components used in this research study on the L2 performance change. There was a clear need to use mixed-methods to evaluate the intervention as accurately as possible (Jensen

and Neuman, 2013; Tashakkori and Teddlie, 1998), which justified using the current paradigm.

In this research study, the pragmatic paradigm (Keeble-Allen and Armitage, 2007; Teddlie and Tashakkori, 2003) drives the mixed-methods approach. It invests in the objectivist approach, which is linked to positivist thinking, where reality can be investigated through empirical research using quantitative methods to establish the facts that explain the nature of the reality at hand. However, the pragmatic paradigm also involves a subjective interpretive approach, which prioritises the importance of the learners' experiences and perceptions. Qualitative methods were employed to achieve this aim. In other words, the pragmatic paradigm appreciates the importance of the natural, as well as the social worlds, while attempting to understand the truth (Robson, 2011), which fits well with the aims of the current research study.

In this research study, the reality is considered a mixture of measurable realities that could evaluate the intervention, namely on the learners' engagement with WCF and the L2 writing performance. At the same time, this reality also contains subjective components, as it is based on the learners' perceptions of how the intervention influenced their learning and their engagement (Creswell, 2017).

Following a pragmatic paradigm, the qualitative data were collected by interviewing the learners, observing them and conducting TA sessions with them. Their responses and the indicators of their engagement were noted carefully during all the research sessions. Their perceptions were explored and clarified, and their responses were discerned and subsequently explained. To gain access to these data, building a good rapport with the learners was essential (Creswell, 2013).

Tests were used in this research to obtain data about how the intervention influenced the learners' L2 writing performance. Combining learners' experiences with facts about their levels of L2 writing fluency, grammatical accuracy and grammatical competence strengthened the current research study in its findings, implications and suggestions.

The choice of this paradigm was influenced by the nature of the research questions and the methods used in attempting to answer them, regardless of whether deductive or inductive logic was applied (Tashakkori and Teddlie, 1998). This paradigm considers words and numbers to be important in identifying the effect of an intervention (Lincoln and Guba, 1985; Morrison, 2012; Tashakkori and Teddlie, 1998). Moreover, this paradigm was adopted in this research because it is 'concerned with action and

change and the interplay between knowledge and action' (Goldkuhl, 2012, p. 2). The results of the intervention were intended to help the learners invest in the WCF practices. The intervention might influence the future design of effective WCF models for writing courses.

There has been some debate in the literature on the pragmatist approach. Some researchers have stated that using mixed methods in research is impossible because objectivism is incompatible with realism (Lincoln and Guba, 1985; Smith and Heshusius, 1986). As the research developed; however, more recent research stated that paradigms and methods are independent of each other; therefore, carrying out mixed-methods research is possible (Creswell and Plano Clark, 2007; Teddlie and Tashakkori, 2003). The latter stance was adopted in this research, and both quantitative and qualitative methods were implemented to answer the research questions. The following sub-section discusses the mixed-methods research design.

3.3.2 The research design

Researchers in the social sciences acknowledge two distinct research methods in their fields: the quantitative and qualitative methods. The two differ in the type of data produced, how the data are collected and, most importantly, in the philosophy that underpins each method. The quantitative methods reflect positivism and post-positivism. Supporters of this school of thought believe that absolute true knowledge exists. They assume that scientific methods and deductive tests are the only way to discover truth (Jensen and Neuman, 2013).

In contrast, qualitative methods reflect an interpretive paradigm, where reality is explored inductively by working with people and talking to them to gain access to how they interpret and understand the world. Supporters of this school (e.g. Palaganas, *et al.*, 2017; Swinton and Mowat, 2016) appreciate the participants' experiences and value them as a source of data.

In the current research study, the use of a single approach could lead to only a partial understanding of a complex research area. Even worse, relying on a single method might cause a complete misunderstanding of the topic. Hence, a mixed-methods approach was selected (Cohen *et al.*, 2011). It combined the qualities of quantitative and qualitative methods and compensated for the weaknesses of each (Creswell, 2013).

Combining quantitative and qualitative methods can provide a holistic approach to solving research problems from both perspectives. This strategy is referred to as

‘mixed methods’, and it is associated with a pragmatic paradigm (Feilzer 2010; Tashakkori and Teddlie, 2003b). Figure 3.2 illustrates the study design.

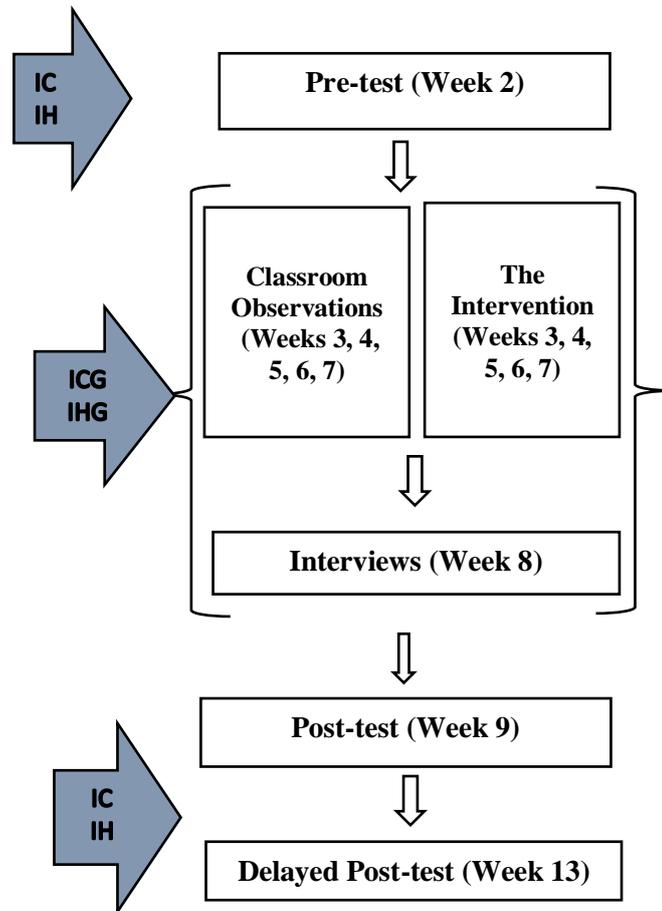


Figure 3.2 The Research Design

The right side of Figure 3.2 shows the method and the weeks within which the component of the intervention was conducted during the semester. The left side shows the targeted participants that were tested. One of the goals in this research was to reach a comprehensive understanding of the factors that influenced the learners’ engagement with WCF and how the learners’ performance changed after the intervention both quantitatively and qualitatively (Arthur, 2012). Therefore, using the tests as a quantitative deductive paradigm provides objective data on the topic, while the qualitative inductive paradigm leads to a deeper understanding of the learners’ experiences (Carey, 2013; Matthews and Ross, 2014; Pring, 2004; Scott and Usher, 1999). Table 3.2 summarises the method used in this research and the type of data usually generated along with the advantages and disadvantages.

Table 3.2 Research methods and their advantages and disadvantages

Research Methods	Type	Advantages	Disadvantages
Test	Quantitative	Offers the possibility of replicating the experiment to generalise the findings; the researcher is more objective and accurate in measuring the results because the different variables are controlled.	Learner engagement cannot be tested through this method.
TA	Qualitative + Quantitative	Low-cost; engaging; flexible in time and place, easy to learn.	Impossible to replicate or reproduce the results; requires training; difficult to generalise the findings.
Interview	Qualitative	Provides multiple facets of a case.	Generalising the findings is unattainable, time-consuming in transcription and analysis.
Classroom observation	Qualitative	Provides an external view of the indicators of engagement between the participants, shows the researcher what has not been mentioned in the other methods in order to triangulate the findings.	Needs attention while observing a large number of learners at the same time; might cause reactivity (change in the learners' behaviours).

As shown in Table 3.2, each research tool has limitations. Hence, combining them reduced their downsides. The research aims and questions must be considered when designing mixed-methods research (Morse, 1991). In the current research study, both quantitative and qualitative approaches were deemed necessary. However, the quantitative methods were treated as a secondary source of data in the triangulation for a few reasons (see section 3.7.1 for details).

The quantitative and qualitative data were collected, analysed and reported independently and concurrently (Creswell and Clark, 2007). They were then converged by comparing, contrasting and triangulating the findings to create a holistic picture of the research results. Hence, this research study applied triangulation to the methods to deepen the understanding of the topic and also in the interpretation of the findings to increase the validity and trustworthiness of the research design (Jick, 1979).

The learners in this research were tested once before the intervention and twice afterwards. Their results were compared both between-participants and within-participants to measure the change in their L2 writing performance. The features to be addressed included writing fluency, grammatical competence and grammatical accuracy in using three specific features (capitalisation, pronouns and English articles). Table 3.3 presents further details about the expected performance (see also 4.3 and Appendix M for the indicators of L2 writing performance).

Table 3.3 Definition of the expected L2 writing performance

Feature	The Expected Performance
Writing Fluency	The learners are expected to increase the amount of words they are capable of writing in response to a question, regardless of the complexity of the forms used.
Capitalisation	The learners are expected to respond to closed questions about capitalisation and to use capitalisation rules correctly in closed questions with proper nouns and at the beginning of a new sentence.
Pronouns	The learners are expected to use pronoun rules correctly. For example, ' <i>Sara is in *she car.</i> ' should read, ' <i>Sara is in her car.</i> '
English Articles	The learners are expected to respond and to use English articles 'a, an and the' correctly. For example, ' <i>Sara is in * car.</i> ' should read, ' <i>Sara is in the car.</i> '

* indicates that the example is grammatically incorrect.

As shown in Table 3.3, the learners' L2 writing performance was measured by their L2 writing fluency, i.e. the increase of the numbers of words in their writing. Their grammatical competence was measured by their correct use of specific grammar rules, including capitalisation, pronouns and English articles. In addition, their grammatical accuracy was assessed by their correct response to questions about capitalisation, pronouns and English articles. These features were chosen because they were found to be suitable for participants' level of proficiency when they were pre-tested at the beginning of the research study and also because they were used previously by other scholars (e.g. Bitchener, 2008; Boggs, 2019).

The learners in the ICG and IHG groups were interviewed after the TA sessions to understand their perceptions about the effectiveness of the intervention. An interview guide was prepared to gather their information in detail (Appendix C).

The learners in the ICG and IHG groups were observed in their groups. The classroom observations were an essential part of the research design because they allowed the researcher to note the indications of their engagement as they received the WCF and before they performed the TA technique using the WCF individually. The learners' conversations and their interactions in their groups were recorded, analysed and reported in order to triangulate the findings. They were the social and affective engagement indicators in the research study.

The aim of using mixed methods in this research study is to triangulate methods that use various means to evaluate the same phenomena (Denzin, 2001; Jensen and Neuman, 2013). This approach is crucial to ensure the participants' statements match their actions and their performance (Gibbs, 2008). The strategy also aims to triangulate the findings to achieve greater trustworthiness and help understand the research problem

from different perspectives (Creswell and Clark, 2007). Triangulation can explain any unexpected findings from one of the methods (Armitage, 2007; Bryman, 2006; Bush, 2012; Hammersley, 2008).

Indirect CF was used in this research study. Direct CF was excluded because indirect CF is more likely to engage learners cognitively with their writing under the current research conditions. More precisely, the current research used TA to engage learners with WCF. The concept behind this method is about using the language so that it ‘conveyed an action - a dynamic, never-ending process of using language to make meaning’ (Swain, 2006, p. 96), which we could not say about direct CF, especially when using TA, which focuses on self-negotiating the meaning in order to improve the outcome of the performance. For the aforementioned reason, indirect CF was deemed more suitable for the current research study. The following section presents the research study’s conceptual framework

3.4 Research conceptual framework

This research’s conceptual framework was based on two frameworks. The first is the learners’ engagement and awareness cycle (Svalberg, 2009) (see 2.3.3). The second framework is the learners’ engagement with CF (Ellis, 2010) (see 2.4.1). The resulting framework links learners’ engagement with WCF with the learners’ awareness of their L2 performance change. In this research study, TA and the WCF mode affects the learners’ engagement with the WCF, which influences their awareness of their L2 performance. TA and the WCF mode were the suggested meditating means. Figure 3.3 shows the resulting framework:

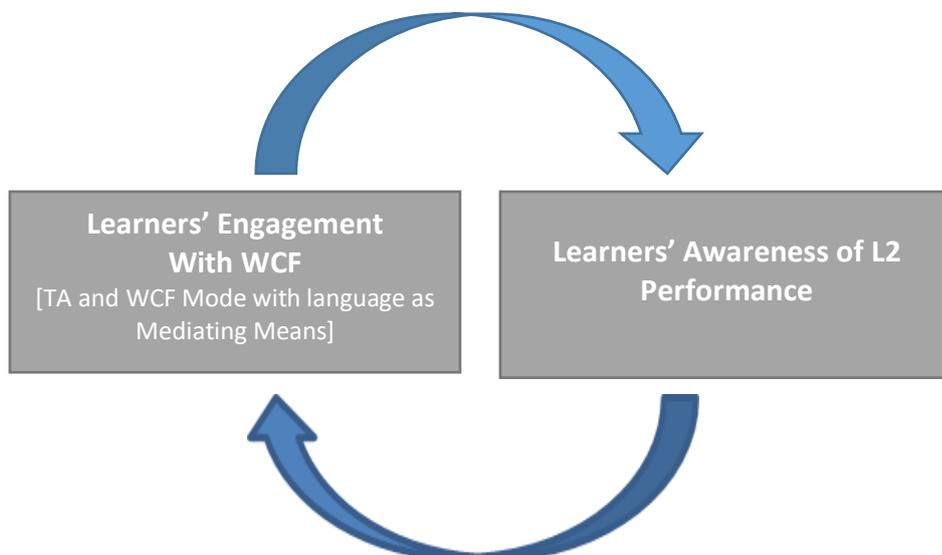


Figure 3.3 The study framework: Learners' Engagement with WCF and Learners' Awareness of L2 Performance

Figure 3.3 suggests that the learners' engagement with WCF is iterative with their awareness of their L2 performance. Hence, when the learners' engagement increases, their awareness also improves, which might influence their L2 writing performance. The following sub-section defines the variables of this research design.

3.4.1 The research variables

Selecting the research study's variables is essential for the analysis stage (see 4.2 and 4.3). In the WCF mode component of the intervention, the independent variables were the modes used to deliver WCF and to allow the learners to engage with WCF: 1) computer-mediated WCF (the Track Changes feature) for the IC class, and 2) handwritten CF for the IH class. The dependent variables in the WCF mode component were 1) learners' engagement with WCF and 2) their L2 writing performance change as seen in their writing fluency, grammatical accuracy and grammatical competence (see 4.2 for the details). The participants included all the learners in the participating classes (i.e. IC = 42 and IH = 44) (see 3.7.2). Each class received and engaged with WCF via the assigned method described previously. The analysis of the tests compared the L2 writing performance of the two classes and the two groups across the two different modes (see 4.2).

In the TA component of the intervention, the independent variable was the TA as a learning activity. The dependent variables were 1) the learners' engagement with WCF and 2) their L2 writing performance, more specifically, their writing fluency (see 4.4). The participants in this component of the intervention were distributed as follows: ICG = 5, ICG* = 5, IHG = 5 and IHG* = 5 (see 1.7.2). The data analysis compared the L2 writing fluency of the groups in the two different environments (see 4.3).

3.5 The pilot study

The pilot study aimed to test and improve the research instruments as well as the research design. The instruments had to be appropriate for the research purposes by providing answers to the research questions. In addition, piloting the instruments improved the quality of the data, which in turn saved time and energy by discovering any potential drawbacks in the instruments before using them in the actual research (Dörnyei,

2007). Another justification for the pilot study was familiarising the researcher with the fine details of the instruments, procedures and the research site.

The pilot study took place in April 2017. It started when I contacted the gatekeepers of both PNU and Leicester University to gain access to the research site and to obtain the ethical approval of both parties. Once all the required letters were in hand, a fellow teacher was contacted to arrange the time for the pilot study. The pilot study had a few main questions in mind:

1. Is the research design coherent?
2. Are the instruments valid for their purposes?
3. Are they clear enough to the participants?
4. Will they help answer the research questions?

The pilot study took place over four days, during which the instruments were tested. Ten learners were recruited to test the questionnaire; four participants were interviewed to test the interview guide. Two teaching sessions were attended to test the classroom observation card; the researcher met with the participants individually, and the project was explained to them. Each participant was asked to read and sign a consent form and was assured that all of the collected data would be used for research purposes only. The tests were not piloted because the course coordinator and the teachers change the tests each semester and compile new assessment papers. In addition, the TA technique was not tested. The rationale for this decision resulted from the fact that participant training is deemed necessary before any TA data may be collected, particularly since the method is new to the targeted group and there was not sufficient time to carry out such training.

The pilot study helped improve the main study in many ways. First, the consent form was revised. A significant change was made to exclude the option to write the participants' actual names on the main consent form to ensure the confidentiality and privacy of the group members (see Appendix B). The survey was administered in Arabic. The learners were asked to do the following: (a) fill out the form, (b) mark any unclear items on the first attempt with an asterisk and (c) make a note of the time needed to complete the survey. The learners found most of the items precise and clear, and any ambiguous items were reworded for clarity. The average time to complete the survey in the pilot study was between 10 and 15 minutes. In the final draft, every item in the survey

was linked to a specific research question; therefore, irrelevant questions were removed (see Appendix A for the final survey). The remaining items were either deleted or moved to the TA interview schedules (see Appendix C) because they were unfit for the general interviewing stage (Johns, 2010). As for the observation card, it was tried and improved accordingly (see Appendix G1).

3.6 Participants and Teaching Approach

3.6.1 The teacher

The main study took place from September to December 2017. In the first week of the data collection period, a meeting was arranged with the English teachers in the department. During that meeting, the teachers were introduced to the research topic, its purposes, the methods of research, and the type of participants needed. At the end of the meeting, the teachers were asked if it was possible for the researcher to attend their classes. Two of them were willing to participate, so the teacher with the most suitable schedules and daily contact hours was chosen. That teacher was asked to sign a consent form to permit the researcher's attendance and note-taking in her classes (see Appendix B). The researcher prepared the teacher to mark the learners' writing by clarifying the proposed WCF modes to her. She was also provided with a list of marking codes to use (see Appendix N). This teacher was additionally introduced to the Track Changes feature in Microsoft Word 2013 and was taught how to use it to mark learners' writing and comment on their work for the IC class.

In this research study, the teacher was asked to underline errors and to provide codes to indicate the type of error in the student writing (e.g. 'WW' for Wrong Word or 'VT' for Verb Tense) without further corrections. This approach merges two types of error corrections (indirect WCF and error correction codes) (see 2.5.3) and aligns with the aims of this research study. The goal was to promote cognitive engagement by raising learners' awareness of their L2 performance in their writing. All inquiries were responded to, and by the end of the first week, the teacher was ready for her role in the intervention.

3.6.2 The learners

In this research study, the site was chosen by convenience sampling (Creswell *et al.*, 2003; Rahi, 2017). My personal connections with the research site made communication and obtaining the required approval letters easier and faster. During the class selection process, four classes were contacted and surveyed to obtain their demographic and background data and the education history of the learners (see Appendix A). The contact letter included an introductory section and survey page that clarified its purpose, provided a general idea about the intended research and defined related keywords. The learners' responses provided the grounds for determining participation suitability in the current research study.

After skimming through the returned surveys, I selected two classes that were suitable to take part in the current study for three reasons. 1) The students of the two classes were similar to one another in terms of their background knowledge and predicted levels of proficiency; 2) the numbers in the two classes were similar; and 3) the schedules allowed the researcher to attend all the classes for both groups during the intervention.

After choosing the classes, purposive sampling was employed to identify the participating group in each class (see 3.2) (Bernard and Bernard, 2013; Creswell and Clark, 2007; Creswell *et al.*, 2003; Patton 2005). This sampling method selects participants using predetermined criteria (Palinkas *et al.*, 2015). In this research study, the criteria were beginning learners who had not lived abroad during their childhood and who had finished their secondary education in public schools in Saudi Arabia.

After reading the returned surveys and narrowing down the number of learners who best met the criteria, the advanced users of English and those who might have had acquired English differently during their critical period of language acquisition were excluded (Abutalebi and Clahsen, 2018; Meisel *et al.*, 2013). The number of potential participant nominees in each class was reduced to 22 in the IC class and 24 in the IH class.

The nominees were approached, and the research purposes were reintroduced. The learners were asked to volunteer if they were willing to commit to the next stage of the research. The students were made aware that only five learners in each class could take part in this learning opportunity, and they were asked to email the researcher as soon as possible if they were interested or if they had any further questions.

Accordingly, the first five learners who emailed to express an interest in taking part received a welcome letter and a consent form for the further stages of the experimental study via email (see Appendix B). They were asked to sign and return the forms to proceed with the current research study. The selected learners formed the ICG and IHG and took part in the TA component of the study intervention (see 3.8.2 and 3.9.2).

The participants were then asked to come in for a brief general interview based on their answers in the questions section of the survey. General interview instruments are often used to gather background information about research participants. Researchers who apply this method have specific goals in mind, such as looking for in-depth information about underlying ideas or attitudes that are impossible to gather in classroom observations or saving time by conducting interviews based on surveys (Cumming *et al.*, 2002; Dörnyei, 2007; Khongput, 2014). In this research, both goals were achieved through general interviews. More specifically, the interviews aimed to find out about three areas: what the learners' current preferences in WCF were; what they considered useful and engaging WCF; and the traditional culture of WCF at the college.

The responses reflected the learners' current situation of engagement with WCF, and thus, the answers formed a point of comparison with the findings and the later observations in the research. The questions were kept general, and any questions that could have revealed the nature of the intervention were avoided. Furthermore, the information required to recruit the participants was collected quickly and easily due to the limited time for data collection and also because the other instruments, especially TA, were expected to require more time and effort from the participants.

Each class and group was labelled according to the mode of WCF used with them. Each group member was assigned an identification (ID) that reflected which class she was in and her number in that group. This process made it easier to recognise and organise the data for each learner. For example, 'Learner 1.3' represents the third learner in the ICG group. This method also assured the learners' confidentiality, as their names were kept separate from the data. In each class, another group was created during the analysis stage to confirm the effect of TA. Hence, five learners were chosen randomly from the IC and IH class registers to form the ICG* and the IHG* (* denotes comparison groups that did not participate in TA sessions). Their results were compared to the results obtained from the ICG and IHG. Table 3.4 includes the participants' classification and the description of the treatment they received.

Table 3.4 The participants' classification and the treatment they received

	No. of participants	Description of the treatment
IC	42	Indirect computer-mediated WCF
IH	44	Indirect handwritten CF
ICG*	5	These learners were chosen randomly from the IC class register. Their results were compared to the ICG results to explore the effect of TA on L2 performance.
IHG*	5	These learners were chosen randomly from the IH class register. Their results were compared to the IHG results to show the effect of TA.
ICG	5	Indirect computer-mediated WCF + TA
IHG	5	Indirect handwritten CF + TA

* denotes comparison groups that did not participate in TA sessions

As shown in Table 3.4, class IC received indirect computer-mediated WCF, while class IH received indirect handwritten CF. The members in both classes were trained to think-aloud, but only the ICG and IHG experimental groups were required and monitored during the TA activity.

The embedded groups (i.e. ICG and IHG) received and engaged with the same type of WCF as the other students in their classes. Additionally, they participated in the TA intervention (see 3.8.2 and 3.9.2 for details about TA). After receiving the WCF, the groups were asked to join TA sessions to think-aloud and rewrite and also to submit a revised copy of their writing via the mode that applied to them. ICG members emailed the revision after each TA session, whilst IHC members submitted a paper copy of their revised writings.

In summary, at the end of the recruitment stage, the experimental groups were identified, and the concept of the research was made clear to them. They were informed about the research plan, and they were made aware of the intervention being a learning opportunity that required commitment and honesty in reporting and in carrying out their part of the research to ensure that the results of the current research study would be meaningful and useful. This approach paved the way for the following stages of the current research study to run smoothly. In the following section, the research methods are explained.

3.6.3 The teaching approach used in the current research study

Researchers developed the process approach as a reaction to the disadvantages of the product approach (Gee, 1997). Gee (1997) adds that the product approach seems to neglect the writing processes and undervalues the learner's knowledge. In contrast, the process approach is criticised for having poor teacher input and also for generalising the

writing processes to all types of writing, as well as for neglecting the importance of linguistic knowledge for writing a good text (Badger and White, 2000; White and Arndt, 1991). Cumming (2010) argued that:

No single theory might ever explain such complex phenomena as second language writing, which necessarily involves the full range of psychological, cultural, linguistic, political, and educational variables in which humans engage (Cumming, 2010, p. 19).

This complexity applies not only to the theories but also to the teaching approaches that follow them. As a result, the current research study combines the merits of both approaches to minimise the limitations and invest in the advantages for research purposes.

In the current research study, the learners are taught to brainstorm and create a mind-map that outlines their paragraph before writing the first draft, which is aligned with the process approach. While correcting their essays after their first drafts were marked, the learners thought-aloud as they worked. Indirect error corrections were used to direct their attention to their language skills and help them construct their knowledge by raising their awareness of their performance. Focusing on correcting the written essays aligned with the product approach, which emphasises the output.

The learners attended a writing lesson where they were taught to pay attention to organization, grammar and language style. They were then asked to write a paragraph as an assignment that is due in 24 hours. At the following session, the teacher started the meeting with common error corrections, and the learners were given time to discuss them without having the teachers' customised WCF. The learners were then given their paragraphs with WCF to work with during a TA session that followed every week during the intervention. This approach is not purely process-oriented, nor is it product-oriented; it merges the two approaches and creates a middle-range approach that focuses on writing and learning at the same time. Using a single approach would not have made observing the three constructs of engagement with WCF possible.

3.7 Research methods

3.7.1 Tests

Tests were one of the quantitative methods used in this mixed-methods research. All the learners in the IC and IH classes were tested three times in this study using a pre-test in week two, a post-test in week nine and a delayed post-test in week 13 to follow up on any changes in their L2 writing performance, or the lack thereof (see 3.3).

The results of the pre-test helped to analyse the learners' needs and allowed the researcher to choose which grammatical features to target in the WCF. Hattie and Timperley (2007) state that providing learners with WCF might be of 'little use when there is no initial learning or surface information' (p. 104). There is also empirical support for this argument in the literature. For example, the participants in Ammar and Spada (2006) who had prior knowledge of the targeted forms responded better to WCF treatments. In addition, selecting the forms to target in the intervention eliminates any differences in the learners' processing of WCF and also limits WCF to grammatical features that are already known to the learners, which they still struggle with when they write academic essays. This approach justified the choice of the targeted features in this research, which were also used by other researchers (e.g. Bitchener, 2008; Boggs, 2019). The features were chosen following the pre-test analysis, which revealed that the learners had not mastered the chosen features yet. The pre-test confirmed that these features present difficulties to the learners. Table 3.5 shows the three features that were analysed.

Table 3.5 The test data and the research questions they answer

Features	Brief description of the content	The research question it answers
Writing Fluency	The L2 writing performance is partially measured by the number of the words the learner is able to write during the test.	RQ 2 and 4
Grammatical Accuracy	The ability to respond to the test items on a specific grammatical feature compared to the number of opportunities on the test	
Grammatical Competence	The ability to use specific grammatical features correctly in writing compared to the number of opportunities on the test	

In Table 3.5, the first column shows the features that were used to monitor the learners' L2 writing performance, which were their writing fluency, grammatical accuracy and grammatical competence. The second column briefly describes the expected

performance. The third column shows the concerned research questions, which were Questions 2 and 4.

Tests, in general, are used to prove learners' capabilities and to track the progress of what is taught in class (Barrette, 2004). They do not directly indicate the quality of the domains of engagement with WCF (Sato and Ballinger, 2016; Sato and Lyster, 2012). However, in the current research study, tests were employed to explore the effects of using different modes to provide and engage the learners with WCF to influence their L2 writing performance.

The tests in the current research study were similar in terms of their nature and length. They were designed by the English teaching department to test similar grammatical features. The test items were not presented in a specific order or a hierarchy of difficulty, and they were selected to assess the course objectives. They comprised both short-answer questions and multiple-choice questions (MCQs) (McCoubrie, 2004). On the tests, the learners were required to write short paragraphs on specific topics. The topics differed in every test. The learners were given 20 minutes to answer the MCQs and 40 minutes to write the short-answer paragraphs. The Appendices contain the items used in this research study. Test items that were not related to this research were omitted (appendices D1, D2 and D3).

The pre-test (Appendix D1) was implemented at the beginning of the research to establish the learners' English proficiency. Documentation of the learners' baseline make tracking changes during and at the end of the research study more accessible and reliable (Bitchener, 2008; Bitchener and Knoch 2009a). This approach also identified the language features that could be used for following-up learners' performance changes.

The pre-test contained questions that cover the intended learning outcomes as per the course syllabus (see Appendix O for the course syllabus). The pre-test questions asked the learners to provide the correct answers for certain items as follows: to use correct capitalisation; to choose the correct pronouns; to write the missing articles; to correct the verb tense; to fill in the gaps with the correct vocabulary; and to put the items of a sentence in the correct order.

The pre-test helped to select the grammatical features that were used to monitor the performance changes in the post-test and the delayed post-test. These features were chosen for two reasons: 1) they were mentioned in the course specifications, and 2) other researchers have used them in their previous academic work, which enhanced the comparison (e.g. Bitchener, 2008; Boggs, 2019).

To conduct the pre-test, the selected classes were seated in a large-sized hall at the college. The seats were arranged in a way that allows space between them. Each learner was given a paper that contained the questions and also an answer sheet. They were allowed an hour to take the test. The topic was, 'Write a paragraph on a memory of your childhood.' The learners were given 40 minutes to write the composition. They were monitored and were not allowed to use dictionaries or any form of external help. At the end of the allotted time, the students were asked to stop writing and to answer the remaining MQs in 20 minutes. The learners were asked to flip their papers over on their desks at the end of the 20 minutes and leave the room. The same process was followed in Week 9 for the post-test and the delayed post-test in Week 13. The topics however, differed (see Appendices D2 and D3).

The tests were analysed for writing fluency, grammatical accuracy and grammatical competence (see 3.8.1). The test findings revealed the influence of using different WCF delivery modes on L2 writing performance, as the classes' results were compared at three distinct points in time. They also revealed the effect of time and the effect of the interaction between the time and mode on the L2 writing performance. These findings are detailed in section 4.2.

To calculate the writing fluency, the word count for the texts were assessed. Following Bitchener *et al.* (2005) and Bitchener and Knoch (2009b). The paragraphs' topics were chosen because an autobiography could encourage the learners to write freely. In addition, previous researchers have used autobiography as the main genre in their test designs (Chandler, 2003).

To determine the learners' grammatical accuracy, the students' correct responses to specific language items were calculated. The same method was applied to grammatical competence: that is, the learners' correct usages of the specific language items were calculated. Bitchener's (2008) and Bitchener and Knoch's (2009a, 2009b) method calculates the obligatory cases; this approach was also followed in this research study.

The obligatory cases or 'opportunities', as they were named in this research study, of the use of the targeted forms, such as articles, were counted, and the percentage of instances of correct usage of articles was also calculated. The other features were calculated in the same way. To increase credibility, another researcher was asked to count the instances of correct and incorrect use of the specified features in the learners' scripts. The percentage agreement between the two counts was 98%.

The tests were part of the WCF mode, and this intervention did not have a control group. All the learners received indirect WCF via a specific mode. This decision was based on the author's personal belief about the importance of WCF in learners' language development. Other researchers have also carried out experimental studies without control groups, such as Kepner (1991) and Chandler (2003).

Due to the required accreditation procedures, the department prepared the tests and also ran them. For the same reason, no changes to the tests or any additions to the items were allowed. Thus, the tests were used in triangulation with caution as supporting datasets, with the other methods being the primary source of data.

There were some issues with the tests' design. In general, most of the test items targeted lower cognitive abilities, such as memorisation. Hence, the learners were not given proper opportunities to engage cognitively during testing. Tests that rely heavily on memorisation are famous in the current context (Al-Seghayer, 2014). In addition, the course was intended to teach academic writing; however, most of the assessment questions targeted grammar and vocabulary use. The writing component in the tests was also minimal. In addition, some items were poorly designed, and they could have been misleading to the learners. These flaws in the test design strengthened the decision to use tests in this research with care. The TA method is discussed next.

3.7.2 Think-aloud

The purpose of TA was twofold. First, it aimed to examine how the learners engage with the teacher's WCF through TA. It also observed what effects TA as a learning activity had on their L2 writing performance. This method of TA combined the cognitive and metacognitive approaches of thinking-aloud and seemed appropriate in this research study because without knowing what the learners were thinking about their thinking, any description of their cognitive engagement would have been incomplete (Bowles, 2010).

As the TA method was unfamiliar to the learners, training sessions were held to introduce them to this approach. These meetings began by showing the learners how to perform TA and gave them two warm-up activities (Appendices E2 and E3). In these sessions, the learners were offered another detailed account of how to think-aloud, and the correct manner of thinking-aloud was clarified. For example, the learners were told that they should report their thinking as it happened but not as they think it should have happened. In addition, individual one-on-one training tasks were utilised when they were

needed before conducting the actual TA sessions. Later, in the first actual session, the learners were given an instruction sheet to follow that was in Arabic (see a translation in Appendix E1).

The TA sessions were held during Weeks 3, 4, 5, 6 and 7. The focus of TA was the groups, ICG and IHG. Members of these groups were required to think-aloud, whereas the remaining participants in the classes were not. This method is generally a qualitative method. However, in this mixed-methods research study, it generated both qualitative and quantitative data: the TA protocols, which were recorded as the learners were thinking-aloud, along with TA observations, which I recorded during the sessions, and the TA writing assignments, which were rewritten during the TA sessions. These weekly assignments were analysed for writing fluency and performance change following all TA sessions.

The TA strategy used language as a mediating means for learning and knowledge construction, in which the language was both the tool and target. The TA approach also supported and was supported by the groups' collaboration during the classroom CF discussions. In the current study, the learners engaged in group discussions and self-editing activities during class time by using the language to learn the language (Svalberg, 2009; Figure 2.2). Here, learners' engagement might enhance learners' L2 performance, as it could change their awareness of their performance as well as their understanding of the target language's linguistic forms (Baralt *et al.*, 2016). More precisely, this study investigated how a choice of procedures, namely TA and indirect WCF, can influence the learners' cognitive, affective and social engagement with WCF. The learners were asked to report their thinking as it happened, to reveal their cognitive activities while rewriting their marked paragraphs and to elaborate as much as possible. They were also observed during the TA sessions for non-verbal cues of cognitive and affective engagement with the WCF as they worked on their texts after receiving the WCF through the designated WCF mode. The students submitted, received and engaged with their texts through different modes.

Bowles (2010) used TA in her research and recommended video-recording the TA sessions for further analysis. Researchers must pay attention to non-verbal signals along with verbal ones during TA; both are equally important in understanding the phenomena. In the current study, however, video-recordings were not possible for personal and cultural reasons. Instead, the TA sessions were audio-recorded, and data collection was supported by keeping session notes on an observation card.

The observation card indicates the learner's ID, the date and the session number. These cards were used to keep records of the non-verbal indicators of engagement at the time they occurred to support and ease the later analysis (see 3.8.2). The use of an observation card helped to capture and remember what had happened during the sessions as accurately as possible. This method is crucial to avoid relying on the audio recordings or one's memory alone. The observation card template and an example of a completed observation sheet with codes are attached (see Appendices G1 and K).

The learners were allowed the use of L1 and L2 during the TA sessions to articulate their thoughts as freely as possible (Bowles, 2010). They translanguaged while thinking-aloud, which was expected because of their level of proficiency. In fact, the use of only English during the TA sessions might have discouraged the learners and could have led some to withdraw from the current research study, which was not desired. This method aligns with what Carless (2008) and Fucuta *et al.* (2019) suggested about balancing the use of the target language and the mother tongue during learning activities. In addition, the current research study targeted the learners' engagement, not their use of the L1 or L2, so the use of L2 in the sessions was not a variable that was monitored.

During the TA sessions, to ensure the method was applied as intended, the learners were reminded to TA metacognitively. They were asked to verbalise any specific reasons they could think of that contributed to their recurring errors. According to Bowles (2010), researchers should ask participants to justify their thoughts to serve the research questions and to provide as much detail as required. The learners were also reminded to describe and report their thinking and their feelings. This information was important for the research aims; affective engagement and cognitive engagement are strongly linked; forcing the learners to separate the two may result in fragmented data. The students were still reminded to refocus their thinking on the activity, but any affective responses were allowed and recorded on the TA observation sheet. The indications were analysed and integrated in the discussion (see Appendices I and L).

The use of TA required designing a process, which involved selecting a suitable task, defining the researcher's role and using a source of triangulation, and also choosing an appropriate method of interpreting the verbal and non-verbal TA cues (Charters, 2003). In order to implement the TA correctly and to satisfy the current research queries, the TA sessions were planned thoroughly. For instance, the amount and type of training required to perform TA was limited to the appropriate amount for the research study. In addition, the type and amount of instructions given to the learners were chosen carefully;

for example, the types and language of verbalisation used in the warm-up tasks were not similar to the activities the learners were asked to perform in the intervention (see Appendices E2 and E3). The learners were introduced to the technique but not to the answers they were required to reach on their own during the learning activity. The participants in both classes were introduced and trained to think-aloud as part of the intervention. However, only the ICG and IHG were monitored during the TA.

The TA writing assignment was analysed quantitatively for writing fluency. In order to evaluate the influence of the TA intervention on the learners' L2 writing performance, the groups' writing fluency in the TA writing assignments were compared to the performance of other participants in the classes. Two groups were created: ICG* and IHG*. The learners in these groups were chosen randomly from the class lists by selecting the first five names on each class register. The (*) in the control group name denotes 'comparison groups that did not participate in TA sessions'. It identifies the groups who were trained to TA but who did not participate in the monitored TA sessions (see 3.8.2.1). Both ICG and IHG, and ICG* and IHG* learners received the same types of WCF on their assignments.

The teacher corrected the assignments, and then I reassessed her corrections for consistency before using the results to answer the research questions. Her corrections followed the expected procedure as agreed (see 3.7.1). For instance, she underlined the targeted errors and provided the metalinguistic markers for the errors (see Appendix N for the symbols used for correction codes). This feedback was added manually for the IHG and IHG* learners and using the Track Changes feature for ICG and ICG* students. The learners read, engaged with and responded to the WCF through the same mode that had been used to provide the WCF (i.e. either manually or using a computer).

Another dataset is the TA protocols, which consisted of the TA audio-recordings and researcher observations. During the TA sessions, the learners were asked to read the WCF aloud and pause at each error as it appeared in the text and also to talk out loud while self-correcting and self-editing their writing. They were asked to describe how to correct the errors and why these errors occurred and recurred. Moreover, the learners were asked to justify their way of correcting the errors in their own words as if no one else were listening, i.e. using private speech (Frawley and Lantolf, 1985) (see 2.11). Their monologue was recorded and transcribed for analysis (see Appendix H for the transcription codes). Concurrently, the TA observations, which the researcher noted while observing the learners performing the TA technique, were also noted and added

accordingly. As the learners engaged with WCF, their non-verbal indications of engagement were recorded because non-verbal cues form a valuable source of data regarding the TA technique in general and also in this research study (Bowles, 2010). Finally, the learners' TA data was organised in logs that combined the TA audio-recordings and TA observations (see Appendices I and J). At this stage, the TA protocols were ready for analysis (see 3.8.2).

Reactivity is one of the challenges associated with TA. It relates to how TA alters the learners' thinking or responses to stimuli (Bowles, 2010; Lumley, 2002). Although this could be a limitation for many studies, in the current study, reactivity was expected. In other words, TA is applied as an intervention to explore how TA enables or deters learners' engagement with WCF. The learners are urged to master the technique and to use the intervention as a learning opportunity. Nevertheless, because many researchers question TA's validity in eliciting data, other qualitative methods were also employed in this experimental study, including interviews and classroom observations. In addition, the intervention included a post- and a delayed post-test (see 3.4) as a quantitative measure of the learners' L2 performance following the intervention and also as a secondary source of data validation and trustworthiness in data triangulation during the data analysis (Renz *et al.*, 2018; Wickens and Keppel, 2004). The next sub-section presents the classroom observations.

3.7.3 Classroom observations

Classroom observation was another qualitative method used in this mixed-methods research study. The use of observations tends to enrich the findings of a study as these observations provide first-hand data about the learners' social and affective engagement (Svalberg, 2009). The information collected during classroom observations, in particular, enables researchers to keep a record of the interactions that take place (Foster, 1996). Classroom observation can be carried out either by the physical presence of an observer in the location or remotely via video facilities. In this research study, it was more suitable to be physically present in the classroom because of the restrictions on broadcasting video clips of people due to cultural values.

The main aims of conducting the classroom observation in this research study were to see how the learners engaged with WCF immediately after they had received it from their teacher and before engaging in TA sessions, which were called CF episodes. The few minutes after receiving the WCF showed the learner's first impressions of the

WCF and their affective responses. The indicators of affective engagement in these few minutes were used to understand and explain how the remaining learning activities were shaped and received. This aim was directly related to answering the research queries about the learners' engagement with WCF (see 3.2 and Appendices I and J).

Due to the nature of the phenomena in this research study and because of the choice of the data analysis approach (see Table 3.2, p.70), classroom observations were deemed essential to enhance the quality of memoing and the researcher's reflections (Bryant and Charmaz, 2019; Charmaz, 2006, 2014). Being immersed in the learning environment enabled a detailed account of learner-learner and learner-teacher engagement to be collected for further analysis and reflection. This, in return, enhanced the interpretation of the data (Birks *et al.*, 2008).

The classroom observations took place in Weeks 3–7 of the semester. They ran in parallel with the intervention components. The data were obtained by observing the learners in their specified ICG and IHG groups in the two IC and IH classes while classes were in session. The teacher was asked to start each class with a CF episode, which is a group discussion of common errors. The errors that were made by the majority of the class were presented with a list of examples that were in the weekly assignments, and the learners were asked to discuss these sentences in their groups. They were given 10–20 minutes for this discussion before sharing their answers with the entire class. Close to the end of these discussions, the groups would receive their corrected assignments either manually or electronically. My observations of the learners took place during these CF episodes, and the indicators of learner engagement within their groups and also with the WCF were recorded using a classroom observation card (see Appendices G1, G2 and G3). The items on the card were based on the learners' engagement construct (Svalberg, 2009) and Ellis' (2010) CF framework. Any further notes which were of a similar nature or seemed to have influenced on the learners' engagement were added when they occurred during the observations.

Some researchers criticise the validity of observations. Foster (1996), for example, claims that personal or practical issues could threaten them because the participants might behave differently in the presence of an observer. Dörnyei (2007) also suggested that learners' behaviours change when they realise they are being observed. However, previous studies have shown that more observations can produce data that are more reliable and minimise the effect of observing the learners (Cohen *et al.*, 2002). In order to avoid any anticipated limitations of this kind and to overcome what researchers

have identified as problematic for classroom observations, 10 lessons (5 in each class) were observed during a two-hour lesson each time.

The seating plan ensured close access to the group being observed without requiring the need to actually sit with them. The frequency of my attending the classes familiarised the learners with the situation. Soon, the learners stopped paying attention to my presence. In addition, to organise the observations systematically, the learners were asked to remain in their groups and to sit together during every lesson. Figure 3.4 shows the seating plan for the group within the class:

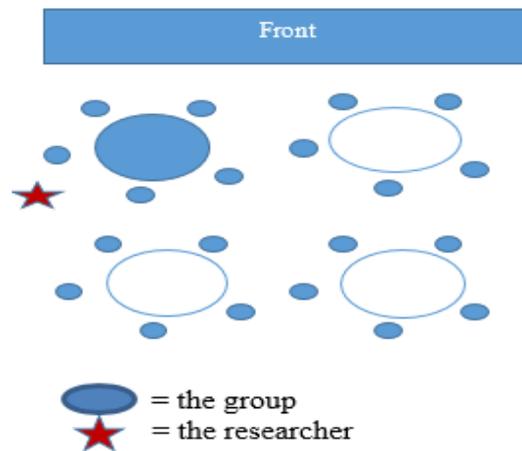


Figure 3.4 The seating plan for the class and the researcher.

As shown in Figure 3.5, the seating plan allowed me to be near the groups but not with them. This enabled me to observe the participants and watch their interactions without interrupting their learning and engagement with one another. The aim of this approach was to minimise the observer's effect (Merrett, 2006; Miltenberger, 2008; Jennings, *et al.*, 2011; Leow, 2015). The learners were later asked about the effect of the researcher's presence on their behaviour; most of them stated that it had not affected them. In qualitative research, however, the researchers' interaction with the researched is inevitable (Braun and Clarke, 2013; Charmaz, 2006, 2014; Charmaz and Belgrave, 2019).

The classroom observations were audio-recorded during the first lesson in order to corroborate the written records of the events. However, the learners were uncomfortable with the presence of a recording device, and it likely hindered their regular participation because they felt uncomfortable about being recorded. Thus, to ensure the learners remained comfortable during the sessions and stayed committed to the study (and also to avoid any withdrawals in participation), the recording device was removed,

and additional efforts were put into keeping a detailed written record of the observations. For example, the notes were revised after each session to ensure that the data were as accurate as possible.

An observation card was assigned to each learner at each session, and it was used to keep records of the learners' interactions and actions; there were 10 cards between the two groups weekly. The card items were designed by drawing on the characteristics of an engaged, agentic learner, as described in the literature (Svalberg, 2009). Indications of learner engagement, such as focusing on language, initiating discussions during the tasks, scaffolding and holding back to give another learner the opportunity, were noted. The markers also included facial expressions, hand movements and body language. For example, a learner who leaned forward to engage with her partners in a group discussion was marked as engaging socially with others.

The aims of examining non-verbal cues differ in the literature. Some researchers have noted non-verbal cues to determine if the reported actions differed from the actual practices or matched them because 'non-verbal communication has a significant bearing on the transmission of a message' (Martin *et al.*, p. 307). In this research study, non-verbal cues were deemed necessary to understand certain aspects of cognitive, social and affective engagement (see 3.2).

Learner-learner interactions were noted during my observations. This process was carried out in turns between learners to make sure every learner was given enough attention. For example, at the first observation (Week 3), the group interaction was monitored in general with a particular focus on Learner 1.1. Hence, all of her interactions with others and her engagement with her colleagues and the teacher during corrective feedback activities were noted. During the following class, the group as a whole was observed with a focus on Learner 1.2, and so on.

The details of the observations were recorded during class time. Then, after each class, all the extra information was added to enrich the memos and to reflect or add comments to the card as needed. These journals were consulted many times while writing the findings. In fact, keeping a dated reflexive journal strengthened the researcher's reflective position, which fits the grounded approach adopted in the data analysis (Bryant and Charmaz, 2019; Urquhart, 2019).

Prior to main study, the classroom observation card was tested in the pilot study, in which two, two-hour sessions were attended. In both classes, the main target was identifying any indications of cognitive, social and affective engagement (see Appendix

G for the current researcher's observation sheet). The following section presents the interview.

3.7.4 Interviews

The interviews took place in Week 8 of the semester, right after completing the TA sessions and a few days before the learners were post-tested. The aim of the interview was to obtain answers to crucial enquiries about the learners' experiences. In addition, the interviews explored the learners' perceptions about their awareness of the changes in their L2 writing performance, and how these changes influenced their engagement with WCF and vice versa. A semi-structured interview method was chosen because it allowed for more open discussions with the interviewees (McIntosh and Morse, 2015).

The interview schedule consisted of 10 questions for each group (see Appendix C). The questions concerned the learners' perceptions and attitudes towards the TA and WCF modes intervention. The interview questions were a guideline, and the learners were invited to express their ideas freely and openly to inform the researcher about the writing class, TA sessions, their awareness and WCF. The interviews took place at the college during customary working hours on weekdays. Each learner was interviewed at her preferred time and day of the week. The interviews were conducted in Arabic, and they lasted for 40–55 minutes on average. It was impossible to video-record the interviews, but they were audio-recorded instead. The audio-recordings were transcribed, analysed and reported (see 3.8.4).

Prior to the main interviews, four learners tested the interview schedule in the pilot study (see 3.5). The interviews were conducted in Arabic, and prompts were used when needed. The interviews were audiotaped to test the recording devices as well. These pilot-study learners were from the same college but not from the targeted department, and they were not enrolled in the classes when the actual study took place. Following the pilot study, a few questions were re-worded for the main study in order to encourage the learners to speak more. For example, Questions 6 and 7 did not encourage the interviewees to talk about or elaborate on their answers in the pilot study (see 3.8.4) (see Appendix C for the interview schedule), but the revisions produced longer and more detailed responses. The following section reports the data analysis procedures.

3.8 Data analysis

Planning the data analysis stage is essential, especially when applying many methods in the data collection. Researchers are aware that data analysis is an evolving process (Huberman and Miles, 1994; Srivastava and Hopwood, 2009). It requires reviewing the data many times before attempting to analyse it. Data analysis also involves thinking about the research components, especially the thinking approach (e.g. the epistemology) and the framework (e.g. the methodology) within which the analysis is being conducted. In this research, a grounded approach to data analysis was followed. Hence, the data led the analysis. In fact, many perspectives were considered before establishing the current analysis strategy. Moreover, the research questions and data transcripts were reviewed more than once before proceeding. The epistemological and ontological stances were also tested at this stage to determine the school of thoughts and the conceptual frameworks of this research study (see 3.3).

The current research study's nature was empirical. It was explanatory and exploratory at the same time. The data collection invested in many methods to crystallise the answers and to provide as accurate explanations of the research queries as possible. The current research study was partly developed through an abductive approach (Nyrup, 2015) in which an idea was followed through research to provide the best and most appropriate presentation of the data. In addition, the best possible interpretation of the events was presented while remaining open to the possibility that the interpretation was not the ultimate answer because it follows an intuition. However, according to Nyrup, this school of thought needs to be supported by other approaches when used in scientific inquiry (2015). Therefore, an inductive approach (e.g. a grounded approach) was also applied to fill the gaps in the abductive approach and to explain the analysis, findings and amalgamation.

In addition, deductive data was used in the current research study with the inclusion of quantitative data in research inferences to ensure validity and strengthen the explanations. These measures were necessary because conducting mixed-methods research expands the scope of the research, which requires improving the analytic power of the research (Sandelowski, 2000). The current research design (see 3.3 and 3.4) allowed the data analysis to evolve as the inquiries proceeded. There are many approaches to analyse mixed-methods data. In this research study, many were consulted before arriving at the current analysis.

Onwuegbuzie and Teddlie (2003) stated that analysing mixed-methods data is the most challenging stage of the research process. For instance, in the current research study, each dataset was prepared and analysed separately. This decision allows the data to inform the analysis, and vice versa. The data collection lasted for 13 weeks, and the analysis started as soon as the data were collected. This approach saved valuable time.

The general plan for preparing the data for the TA sessions and the classroom observation was to transcribe it after each session. The data were recorded in Arabic, so the transcriptions and analysis were done in Arabic as well to avoid losing some meaning in the interpretation and translation (Van Nes *et al.*, 2010). The transcripts were read many times to immerse the researcher in the data. At this stage, the aim was to think, see and feel what the research participants thought, saw and felt in their responses and actions. Understanding the participants' perspectives improves the quality of a qualitative data analysis (Creswell, 2007; Miles and Huberman, 1994).

The data were then open coded. A 'code' is a unit of data that could be a word, expression or sentence that holds meaning when answering a research query. The codes were generated from the researched responses or from the researcher's interpretations grounded in the data. Some examples of the open codes that I created were 'trust, ask for help, offer help, scaffold'. Other examples of the open codes that the learners mentioned were 'Anxious, saddened, angry, relieved, eager, careless, pointless, helpful'. The two lists contained emotions, actions and reactions. They were labelled 'enablers and hindrances', which moved the open coding up a level and created 'focused codes'. These two examples of 'focused codes' resemble affective and cognitive engagement that were enacted in cognitive change and challenges, which showed the levels of engagement with WCF and L2 performance. Affective and cognitive engagement were the categories linked with focused codes and the core category. Figure 3.6 shows the overlap between the codes. Some codes were linked to more than one category because they held more than one interpretation at the same time. For example, the code 'fear of judgment' was linked to affective engagement and social engagement as well because it shows signs of both based on the observations and memos. This classification shows the overlapping nature of the engagement constructs (Svalberg and Askham, 2014).

This analysis process was applied to the TA protocol and the classroom observation datasets, and it followed a grounded approach in which the codes were generated from the data (Charmaz, 2006; Bryant and Charmaz, 2019; Hadley, 2017). It was also helpful and useful in analysing the memos and the researchers' reflections,

which were added to the appropriate dataset accordingly. The TA protocol and classroom observations were analysed prior to conducting the interviews.

The interviews followed an analysis process in which they were labelled according to *a priori* codes already established in the TA protocol and classroom observation analysis (Richards, 2003). Adherence to this procedure improved the analysis and increased its validity and reliability (Richards, 2003). Each set required an appropriate analysis plan before triangulating the findings.

Next, an analysis model was created to incorporate the main categories into one proposed theme map (Figure 3.6). This map followed Hadley's Successive Coding Procedure for Constructing a Grounded Theory (2017, p. 112) (see Figure 3.5, p.94).

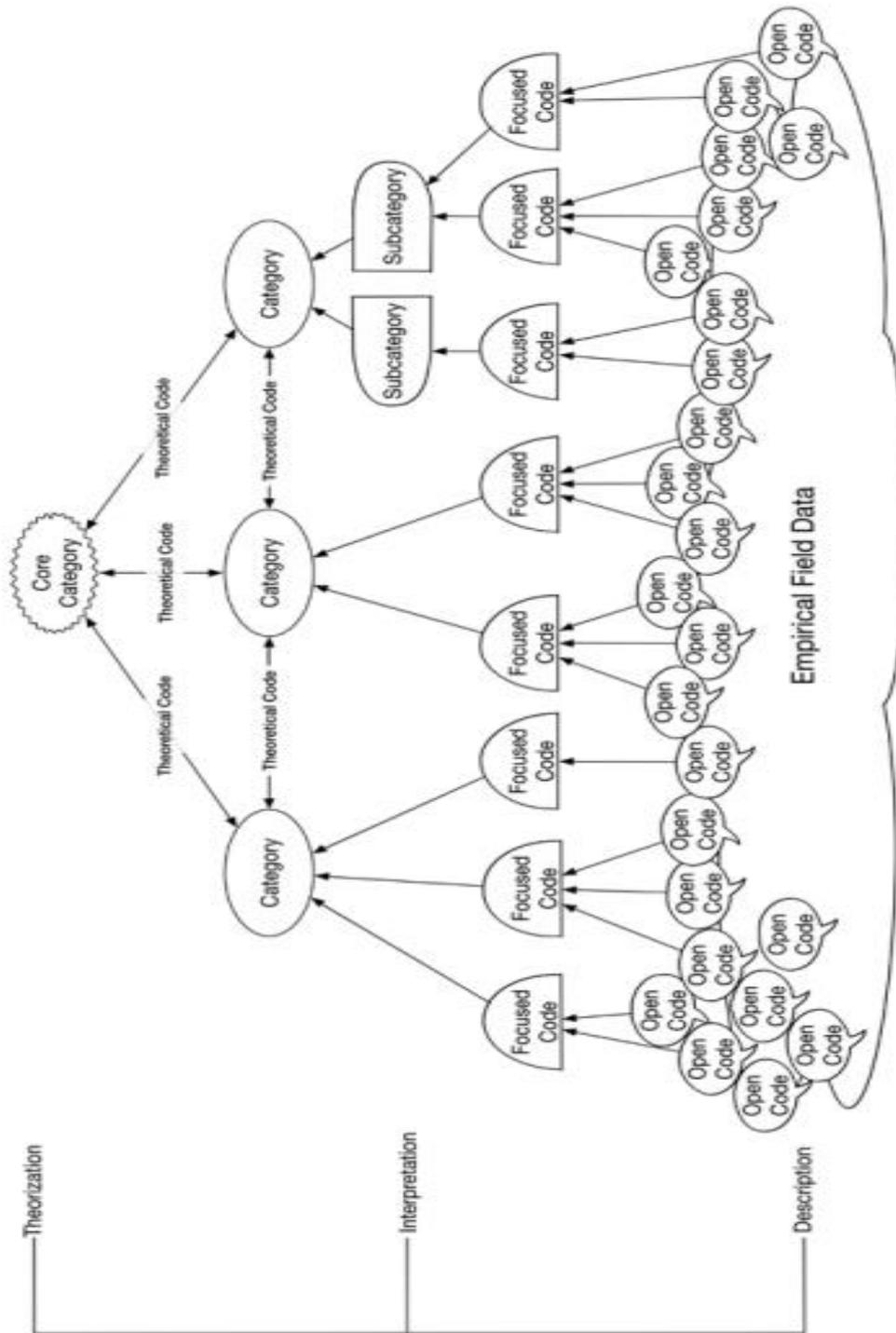


Figure 3.5 Hadley's Successive Coding Procedure (2017, p. 112)

Following Hadley's map, the current study's map (Figure 3.6) below shows the connections between the components of this research study and its core categories (e.g. themes). Therefore, the research themes and the theoretical codes were identified. The data were connected and interwoven to create a research story (see Figure 3.6, p.95).

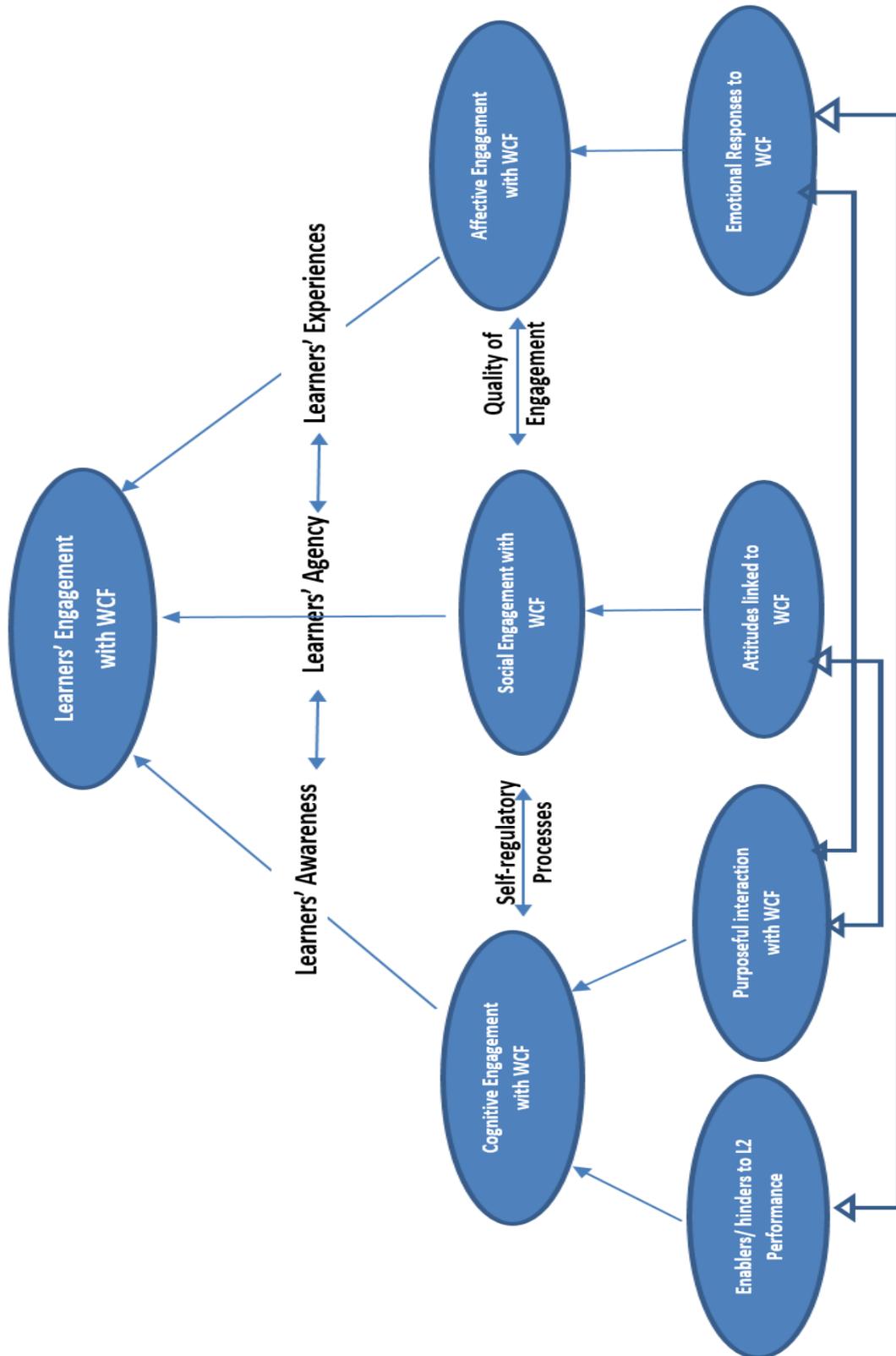


Figure 3.6 The current research themes map

As seen in Figure 3.6 above, the learners' engagement with WCF was a product of their awareness of their L2 performance, their self- and collective agency and their learning

experiences. These theoretical codes interacted and shaped the learners' engagement in the current research study. This concept is discussed further in Chapter 5.

In the following sections, a thorough account of the data analysis for each method is presented. This description begins by explaining how the tests were analysed. Then, the approaches used to analyse the TA protocol and writing assignments related to it are explained, followed by the interviews and the classroom observations. Finally, a detailed account of how the data were prepared for the triangulation is presented (see 3.9).

3.8.1 Tests

In the current research investigation, tests were used to explain and support the other datasets in answering the research queries about L2 writing performance with caution. Many different approaches exist to analyse the test data in second-language teaching. Most studies on L2 writing use the t-unit as the primary unit for analysis (Armstrong, 2010). A t-unit is defined as the main clause and any subordinate clauses attached to it (Hunt, 1965, p. 20). To analyse the t-unit, the researcher counts the units (normally sentences or clauses), which are error-free per the total number of units in the text (Lennon, 1990). In this research study, using this unit for analysis was not suitable because of the learners' proficiency level (Mackey and Gass, 2015).

Instead, the learners' L2 writing performance was assessed for writing fluency, grammatical accuracy and grammatical competence. The units of analysis within the tests were chosen after establishing the proficiency levels of the participants (i.e. after the pre-test). The test data were inserted and analysed using Statistical Package for the Social Sciences (SPSS). A mixed-measures analysis of variance (ANOVA) was used as it was the best fit for the purpose of the analysis (i.e. a descriptive analysis) and the number of included participants (IC = 42 and IH = 44). A repeated-measures ANOVA analysed the numbers for three variables: the mode; the interaction between the mode and time, and the time. The tests were part of the mode intervention; they were analysed both 'within' and 'between' the classes as all of the participants took part in this intervention (see 3.2 for the research design).

Fluency is defined in the literature as the rate and length of speech or text produced in a specific amount of time (Lennon, 1990; Wolfe-Quintero Inagaki and Kim, 1998). Accuracy, in contrast, is producing text or speech that is free from error (Foster and Skehan, 1996). In the current research study, grammatical accuracy referred to the

correct response to the grammatical questions, which Van Beuningen *et al.* followed in their 2012 research.

Chomsky introduced the term ‘grammatical competence’ in the 1960s, which refers to the implicit knowledge of language stored in the mind and the learners’ ability to produce this knowledge freely. Cook defines grammatical competence as the knowledge of language stored in a person’s mind (2008). These definitions were adopted in this research, with writing as the targeted L2 skill.

Analysing the test paragraphs followed the Topic Writing Tasks (TWT) system (Masrom *et al.*, 2015). The learners were limited to 40 minutes to finish their writing. Then, the number of words produced was used to determine their writing fluency, following ‘the length of the output’ as suggested by Lennon (1990). To determine significance, these numbers were analysed using a post-hoc t-test (see 4.2).

The learners were allowed 20 minutes to answer the remaining test questions. Grammatical accuracy was calculated as the percentage of the correct responses to the total number of opportunities offered to the learners on each test. More specifically, on each test, the learner’s correct answers were counted, divided by the number of the opportunities on the test and then multiplied by 100. The number of total opportunities were similar on the three tests (Appendix D). To determine significance, the grammatical accuracy on the tests was analysed using a repeated-measures ANOVA (see 4.2). The same approach was employed to calculate the grammatical competence, which was measured by the learners’ ability to use the features in answering the relevant test items (see Appendix M for definitions).

The L2 performance change was then categorised as high, moderate or low improvement according to a matrix that was developed to quantify the learners’ performance (see Appendix L). This level of test analysis seemed sufficient to answer the research queries about the L2 learners’ performance change (see 3.2). In fact, choosing an appropriate unit of analysis and also a depth of analysis depends on the research aims and the researcher’s preferences (Gaies, 1980).

3.8.2 Think-aloud

The TA intervention was applied to the ICG and IHG groups. In this study, the TA sessions produced both quantitative and qualitative data. The weekly writing assignments were the quantitative data, whereas the TA protocols made up the qualitative part; each dataset was analysed accordingly. Hence, the qualitative data were examined

using a grounded approach, while the quantitative data were analysed through a t-test ANOVA. In the following section, the data analysis procedure for each dataset is presented.

3.8.2.1 TA writing assignments

As mentioned in 3.8.2, the learners submitted a written assignment every week during the TA intervention. Each class was given a topic to write about that was related to the content being studied that week (see Appendix O for the syllabus). They were not given a word limit in this exercise, but they were asked to finish their writing in one hour. The groups submitted their essays either via email as a Microsoft Word document or on paper as instructed. The students then corrected and rewrote them in the same manner (see 3.7.2 for the TA assignment procedure). The TA sessions were limited to 60 minutes with each learner weekly. The learners had to submit their revised assignments directly after the TA session each week for analysis.

The TA assignments were analysed to show the percentage of L2 fluency change during the TA intervention. Each week, the differences between word counts were converted into percentages. If a learner failed to submit a second draft, then the change was calculated as zero. The results were interpreted according to the L2 performance change measurements (see Appendix L).

The paragraphs were not analysed for grammatical competence or accuracy to encourage the learners to write freely. Instead, the learners' writing fluency was calculated based on the number of words they wrote in their texts without regard for any spelling mistakes or broken grammatical rules. Each word was counted if it was meaningful in the context of the assignment (Lennon, 1990; Ellis and Barkhuizen, 2005). This decision was based on the learners' proficiency level (see 1.2).

The learners' writing assignments in the TA task were also used to track how the learners' engagement with WCF developed within the two different environments during the experiment. The two groups (IHG and ICG) wrote about the same topics, but they submitted and revised their writings using different modes: computer-mediated or handwritten modes. All the writing assignments for ICG were submitted via email as a Microsoft Word document. The learners then received the corrections through the Track Changes feature and engaged with the teacher's WCF on the computer screens in the

WCF group discussions and during the TA sessions. They resubmitted their writing via email.

The IHG turned in their writing on paper, and then the text was marked and returned to them. They were provided with the teacher's WCF in the same manner for the TA sessions. Both groups rewrote their texts during the TA sessions as they went through the teachers' CF. This design showed how different modes influenced the learners' engagement with WCF and also whether modes shaped the degree of engagement with WCF when used with another stimulus, namely the TA strategy. This design incorporated the influence of modes and TA on L2 writing performance. The queries that were answered here were Research Questions 2 and 4 (see 3.2). More precisely, these results attempted to explain the effects of TA and mode when implemented in second language instruction (see Appendices I and J).

3.8.2.2 TA protocols

The TA protocols were created by transcribing the audio-recordings of the learners' performing the TA activity along with the researcher's observations and memos of the sessions. To answer the third Research Question, the transcriptions were analysed for indications of cognitive and affective engagement that arose in the sessions.

The indications were the codes used for the analysis, which were adopted from Svalberg's construct of learner's engagement (2009), Ellis's CF framework (2010) and Zimmermann's concept of self-regulated learners (1998) (see 2.3.2 and 2.3.3 for details). Therefore, I observed not only the participants' thinking but also how their characteristics as learners as well as their feelings towards the learning activity shaped their learning experiences.

The memos and notes and the times when they occurred were written as a narrative while observing the TA sessions, and they were combined with the protocols afterwards for analysis. After preparing the protocols, open coding of verbal and non-verbal cues of engagement began. The learner's strategies for applying TA as well as their emotions and behaviours experienced while thinking-aloud were commented on. Open codes were added when they were evident.

The text data were coded for the cognitive, social and affective verbal cues as they appeared in the protocols. For example, utterances such as 'there is a missing S here [the third singular S]' and 'I should have written "taught" not "teached" ' were marked

as verbal cues that indicated cognitive engagement with WCF in the form of metacognitive explanations (MC). In some of these interactions, the learners expressed clear non-verbal cues, which needed to be recorded. The learners' facial expressions, body language and hand movements were coded in the most appropriate domain. For example, looking unsure or hesitant to write or to correct an error was linked to learner anxiety, which is an affective engagement. This method of organising the protocols generated 42 documents for analysis. An example of the transcription and coding of TA data is attached (Appendices L and M). Figure 3.7 shows a translation of a coded extract of Learner 1.2's TA session. The explanations of the codes are also attached (Appendix I).

1.2	<p>- I use...it should be 'used' because I am talking about the past...my childhood</p> <p>Granma, I mean my grandmother, I don't know why is it wrong</p> <p>They live... oh they lived, it should be they lived because it happened in the past, I know this rule. Why did I forget?</p> <p>My mother leave, mm I should have said 'leaves'... I guess. (...)</p> <p>...</p>	<p> Alshahrani, Nadia CE- Justifying the error-- the facial expressions shows openness to learn- eagerness to practice</p> <p> Alshahrani, Nadia CE- inability to reflect on the corrections</p> <p> Alshahrani, Nadia Here the learners seemed puzzled, her confusion disturbed her performance in the learning opportunity</p> <p>Alshahrani, Nadia AE- stress- facial expressions of unease</p> <p> Alshahrani, Nadia CE- Correcting a grammatical error</p> <p>Alshahrani, Nadia AE- disappointment-</p>
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Figure 3.7 A translated extract of a TA assignment

In Figure 3.7, the learner shows evidence of cognitive engagement (CE) while reading her passage. This was marked as a verbal cue of engagement at 'it should be', and 'I don't know why it is wrong'. The affective engagement appeared in the student's facial expressions and body language while she read the WCF and corrected her writing. For example, in line 6 above (Figure 3.7), a facial expression of uneasiness was combined with the saying, 'why did I forget this'. The learner showed eagerness to practice and an openness to learn. This display was marked as an affective engagement and a sign of a self-regulation process (Zimmermann, 1998). The TA protocols were transcribed and analysed in the same manner until saturation was reached and no new codes were generated. Then, the focused codes were highlighted.

To maintain accuracy in the data analysis when coding the TA protocols, an independent researcher who specialised in qualitative research methods and language teaching was assigned to revise the coding and perform the analysis. She read 21

protocols and coded them before we compared the two analyses. There was 95% agreement. The discrepancies in the two analyses were discussed. The analysis reached 98% agreement before the coding list was confirmed. The final list of themes for TA is presented in 3.10.1.

3.8.3 Classroom observations

The current observations were non-ethnographic (Polio, 1996). They focused on specific phenomena (e.g. learners' engagement with WCF, learners' awareness of performance change) rather than providing a full account of all the details (Polio, 1996). When analysing the data, a grounded approach was preferred for the observation type. Hence, the data were read for initial inductive coding while bearing in mind the research questions and aims. After that, the data were coded again. At the same time, *a priori* coding was followed in which the domains of engagement (Svalberg, 2009) were used to classify the data (see Appendix K for an example of coding a transcription for engagement cues in the observations). Nonetheless, the emerging codes were highlighted, as they were essential to offer better answers to the research questions. A list of the codes that recurred in the data was also created.

By the end of the observation period in Week 9, the initial coding was ready. After that, the data were re-read, and the codes were re-examined, grouped and sub-categorised. Some segments were coded twice because they represented more than one meaning or idea, while others were deleted or merged with other codes to clean up the data and form themes and their operational definitions. Most of the coding and interpretations of the group interactions were based on the researcher's interpretation, which falls within abductive reasoning and the grounded approach that set the scene for this research (Martin, 2019; Reichertz, 2019).

In order to prepare this dataset for triangulation, the criteria for judging the domains of engagement were clarified, enumerated, well-defined and linked to the appropriate literature (Braun and Clarke, 2013; Charmaz, 2006, 2019). To maintain quality and ensure reliability, an independent researcher was consulted to analyse the data. The two analyses were compared, and a 96% agreement was reached. The areas of disagreement were discussed until 99% agreement in coding and themes was attained. The final list of themes for the classroom observations is presented in 3.10.2.

3.8.4 Interviews

The interviews conducted during this research study were semi-structured (see 3.7.4). The analysis followed a thematic process in which the data were labelled according to *a priori* codes that were established in the TA protocols and classroom observation analysis (Byrne, 2017; Green and Gilhooly, 1996; Richards, 2003). Immediately after establishing familiarity with the interview scripts, the labelling process began. At the same time, the analysis remained open for any emerging data that arose during the interviews. This approach ensured the objectivity of the data and controlled the subjectivity of the researcher (Creswell, 2013).

In the analysis, recurring words were highlighted. These words included sentences or parts of sentences as well as statements that stood out in the interviews. The expressions that indicated domains of engagement were colour-coded to classify them as follows: green for affective, yellow for cognitive and blue for social indicators. In addition, indicators of the learners' awareness of WCF's importance were also colour-coded. By the end of this stage, 48 codes were identified. These codes were then categorised, clustered and divided into *a priori* themes that were generated from the TA protocol and the classroom observation analysis.

To ensure validity, an independent researcher with a degree in TESOL was enlisted to analyse the data. After she finished her analysis, we sat together and discussed the points that were ambiguous about the coding before reaching 99% agreement. Later, the operational definitions were established for the themes. The final list of themes for the interviews is discussed in 3.10.3. The following section presents the preparations undertaken prior to the data triangulation.

3.9 Preparations for triangulation

There are several types of triangulation in research: researchers' triangulation; informants' triangulation; environmental triangulation; and methodological triangulation. The latter was applied in this research study. As the name suggests, more than one method of data collection may be used in methodological triangulation to answer the same set of queries. Triangulation is used in research for many reasons. It may be used to validate the choices of the methods or to validate the data analysis or its findings. Some researchers use triangulation between participants. In such cases, triangulation is used to test a theory or to generalise the findings analytically, i.e. to the

present or new theories, but not to the broader population (e.g. Firestone, 1993; Miles and Huberman, 1994).

Triangulation can be carried out at different stages of the research. Some researchers use triangulation to collect the data; others employ it during the analysis or while writing their discussion. In this research study, triangulation was conducted in the data collection and data analysis stages and also when reporting the findings. To be more specific, it was used to tackle the research assumption from different angles and present a clear answer to the research questions (see 3.2). In fact, due to the nature of the phenomena investigated in this research study, the queries would not have been answered adequately without methodological triangulation, and the answers would not have been validated or meaningful (Larsen-Freeman, 2012).

Triangulation has both advantages and disadvantages. One of the substantial advantages is its validity and reliability. The main disadvantage of triangulation is the time factor, as it requires a longer amount of time to be conducted. It is also a risky tool for novice researchers if it becomes a target in itself instead of a tool used to serve the overall research (Creswell, 2013).

After analysing the different sets of data separately, the findings for each set were presented and reported individually. Then, the different findings were combined to answer the research questions and serve the purpose of the research (see 5.2, 5.3, 5.4, 5.5, 5.6 and 5.7). The following section presents the themes for this study with relation to the method that generated them.

3.10 Descriptions of themes

Researchers have recommend indicating how the data were interpreted along with evidence or access to the raw data, which shows rigour in the research and increases the trustworthiness of the research (e.g. Patton, 2005; Rice and Ezzy, 1999; Ryan and Bernard, 2003). Because the data from this current research study were recorded in Arabic, a major challenge was to keep the intended meaning as true to the translation as possible. Hence, the data were treated and coded in Arabic first. Then, the required parts were translated into English as needed for quotations. The responses that were used as evidence in this research were translated by the author and then verified by a certified Arabic-English language translator who is a native speaker of Arabic. She read the quotations and translated them. Then we met and compared both translations. We negotiated the meanings and agreed on one translation. In the following sub-sections, the

themes for each method are presented. Definitions, descriptions, and quotes from the translated data are provided to demonstrate how the overarching themes for the research study were reached.

3.10.1 Think-aloud

Three themes emerged from the TA tool: purposeful engagement with WCF, learners' awareness and L2 writing improvement, learners' agency and self-regulation processes. These themes are discussed below.

PURPOSEFUL ENGAGEMENT WITH WCF

The theme encompassed the researcher's observations of the quality of the learners' engagement with WCF during the TA sessions. The indicators of the engagement included verbal and non-verbal cues, such as facial expressions and hand movements. These indicators were based on the literature (Ellis 2010; Svalberg, 2009) (Appendices I and L). More specifically, purposeful engagement with WCF comprised cognitive, social and affective engagement. As such, when the three constructs were aligned and balanced, the TA sessions were found useful to the learners as a learning activity. In this case, the learners' engagement with the WCF and their awareness of the connection between their engagement and L2 writing changes were noticed. Likewise, the learners' failure to purposefully engage with the WCF in some of the learning episodes harmed their overall learning during the intervention (see 4.4.1). This theme also encompassed any comments the learners made during their interaction with the WCF via TA, i.e. private speech (Frawley and Lantolf, 1985). The learners' comments revealed the cognitive domain of the learners' engagement with the WCF. Comments such as 'aha', 'meaning...', 'SO', 'look this up now', 'made fewer errors this week', 'oh, s..., third person singular' proved the cognitive activity.

LEARNERS' AWARENESS AND L2 WRITING IMPROVEMENT

This theme acknowledged the learners' awareness of the connection between their L2 improvement and WCF as a dynamic system (see 4.4.2). This theme included the researcher's observations about the degree and depth of learners' awareness of WCF and how it is linked to L2 writing progress or the lack thereof. This theme is divided into three types. The first type is 'positively aware', in which the learners were aware of the interaction, and they acted upon this awareness. For example, Learner 2.5 said, 'working on my errors helps my English [writing]'. The next type is 'unaware', in which the learners were unaware of such links and did not use the TA as a learning opportunity.

For example, Learner 2.2 observed, ‘TA about it [WCF] does not seem to improve my [L2] writing’. The third type is ‘ignored awareness’, in which the learners were aware of the links but did not act upon their knowledge for various reasons, which affected their progress in L2 writing. For example, Learner 2.1 observed that thinking-aloud about WCF is important, but she was unwilling to practice this technique (see 4.4.2).

THEME 3: LEARNERS’ AGENCY AND SELF-REGULATION

This theme encompassed the researcher’s observations about how the learners’ used and developed self-regulation strategies during the TA sessions. Self-regulatory processes were linked to self-efficacy and agency. Learners who showed evidence of possessing these qualities were more likely to achieve their intended TA session goals. For example, attending the TA sessions and actively engaging with the method was marked as an ‘active self-regulatory process’ (see also 3.4.2). This theme is linked to Bandura (1986), Zimmerman (1998), Svalberg (2009) and Mercer (2011).

3.10.2 Classroom observations

Two overarching themes emerged from the classroom observations: the learners’ levels of engagement with the WCF and the learners’ regulation strategies and agency. These two themes are introduced below.

LEARNERS’ LEVELS OF ENGAGEMENT WITH WCF

This theme includes the researcher’s observations of the learners’ engagement with WCF during class time. These observations show how the learners behaved once they received the corrections and were based on the class discussions that followed. The responses included verbal and non-verbal cues of engagement as described in the literature (Ellis, 2010; Svalberg, 2009).

THEME 2: LEARNERS’ REGULATION STRATEGIES AND AGENCY

This theme includes the researcher’s observations about the learners’ regulation strategies and agency as observed during the classroom time. The learners’ regulatory strategies were divided into agentic- and non-agentic-learners, and the judgement was based on actions taken by the learners when they received their WCF because they were classified as decisions that were predetermined and indicated the intent to attain academic goals (Koriat, 2018; Mercer, 2011). The classifications also included indicators of collective agency, such as supporting other members of the group, scaffolding and offering answers to less-proficient group members as they do not only show the learners’ self-agency but also indicate collective agency and social engagement.

3.10.3 The interviews

Two overarching themes emerged from the interviews: self-regulatory strategies and quality of engagement with the WCF and the learners' experiences in the intervention. These themes are introduced below.

SELF-REGULATORY STRATEGIES AND QUALITY OF ENGAGEMENT WITH WCF

This theme encompasses the comments the learners made about the quality of their engagement with WCF and how they relate to their self-regulation strategies. For example, four learners stated that they read WCF only if it is part of rewriting the paragraph again. Five learners stated that not all the WCF they have received is understandable immediately. The learners' self-regulatory strategies and processes were developed during the experiment can be reflected in their L2 learning as they may enable or hinder a student's L2 performance. For example, two learners stated that they have developed a commitment to the sessions because they saw the sessions were enhancing their writing. One learner shared, 'It was difficult to commit to the TA sessions at the beginning. However, when I saw how the errors' number declined and how it was easier to spot them, I decided to change'. Some learners did not adopt the self-regulation processes, even though they appeared committed to the intervention, which was also reflected in their progress. For example, Learner 2.3 relied on private tutoring on her own time, which provided fewer challenges than the suggested method of using WCF to attain learning goals by self-editing.

LEARNERS' EXPERIENCES IN THE INTERVENTION

This theme includes all the comments that the learners made about their experiences during the experiment as individuals. For example, the learners expressed how the TA and WCF modes reflected on their learning as well as their emotions and actions. They stated that they understood their classmates' struggles with L2 writing better when they paid greater attention to their own learning (i.e. empathy). Learner 1.2, for example, stated the following:

I forgive others and myself when we make mistakes... I stopped comparing myself to my friend or other learners... we receive teaching differently, and we also act to feedback [CF] differently.

In addition, the learners' experiences included their comments about their agency and the other learners' agencies as well (i.e. self-agency and collective agency). The learners made specific comments about their self-agency. For example, half the learners stated that the best part of the intervention that they encountered was 'feeling in charge of their learning' (1.2, 1.5, 2.1, 2.4 and 2.5). They also reported that the experiment made them

realise the power of scaffolding, encouraging and helping other learners to achieve their learning goals which, in return, helped the individual to reach her own learning goals. This sense of collective group agency was evident in the experiment and was elaborated on during the interviews. For example, Learner 1.4 stated, ‘working in groups to understand the [WCF] helped us all’. This code is linked to Mercer (2011).

In addition, the learners’ experiences also included their comments about using TA technique in L2 writing. Learners 1.1, 1.2, 1.4, 1.5, 2.1, and 2.5 reported that TA made them view L2 writing differently. Learner 2.3 stated that she sees writing now as a process, not only a product. Other learners revealed that TA showed them their real levels of proficiency in L2 writing, unlike direct marking, which did not allow time for self-corrections and self-editing. Three learners mentioned how TA provoked their inner speech to self-correct their writing. This code is linked to private speech (Frawley and Lantolf, 1985). The following section presents the researcher’s role.

3.11 Researcher’s role

This research study involved working with adults with special characteristics. The learners were young females from a conservative environment in both their daily lives and learning atmosphere (Alhaysony, 2008). They have very limited opportunities to practice their target language outside the institute where they learn (Alhaysony, 2008; Al-Seghayer, 2011, 2014). These characteristics threatened their engagement with the target language and strengthened the need for research to explore this area. The purpose of this study was not only to explore the participants’ views or their engagement with WCF but also to offer an understanding of how their engagement influenced their L2 writing performance.

In order to achieve these goals, it was necessary for the researcher to build mutual trust with the learners by getting to know them and being friendly with them. Lunt and Curran (2010) reported that learners value teachers who have a genuine interest in them. Hence, building good relationship with the researcher encouraged their interest in this project. In addition, becoming familiar to the learners by attending the classes encouraged them to talk more during the interviews. It also removed the nervousness barriers and enhanced the depth of their responses, which in turn enhanced the qualitative findings of the current research.

As this research study involved classroom practises, it was important to be involved with and accepted by the learners (Alkhatib, 2015). First, it was the best way to

access the learners' thinking during the data collection, specifically during the TA sessions. As some of the learners' responses were not clear, and others naturally occurred as short segments (e.g. private speech), having access to the learners helped in exploring their thinking as well as their emotions regarding the research enquires in the following interviews and informal interactions as well. Therefore, this research study required an active role for the researcher as a data collection tool, which is an acceptable role for researchers in qualitative studies (Lumley, 2005). However, all precautions were put in place to ensure the learners that their honest responses and feedback were the ultimate goal. For example, they were encouraged to express their thoughts, fears and expectations without worrying that their grades or their value as individuals would be harmed, as the aims of the research were focused on what was being offered to them and to what degree it was helping them meet their learning potentials. In other words, they were assured that they were volunteering to provide an understanding of learners' engagement with WCF and how it influenced their L2 writing performance without being judged and also that their help was genuinely appreciated.

Some errors in this research were expected due to the nature of the queries and the research methods. For example, the learners' awareness that they were being researched may have influenced their behaviour or led them to act differently than they might have otherwise. Hence, two validation checks were employed in the data collection. First, a good rapport was established with the learners that minimised the sense of authority and encouraged them to provide accurate responses. Second, this research study used more than one method for data collection and data analysis in order to triangulate the findings. These checks guarded the data collection's validity. Thus, the validation checks compensated for various expected errors and verified the reliability of the data.

In the research analysis strategy, a combination of tactics was used to draw conclusions and generate meanings to test and verify whether the findings were valid, persistent and recurring. First, each dataset was reported individually, and then all the data related to a specific research question were drawn from the different methods to reach a conclusion (see 3.8 for the data analysis procedures).

Combining different methods and collecting qualitative and quantitative data resulted in the triangulation of the research findings and ensured the reliability and validity of the research (Creswell, 2002, 2007; Gorard, 2003). Findings triangulation was achieved by using multiple data, methods and perspectives. Data triangulation was

attained by applying a mixed-methods approach to the findings. This type of approach invited different findings to emerge, which is valued because the findings led to re-examination and triangulation of the two conceptual frameworks this research study was based on. It also encouraged checking the underlying research assumption (Biesta, 2010; Patton, 2005; Tashakkori and Teddlie, 2003) (see 3.2).

Using mixed methods enhanced the descriptive and interpretive validity of the research findings (Hammersley and Atkinson, 2007; Maxwell, 1992, 2012). For example, beginning the research with a pre-test to establish the learners' proficiency provided inductive proof that informed the succeeding inductive and deductive inquiries. In addition, the use of mixed methods reminds the researcher of the multifaceted nature of the research problem, which offers an opportunity for researchers to grow their criticality and develop more convincing and robust explanations of the social processes being investigated (Deacon *et al.* 1998, p. 61). In this research, the learners' engagement with WCF in specific learning situations was interpreted according to their experiences, which enhanced the validity of the findings.

Another factor that could affect the quality of research is replication. In this study, all efforts were made to allow replicability. For example, a detailed account of the research design and methodology was provided in order to allow other researchers to use them for their own research studies. Nonetheless, repeating the research does not guarantee similar results because of the nature of this research study (see 3.1, 3.4). The same is true for any qualitative inquiry and relates to the social impact of the context in shaping the learning experiences (King, 2016; Larsen-Freeman, 2012, 2015). The following section discusses the ethical considerations in this research.

3.12 Ethical considerations

Ethical issues in research have received significant attention over the last few decades and have become a general consideration in research as one of the researcher's obligations towards the research community (O'Leary, 2017). Ethics are the moral principles that involve people's behaviours (Wellington, 2015). Some novice researchers think that ethical questions in education and social research relate mainly to the data collection stage. In fact, ethical questions integrate with the research from the beginning until the end of the study (Creswell, 2013).

This research followed the ethical review procedures of the two involved institutions: the School of Education at the University of Leicester and the college at the PNU. The ethical committees of both schools emphasised mutual respect between the researchers and the learners. Both also were very strict about the participants' privacy and about conducting and reporting the research with honesty and transparency. Each university had specific questions that had to be answered prior to conducting the research, depending on the role it played in the study. For example, the Leicester School of Education committee asked for details about the nature of the research, the level of risks involving the researcher or the researched; how the participants' identities would be protected and how the data would be stored. In addition, power relations issues and the university's responsibilities and liability for any research errors were discussed. The college, in contrast, was concerned with the consent forms; access permissions; confidentiality; privacy; anonymity; and avoiding harm to both the participants and the institution (Cohen *et al.*, 2011).

After satisfying the conditions of the ethics board at the University of Leicester, an approval letter was obtained for the duration of the research. In order to access the college, a letter was submitted to the dean of the department to grant permission for the duration of the research. The letter explained the research aims and objectives and all other details, which were deemed essential to convince them to allow the research in the department. The access was granted.

Before conducting the research, all participants were asked to sign an informed consent form to take part in the research, which they all signed. These consent forms were easy to read because they were written in the participants' first language. They stated that participation was voluntary and that the learners could withdraw at any time

before the data collection stage was finished. All data associated with withdrawn participants would be securely destroyed.

As for the confidentiality and anonymity, the participants were assured that their identities would not be revealed or shared with anyone but the researcher. In addition, because audio from the TA sessions and the interviews were recorded, a particular device was used to record these sessions. The files were that contained these recordings were stored on a personal laptop protected with a password.

Doing no harm is a necessary code of ethics. It often may require people to do or refrain from doing a certain physical or psychological activity (Wellington, 2015). This research study involved no potential harm to the participants or to me as the researcher. It was carried out in a secure place on weekdays during customary working hours. In addition, to avoid any kind of potential harm to the participants in this research study, a clear statement was shared with them about the power relations in this research study. The participants were told that their teacher was in charge of their grades. She was also in charge of assessing them. Care was taken to make it clear that the researcher had no power over them as participants and it was entirely up to them to remain in or leave the experiment. Only one learner decided to leave the research due to other commitments. All of her data were destroyed. Doing no harm also informed the research design by not including a control group whose participants would receive no feedback, as feedback is an integral part of teaching and learning. Depriving learners from corrections has been proven to hinder their progress in writing (Ferris and Roberts, 2001). Hence, all participants in this study received WCF.

Most of the data were digitised and saved on a personal device. All hard copies were placed in a locked drawer, and no other person had access to them. All the documents were well managed and maintained because the participants agreed for the data to be used not only in this research study but also for other similar research projects; It is an acceptable practise to recycle and reuse the data (Corti *et al.*, 2019).

Another ethical consideration for maintaining the research quality is transparency. This feature relates to the axiological orientations of a researcher that involve discussing values and biases as ethical issues that shape how the research was conducted. It also affects how the findings were described (Tashakkori and Teddlie, 2010). In this investigation, any biases that were caused by the chosen research methods, the research design or the relationships with the participants were reported and documented in the memos and acknowledged as limitations or threats. At the same time,

these effects were minimised by using different methods and also by triangulating the data. Biases and limitations were also prevented by incorporating the learners' interpretations along with the researcher's observations.

One major ethical dilemma that arose in this study was the use of TA. In this research, TA was initially named as a data collection method used to study learners' engagement with WCF without observing how TA might change the L2 performance. However, after the experiment began, I realised that the learners were unfamiliar with the method and had not used it in their learning before. At that point, it seemed unfair to explore their engagement with a tool that they were still being introduced to. The results were unlikely to reflect their actual level of engagement. Instead, the TA observations could demonstrate the learners' excitement about a new learning activity, which would skew the findings and the conclusion, especially for affective engagement. Therefore, I started thinking of TA as an intervention component instead of only a data collection method.

In addition, after the TA training, some learners stated that TA had made their thinking about writing stages clearer and that they were using it not only to engage with WCF but also earlier in their writing of a first draft. Their comments confirmed that I had an ethical responsibility to use TA as a learning activity. In response to their feedback, the TA technique was reconstructed, and TA assignments were added to observe the L2 performance. This decision affected the data analysis procedure as well, but it was both worthwhile and ethical.

This direction change took place in Week 2 of the data collection stage. It is worth noting that TA was the only data collection method that was not piloted. If I had tested the TA technique in the pilot study, I might have made this decision earlier. The following section summarises Chapter 3.

3.13 Chapter summary

In this chapter, the research design and methodology were introduced. First, the research questions were restated. After that, the research framework and its variables were identified. This chapter also defined the elements of the research design, including the paradigm and the approach (i.e. mixed methods). The pilot study and its implications on the current research study were presented. The chapter also described the recruitment of the participants in detail. Finally, the research methods and the data collection were outlined and justified.

In addition, the data analysis procedures were presented, and the triangulation plan was clarified. The chapter also included descriptions of the themes and linked them to the methods of data collection. It described the researcher's role and then explored the expected issues of validity and reliability and the plan to overcome them. The last section discussed the ethical considerations of this research study. The following chapter, Chapter 4, presents the findings and links them to the study interventions, the TA and WCF delivery modes.

CHAPTER 4 FINDINGS

4.1 Chapter introduction

This chapter presents the current research study findings. The quantitative findings, which include the test results and the TA writing assignments' quantitative results, are presented first. It should be clear to the reader that the imbedded groups contained a limited number of participants, which returned limited responses that were insufficient to make extensive claims. Nonetheless, these findings are indicative and could show tendencies. Other datasets, however, revealed information about these findings and created a rich picture that better answered the research queries. These other datasets, namely the TA session observations, retrospective interviews and classroom observations, which represent the qualitative findings, are reported under the most relevant themes.

4.2 The mode of WCF findings

One of the main research aims was exploring and explaining the influence the feedback mode had on the learners' L2 writing performance (Research Question 2) at three points in time: pre-, post- and delayed post-test. For this purpose, test data from the entire classes (IC and IH) and also the groups (ICG and IHG) were analysed. The learners' scores were assessed for writing fluency, grammatical accuracy and grammatical competence (see Appendix M). SPSS was used to run a mixed-measures ANOVA as the main test. Another test, a post-hoc t-test, was used to determine significance (see 3.8.1).

4.2.1 The classes' writing fluency in the tests

The learners' performance in writing fluency, grammatical accuracy and grammatical competence was analysed (see 3.9.1), and the results are presented below. Writing fluency was calculated as the increase in the number of words the learners were able to write on the test in Weeks 2, 9 and 13 (See 3.5.2 for the study design). Table 4.1 shows the descriptive statistics of writing fluency for the IC and IH classes on the pre-, post- and delayed post-test.

Table 4.1 Descriptive statistics of writing fluency changes over time for the classes

	Class	M	SD	N
Pre-test	IC	27.74	8.86	42
	IH	26.73	12.49	44
	Average	27.22	10.82	86
Post-test	IC	38.69	13.78	42
	IH	39.70	16.23	44
	Average	39.21	15.00	86
Delayed post-test	IC	55.93	21.67	42
	IH	56.75	19.47	44
	Average	56.35	20.45	86

The descriptive statistics for writing fluency in table 4.1 show improvement in the learners' performance for both classes.

Prior to analysing the data for significance, the normality of the dataset was explored in each class at each time point. Table 4.2 summarises the normality results for the classes' writing fluency.

Table 4.2 Shapiro-Wilk normality test for writing fluency

	Class	Shapiro-Wilk		
		Statistic	df	P
Pre-test	IC	.94	42	.035
	IH	.69	44	.000
Post-test	IC	.63	42	.000
	IH	.53	44	.000
Delayed post-test	IC	.67	42	.000
	IH	.62	44	.000

The Shapiro-Wilk normality test in Table 4.2 reveals no normal distribution for writing fluency on the pre-test, post-test and delayed post-test for the IC and IH ($p < 0.05$). The numbers did reveal a change in the post-test and the delayed post-test. This is discussed further in chapter 5 (see 5.2 and 5.4).

The mixed-measures ANOVA revealed a significant main effect of time on the learners' writing fluency, $F(1.27, 106.58) = 218.98$, $p < 0.001$, Partial Eta Squared = 0.72. The Bonferroni post-hoc test indicated that time made a significant impact on the learners' writing fluency between the pre-, post- and delayed post-tests (Tables 4.3 and 4.4).

Table 4.3 Bonferroni post-hoc test for time's effect on writing fluency

(I) time	(J) time	Mean Difference (I-J)	Std. Error	P	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
Pre-test	Post-test	-11.97*	.98	.000	-14.37	-9.56
	Delayed post-test	-29.11*	1.85	.000	-33.62	-24.59
Post-test	Delayed post-test	-17.14*	1.22	.000	-20.12	-14.16

Based on the estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Table 4.3 indicates an increase in the writing fluency or the number of words the learners were capable of writing in Week 13 ($M = 56.35$; $SD = 20.45$) (delayed post-test) compared to Week 9 ($M = 39.21$; $SD = 15.00$) (post-test) and Week 2 ($M = 27.22$; $SD = 10.82$) (pre-test). Therefore, the learners' writing fluency improved with time.

According to the mixed-measures ANOVA results, there was no significant effect of the feedback mode on the learners' writing fluency, $F(1, 84) = 0.01$, $p = 0.93$, Partial Eta Squared = 0. Table 4.4 shows the corresponding statistics.

Table 4.4 IC and IH mode and time during the intervention.

	Mode of WCF	M	SD	N
Pre-test	IC	27.74	8.87	42
	IH	26.73	12.49	44
	Average	27.22	10.82	86
Post-test	IC	38.69	13.78	42
	IH	39.70	16.23	44
	Average	39.21	15.00	86
Delayed-post test	IC	55.93	21.67	42
	IH	56.75	19.47	44
	Average	56.35	20.45	86

As shown in Table 4.4, the means of both classes are similar at every point in time: pre-test, post-test and delayed post-test. The SD indicates the variations in the L2 performance change within classes. On the pre-test, IC members varied by 8.87, while IH members differed by 12.49. This pattern continued on the post-test; IC members varied by 13.78, while IH members differed by 16.23. On the delayed post-test, however, the IC members differed by 21.67 and

IH members varied by 19.47. These results indicate that the overall within-class L2 gap in the IH class was relatively higher than that of IC, which means handwritten CF influenced the writing fluency of the individuals within the classes more than computer-mediated CF did. The changes in the means were almost identical, which indicates that the WCF mode did not make a difference on the students' writing fluency.

The results also showed no significant interaction effect of time and the mode used for WCF on writing fluency: $F(1.27, 106.58) = 0.32$, $p = 0.63$; Partial Eta Squared = 0.004. Therefore, as the treatment continued, the learners' fluency and the mode used to provide them with WCF were not linked to influencing the learners' L2 performance differently (Figure 4.1).

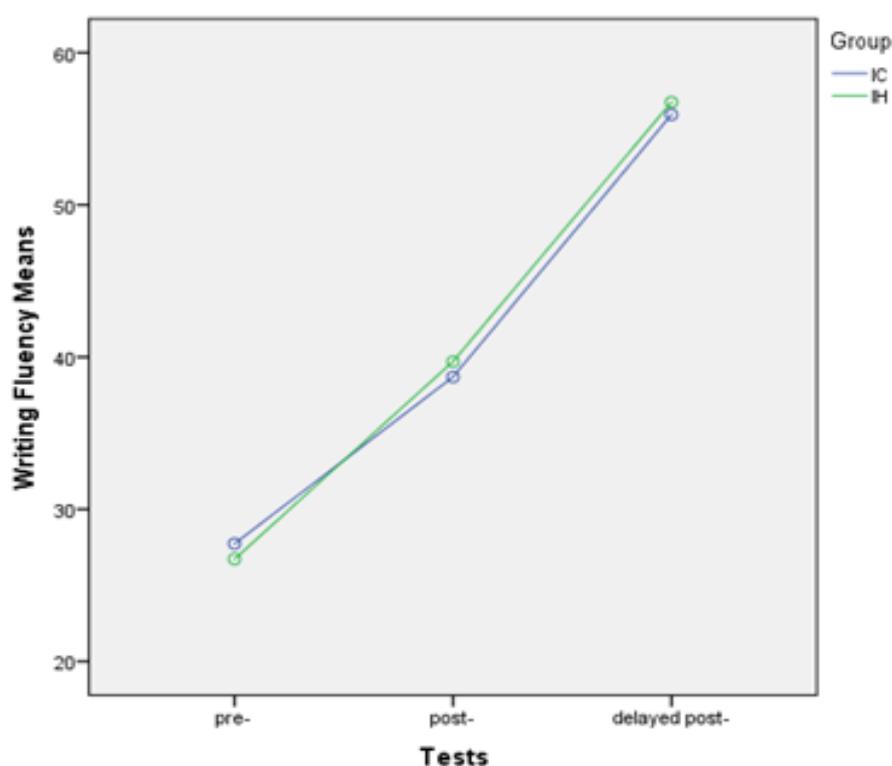


Figure 4.1 WCF Mode and Writing Fluency over Time

In Figure 4.1, both classes improved their L2 writing fluency in similar ways, which means that neither of the modes used had a greater influence on the writing fluency of a specific class in the tests. Figure 4.1 shows the performance of both classes in writing fluency over time. The classes were not significantly different (IH = 51.13 words; IC = 49.03 words), which indicated that both classes experienced moderate improvements in their fluency (see Appendix M). The means indicate the similarity in the two classes' L2 writing fluency change, regardless of the mode that was used to deliver the WCF. The next section presents the writing fluency of the observed groups.

4.2.2 The groups' writing fluency on the tests

In addition to receiving WCF via two contrasting modes, both groups also participated in TA sessions. Any effect (or lack of effect) on their fluency must therefore be related to both the mode and the use of TA. Pre-testing the groups showed that they both wrote a similar number of words, which indicates similar abilities at the beginning of the intervention; the ICG mean was 39.8 words, and the IHG mean was 40.8 words. This pre-test established the baseline for the learners and allowed the researcher to assess the changes in their L2 writing fluency as an indicator of writing performance change (see Appendix M). Table 4.5 shows the changes that took place during the intervention at three points in time: Week 2, Week 9 and Week 13.

Table 4.5 Writing Fluency in Weeks 2, 9 and 13 for the groups

	Pre-test				Post-test				Delayed post-test			
	SUM	M	SD	SE	SUM	M	SD	SE	SUM	M	SD	SE
ICG	199	39.80	26.8	12.00	296	59.20	31.52	14.09	535	107.0	25.51	11.41
IHG	204	40.80	33.04	14.72	365	73.00	32.70	14.62	512	102.40	28.43	12.71

The groups' writing fluency was similar before the intervention (Week 2). This finding suggests that any changes in writing fluency that followed the intervention were not attributable to initial differences between the group members. The numbers in Weeks 9 and 13 indicate that the groups' writing fluency improved, regardless of the WCF mode and TA sessions.

In the post-test, the ICG learners produced 296 words collectively, which is 32.77% higher than what they wrote on the pre-test and represents a low improvement (see 3.8.2 and Appendix M). The IHG increased their fluency to 365 words on the post-test, which was 44.1% higher than their pre-test's result, which indicates a moderate improvement (see Appendix M).

On the delayed post-test, the ICG wrote 535 words collectively, which was 44.67% higher than their pre-test's results. This change is considered a moderate improvement. In contrast, the IHG wrote 512 words collectively, which was 28.71% higher than their pre-test's results. This improvement was categorised as a low improvement. The numbers show that ICG students outperformed IHG learners on the delayed post-test, the IHG did better than the ICG on the immediate test and the ICG outperformed the IHG on the delayed test. Figure 4.2 displays these results.

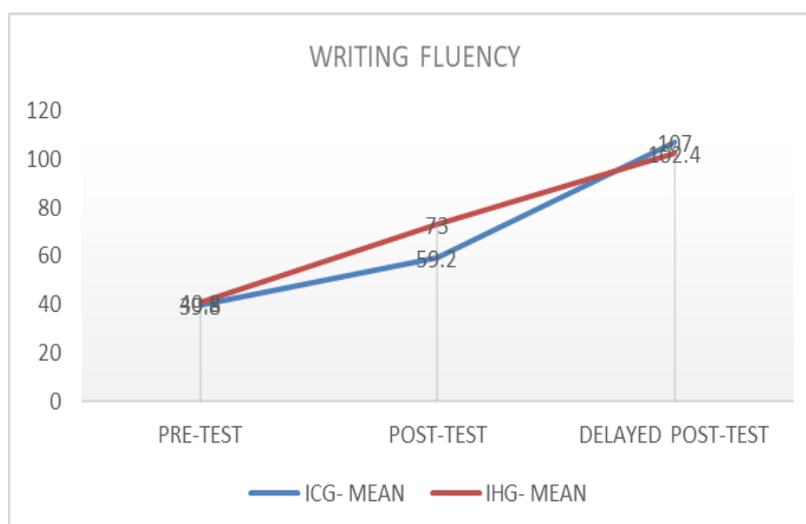


Figure 4.2 ICG and IHG Writing Fluency

As Figure 4.2 shows, both groups improved their writing fluency. Although the groups collectively produced similar numbers of words, the standard deviation (SD) of the samples during the intervention indicates individual differences within groups. For example, ICG started at SUM = 199, SD = 2.86; which means the individuals' levels were similar to each other before the treatment (normally distributed). The IHG SUM = 204 words, while the SD = 33.04 words, which means the learners within-group findings varied in their writing fluency, which was not normally distributed. To further explore the groups' improvement, the writing questions were also analysed. Tables 4.6 and 4.7 show the individual learners' writing fluency during the intervention.

Table 4.6 ICG Within-Group Writing Fluency

Test	ICG										Total
	1.1		1.2		1.3		1.4		1.5		
	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	
Pre-	19.09	38	20.12	40	18.64	37	22.11	44	20.10	40	199
Post-	14.19	42	36.49	108	12.16	36	25.00	74	12.16	36	296
Delayed Post-	16.07	86	25.23	135	19.06	102	24.67	132	14.95	80	535

Table 4.7 Within-Group IHG Writing Fluency

Test	IHG										Total
	2.1		2.2		2.3		2.4		2.5		
	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	
Pre-	5.39	11	5.88	12	25.49	52	24.02	49	19.61	80	204
Post-	9.86	36	10.36	39	28.22	103	24.93	91	26.30	96	365
Delayed Post-	12.89	66	15.41	84	27.34	140	21.29	109	25.98	113	512

As shown in Tables 4.6 and 4.7, learners in the ICG started the intervention with a similar within-group writing fluency. The numbers also indicate that there was a gap for the within-group performance for IHG students. For example, Learners 2.1 and 2.2 wrote less than the other members of the group. A closer look at the participants' writing fluency revealed some individual differences. The fluency gap among individuals continued to expand as the intervention continued. For instance, the SD of the means of the groups increased on the post-test (ICG SD = 31.52; IHG SD = 32.70) and also on the delayed post-test (ICG SD = 25.51; IHG SD = 28.43). This result suggests that the individuals' writing fluency varied within groups, which was further investigated in the interviews.

4.2.3 The classes' grammatical accuracy on the tests

Grammatical accuracy was calculated by combining the average of the learners' correct responses with the test items for the three grammatical features on the tests (see 3.8.1 and 3.9.1 for details). Table 4.8 shows the descriptive statistics of grammatical accuracy for the classes as the percentage of their correct responses and the total items.

Table 4.8 Class Descriptive Statistics for Grammatical Accuracy on the Tests

	CLASS	M	SD	N
Pre-test	IC	46.79	14.44	42
	IH	49.48	13.01	44
	Average	48.16	13.71	86
Post-test	IC	70.67	18.78	42
	IH	70.91	14.29	44
	Average	70.79	16.54	86
Delayed Post-test	IC	91.81	8.85	42
	IH	90.07	9.19	44
	Average	90.92	9.02	86

The descriptive statistics of the classes for grammatical accuracy listed in Table 4.8 show improvement in the learners' performance. The differences between these two classes were not significant for the mode used in WCF.

Prior to analysing the data for significance, the normality of the dataset was explored for each class at each time point. Table 4.9 summarises the normality results for grammatical accuracy.

Table 4.9 Shapiro-Wilk normality test for grammatical accuracy

	Class	Shapiro-Wilk		
		Statistic	df	p
Pre-test	IC	.93	42	.02
	IH	.96	44	.15
Post-test	IC	.95	42	.08
	IH	.96	44	.19
Delayed Post-test	IC	.79	42	.00
	IH	.89	44	.001

The Shapiro-Wilk normality test revealed a normal distribution for grammatical accuracy on the pre-test and post-test in each class ($p > 0.05$), except there was no normal distribution for the IC learners in the pre-test. In the delayed post-test, however, no normal distribution was identified in any class ($p < 0.05$).

A mixed-measures ANOVA was run to calculate the changes in grammatical accuracy. The test results revealed a significant main effect of time on the learners' grammatical accuracy; $F(1.76, 147.61) = 341.46$, $p < 0.001$, Partial Eta Squared = 0.80. A Bonferroni post-hoc test indicated a significant difference in the learners' grammatical accuracy between the pre-, post- and delayed post-tests.

Table 4.10 shows the influence of time on the grammatical accuracy performance.

Table 4.10 Bonferroni post-hoc test for time effect on grammatical accuracy

(I) time	(J) time	Mean Difference (I-J)	Std. Error	P	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
Pre-test	Post-test	-22.66*	1.36	.00	-25.99	-19.33
	Delayed post-test	-42.81*	1.62	.00	-46.76	-38.86
Post-test	Delayed post-test	-20.15*	1.89	.00	-24.78	-15.53

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

B. Adjustment for multiple comparisons: Bonferroni.

The results in Table 4.10 indicate an increase in the grammatical accuracy or the number of correct responses to the chosen grammatical features as the intervention proceeded.

The learners were capable of answering more questions correctly in Week 13 ($M = 90.92$; $SD = 9.02$) compared to Week 9 ($M = 70.79$; $SD = 16.54$) and Week 2 ($M = 48.16$; $SD = 13.71$).

According to the ANOVA results, there was no significant main effect of mode on the learners' performance in grammatical accuracy; $F(1, 84) = 0.03$, $p = 0.86$, Partial Eta Squared = 0.00.

The results also showed no significant interaction effect of time or mode used for WCF on learners' grammatical accuracy; $F(1.76, 147.61) = 0.92$, $p = 0.39$, Partial Eta Squared = 0.01. Therefore, as the treatment continued, any change in the learners' grammatical accuracy was not linked to the specific mode used to provide them with WCF (Figure 4.3).

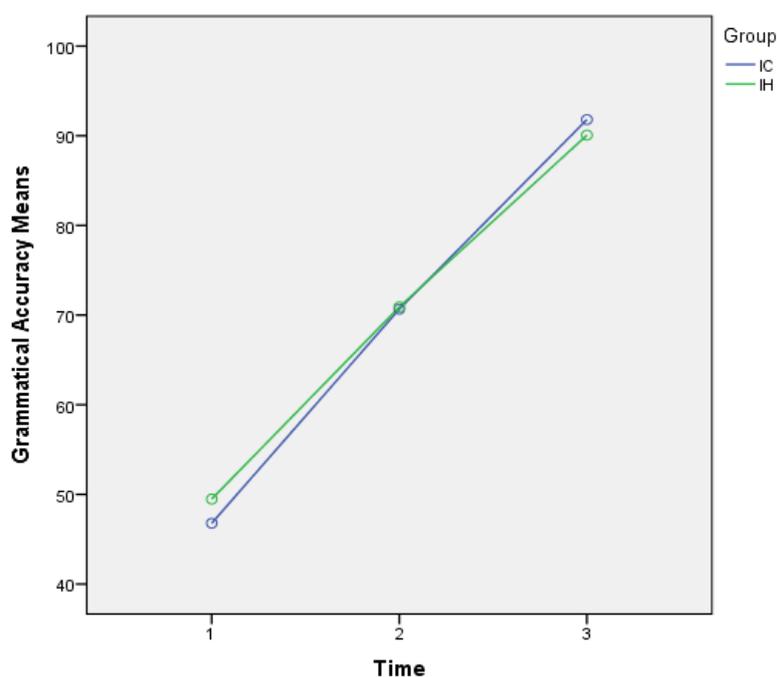


Figure 4.3 WCF Mode and Grammatical Accuracy over Time

In Figure 4.3, both IC and IH classes improved their L2 grammatical accuracy in similar ways, which means that neither of the WCF modes influenced the grammatical accuracy of a specific class on these tests.

4.2.4 The groups' grammatical accuracy

In addition to receiving WCF via two contrasting modes, both groups also participated in TA sessions. Any effect (or lack of effect) on their grammatical accuracy must therefore be related to both the mode and use of TA.

Capitalisation Accuracy

On the pre-test, ICG answered 19 out of 38 items about capitalisation correctly, which is the equivalent of 50% of the opportunities. This type of score is classified as a moderate performance. The learners in IHG answered 14 out of 38 items correctly, which is a rate of 36.84%. This attempt counts as a moderate performance. As both groups fell in the same category, the pre-test indicated that the groups were comparable, and a baseline for their accuracy was established. The learners' capitalisation accuracy was then assessed in the next two tests. Table 4.11 displays more results from the tests.

Table 4.11 Capitalisation accuracy in Weeks 2, 9 and 13

	Pre-test					Post-test					Delayed Post-test				
	%	SUM	M	SD	SE	%	SUM	M	SD	SE	%	SUM	M	SD	SE
ICG	50	19/38	3.80	1.10	0.5	72.22	26/36	5.20	1.30	0.59	96.43	27/38	5.40	1.34	0.6
IHG	36.84	14/38	2.80	0.84	0.38	50	18/36	3.60	0.89	0.45	81.57	31/38	6.20	1.10	0.5

As shown in Table 4.11, the learners' capitalisation accuracy improved during the intervention. For example, on the post-test, the ICG answered 26 of 36 opportunities correctly, which is a rate of 72.22% correct. This score indicates a high performance and improvement. In contrast, the IHG responded correctly to 18 out of 36 opportunities, which is equivalent to a score of 50% and counts as a moderate performance and improvement. However, both TA groups improved their performance on the post-test, regardless of the WCF mode and TA sessions. The ICG also outperformed IHG in this category on the post-test (Week 9).

On the delayed post-test, learners in the IHG answered 31 of 38 items correctly for a score of 81.57%. This outcome shows a high level of performance and improvement. The ICG learners answered 27 out of 38 for a score of 68.42%. This score indicated a moderate performance and moderate improvement. ICG outperformed IHG on the delayed post-test in this category. In brief, according to the numbers, both groups performed better at answering capitalisation questions after the intervention. Figure 4.4 demonstrates the ICG and IHG capitalisation accuracy during the intervention.

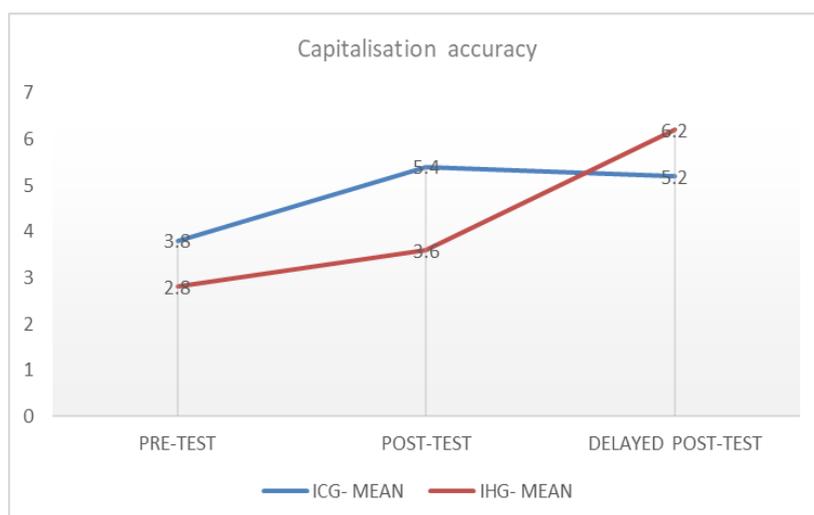


Figure 4.4 ICG and IHG Capitalisation Accuracy

As shown in Figure 4.4, both groups improved their performance compared to the pre-test. ICG performed better on the post-test and the delayed post-test. A closer look at the number of correct responses of each learner shows that some learners performed better than others did within groups, which lowered the overall L2 change for the group. Table 4.12 shows the within-group accuracy.

Table 4.12 ICG Within-group Capitalisation Accuracy

	ICG										
	1.1		1.2		1.3		1.4		1.5		Σ
Test	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	
Pre-	21.05	4	21.05	4	10.53	2	26.32	5	21.05	4	19
Post-	25.93	7	22.22	6	14.81	4	22.22	6	14.81	4	27
Delayed Post-	23.08	6	15.38	4	15.38	4	26.92	7	19.23	5	26

Σ= total of correct responses

Table 4.13 IHG Within-group Capitalisation Accuracy

	IHG										
	2.1		2.2		2.3		2.4		2.5		Σ
Test	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	
Pre-	14.29	2	28.57	4	21.43	3	21.43	3	14.29	2	14
Post-	16.67	3	27.78	5	22.22	4	16.67	3	16.67	3	18
Delayed Post-	16.13	5	22.58	7	16.13	5	22.58	7	22.58	7	31

Σ= total of correct responses

The numbers in these tables show the learners' progress in capitalisation accuracy. The percentages indicate the individuals' contribution to the total amount of change that occurred in the overall group's capitalisation accuracy. Although some learners experienced a slower

change than their colleagues, all learners demonstrated progress and contributed to the total depicted in this category.

Pronoun Accuracy

ICG responded correctly to 12 out of 15 items on the pre-test, which is the equivalent to 80% of the opportunities and indicates a strong performance. The learners in IHG responded correctly to 13 out of 15 items, which is 86.67% and demonstrates an exceptionally high performance. The data for pronoun accuracy is shown in Table 4.14.

Table 4.14 Pronoun Accuracy in Weeks 2, 9 and 13

	Pre-test					Post-test					Delayed post-test				
	%	SUM	M	SD	SE	%	SUM	M	SD	SE	%	SUM	M	SD	SE
ICG	80.00	12/15	2.40	0.89	0.40	50.00	5/10	1	0.00	0.00	80.00	12/15	2.40	0.89	0.40
IHG	86.67	13/15	2.60	0.55	0.25	71.42	10/14	2	0.71	0.32	86.67	13/15	2.60	0.55	0.25

As shown in Table 4.14, the means of the pre-test scores indicated that the levels of the groups were comparable (ICG mean = 2.4; IHG mean = 2.6). Hence, the baseline for the groups' pronoun accuracy was established.

The numbers indicate that the learners' pronoun accuracy declined in the first half of the intervention. The ICG responded correctly to only 5 of 10 items for a score of 50%. This percentage indicated a moderate performance. In contrast, the IHG answered 10 out of 14 items correctly on the post-test regarding pronouns, and their performance was ranked highly due to its rate of 71.42%.

On the delayed post-test, both groups improved their accuracy. For example, ICG provided 12 correct responses for 15 opportunities for a score of 80%. This percentage shows a high performance and improvement. IHG provided 13 out of 15 correct responses, which is the equivalent to 86.67%. This percentage indicates exceptionally high improvement. These results illustrate that both groups improved their performance, regardless of the use of WCF modes and TA. Figure 4.5 displays the groups' performance.

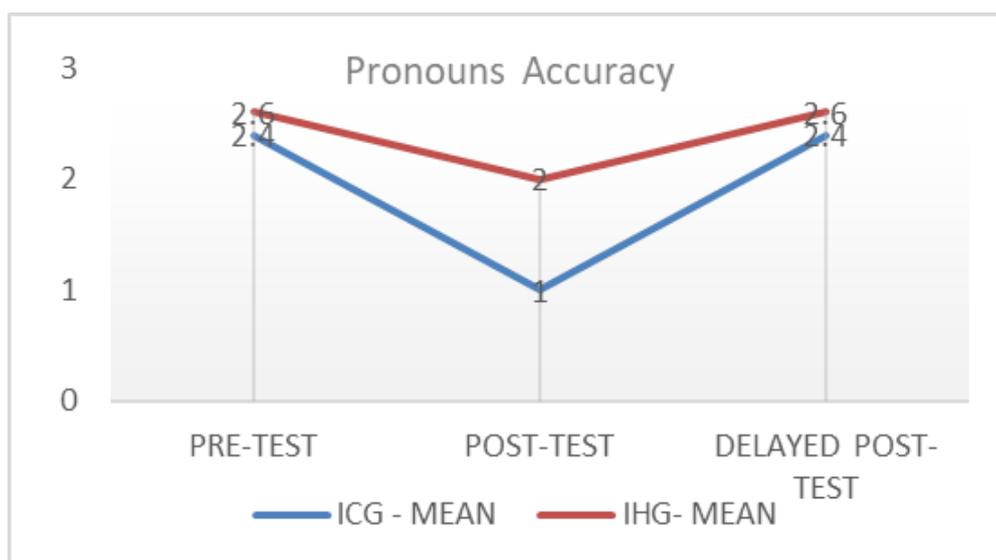


Figure 4.5 ICG and IHG Pronoun Accuracy

As shown in Figure 4.5, the learners ended the intervention at the same level where they had started. For instance, the ICG students began the intervention with a mean of 2.4, which declined to 1.0 before it increased again to 2.4, which was their starting level of accuracy. A closer look at the number of correct responses of each learner shows that some learners performed better than others did. Tables 4.15 and 4.16 depict the individual group members' performance.

Table 4.15 ICG Pronoun Accuracy

Test	ICG										
	1.1		1.2		1.3		1.4		1.5		Σ
	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	
Pre-	25	3	16.67	2	25	3	25	3	8.33	1	12
Post-	20	1	20	1	20	1	20	1	20	1	5
Delayed Post-	25	3	16.67	2	25	3	16.67	2	16.67	2	12

Σ = total of correct responses

Table 4.16 IHG Pronoun Accuracy

Test	IHG										
	2.1		2.2		2.3		2.4		2.5		Σ
	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	
Pre-	15.38	2	23.08	3	15.38	2	23.08	3	23.08	3	13
Post-	10	1	20	2	20	2	20	2	30	3	10
Delayed Post-	15.38	2	23.08	3	23.08	3	15.38	2	23.08	3	13

Σ = total of correct responses

As shown in the tables above, some learners improved their performance over the course of the study, while others did not. However, because the group numbers were small ($n = 5$), the quantities of differences were very limited and therefore insufficient to make claims.

Nonetheless, other datasets in this study revealed information about these learners that supported or refuted the current observations about their pronoun accuracy and created a detailed account that better answered the research queries. To justify the dip in the learners' performance, the test items were inspected. Some items were poorly designed and problematic. Therefore, we declined to draw any conclusions from the results on pronouns.

English Articles

ICG learners responded correctly to 8 out of the 15 items on the pre-test, which is a rate of 53.33% of the opportunities and represents a moderate performance. IHG learners correctly answered 10 out of 15 items for a score of 66.66%. These percentages indicate a moderate performance (see Appendix M). Data regarding the accuracy of English articles are shown in Table 4.17.

Table 4.17 English article accuracy in Weeks 2, 9 and 13

	Pre-test					Post-test					Delayed Post-test				
	%	SUM	M	SD	SE	%	SUM	M	SD	SE	%	SUM	M	SD	SE
ICG	53.33	8/15	1.6	0.89	0.40	80.00	12/15	2.40	0.89	0.40	74.29	26/35	5.20	1.79	0.80
IHG	66.66	10/15	2.0	1.00	0.75	86.66	13/15	2.60	0.55	0.85	65.71	23/35	4.60	0.89	0.54

As shown in Table 4.17, the means of the pre-test suggested that the levels in the groups were comparable (ICG mean = 1.6, IHG mean = 2) and also set the baseline for their English article accuracy. Figure 4.6 shows the accuracy of English article for these groups.

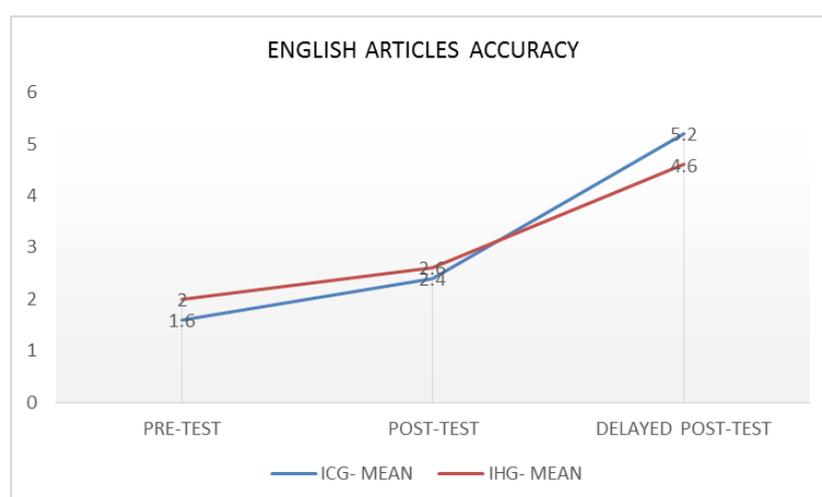


Figure 4.6 ICG and IHG English Article Accuracy

As shown in Figure 4.6, both groups performed better on the post-test and the delayed post-test compared to the pre-test. For example, on the post-test, ICG learners responded correctly to 8 out of 15 items, which is the equivalent of 53.33%. This per cent reflects a moderate performance. On the delayed post-test, ICG responded correctly to 12 items out of 15, which is the equivalent of 80% of the opportunities. This response rate was categorised as high performance. The IHG responded correctly to 13 items out of 15 in the post-test, which is the equivalent to 86.66% of the opportunities. This response rate was marked as exceptionally high. In the delayed post-test, IHG answered 23 items out of 35 items correctly, which is the equivalent of 65.71%, while ICG answered 26 out of 35 items correctly (74.29%). These percentages were labelled as high performance (Appendix M). A closer look at the numbers of correct responses within groups indicated that group members had similar abilities to respond correctly to the test items. For instance, the SD and the SE were similar. Tables 4.18 and 4.19 show the learners' within-group performance.

Table 4.18 ICG Within-group English Article Accuracy

	ICG										Σ
	1.1		1.2		1.3		1.4		1.5		
Test	%	Σ									
Pre-	12.5	1	25.00	2	12.50	1	37.50	3	12.50	1	8
Post-	20	3	26.67	4	20.00	3	20.00	3	13.33	2	15
Delayed Post-	26.92	7	26.92	7	19.23	5	15.38	4	11.54	3	26

Σ = total of correct responses

Table 4.19 IHG Within-group English Article accuracy

	IHG										Σ
	2.1		2.2		2.3		2.4		2.5		
Test	%	Σ									
Pre-	30.00	3	10.00	1	10	1	20	2	30	3	10
Post-	23.08	3	15.38	2	15.38	2	23.08	3	23.08	3	13
Delayed Post-	17.39	4	17.39	4	26.09	6	21.74	5	17.39	4	23

Σ = total of correct responses

The learners' performance was enhanced during the intervention. As the less-capable learners' performance improved, their contribution in the group's overall performance change also increased. The gaps between the learners differed during the intervention and was not stable, which cannot be attributed to just one reason. Nonetheless, the other datasets revealed valuable data, which allowed me to answer the research queries effectively. This trend is explored thoroughly in the following chapter.

4.2.5 The classes' grammatical competence in the tests

The learners were asked to write short paragraphs on the tests, and their grammatical competence was assessed based on these paragraphs plus the test items (see Appendices D1, D2 and D3). The learners' grammatical competence was measured by their correct use of the specific grammatical features in focus: the use of capitalisation, pronouns and English articles in their writing.

Grammatical competence was measured by calculating the average rate of the correct usage of the three grammatical features in the tests (see 3.8.1 for details). Table 4.20 shows the descriptive statistics for the classes on the pre-, post- and delayed post-tests.

Table 4.20 The classes' descriptive statistics for grammatical competence on the tests

	CLASS	M	SD	N
Pre-test	IC	63.60	13.83	42
	IH	74.61	13.02	44
	Average	69.23	14.45	86
Post-test	IC	80.93	8.41	42
	IH	81.00	9.67	44
	Average	80.97	9.02	86
Delayed Post-test	IC	88.74	6.55	42
	IH	87.84	8.22	44
	Average	88.28	7.42	86

As shown in Table 4.20, the descriptive statistics of the IC and IH classes indicated improvement in the learners' grammatical competence over time.

Prior to analysing the data for significance, the normality of the data was explored in each class at each distinct time point. Table 4.21 summarises the normality results for grammatical competence.

Table 4.21 Shapiro-Wilk normality test results for grammatical competence

	Class	Shapiro-Wilk		
		Statistic	df	p
Pre-test	IC	.99	42	.86
	IH	.98	44	.68
Post-test	IC	.97	42	.30
	IH	.99	44	.91
Delayed Post-test	IC	.97	42	.26
	IH	.94	44	.003

The Shapiro-Wilk normality test results shown in Table 4.21 revealed a normal distribution for grammatical competence on the pre-test, post-test and delayed post-test for the IC class. There was also a normal distribution for grammatical competence on the pre-test and post-test for IH learners ($p > 0.05$). In contrast, no normal distribution for the IH was found for the delayed post-test ($p < 0.05$), which would have indicated an L2 performance change following the intervention.

A mixed-measures ANOVA was carried out to calculate the L2 performance change in the learners' grammatical competence. The test results revealed a significant main effect of time on the learners' grammatical competence; $F(1.81, 152.06) = 104.51$, $p < 0.001$, Partial Eta Squared = 0.55. A Bonferroni post-hoc test indicated a significant difference in the learners' grammatical competence on the pre-, post- and delayed post-tests (Table 4.22).

Table 4.22 The interaction effect of time and mode on grammatical accuracy

(I) time	(J) time	Mean Difference (I-J)	SE	P	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
Pre-test	Post-test	-11.86	1.44	.000	-15.37	-8.35
	Delayed Post-test	-19.19	1.45	.000	-22.73	-15.64
Post-test	Delayed Post-test	-7.33	1.10	.000	-10.02	-4.63

Based on estimated marginal means

*. The mean difference was significant at the .05 level.

B. Adjustments for multiple comparisons: Bonferroni.

The results shown in Table 4.22 suggest an increase in the grammatical competence (or the number of correct uses of the chosen grammatical features) as the intervention proceeded. The learners were capable of using these features correctly more often in Week 13 ($M = 88.28$; $SD = 7.42$) compared to Week 9 ($M = 80.97$; $SD = 9.02$) and Week 2 ($M = 69.23$; $SD = 14.45$). Therefore, their grammatical competence improved over time.

According to the mixed-measures ANOVA results, there was a significant main effect of the WCF mode on the learners' performance in grammatical competence; $F(1, 84) = 4.54$, $p = 0.04$, Partial Eta Squared = 0.51. IH learners demonstrated a higher level of grammatical competence ($M = 81.15$; $SD = 7.40$), while IC students scored lower ($M = 77.75$; $SD = 7.38$).

The results show a significant interaction effect of time and the mode used for WCF on grammatical competence; $F(1.81, 152.06) = 12.21$, $p < 0.001$. Partial Eta Squared = 0.13. Therefore, as the experiment continued, the learners' grammatical competence and the mode that was used to provide them with WCF were feasibly linked to influencing the IC and IH

students' L2 grammatical competence. Because an interaction was found, there was also a need to run a post-hoc t-test with a Bonferroni adjustment. Because there are three pairwise comparisons, the p-value of 0.05 is divided by three to obtain a new p-value of 0.017.

The post-hoc t-test with a Bonferroni adjustment revealed a statistically significant difference in grammatical competence between IC and IH classes on the pre-test; $t(84) = -3.81$, $p < 0.001$. According to the results, the IC learners demonstrated a significantly lower grammatical competence at the beginning of the intervention ($M = 63.30$; $SD = 13.83$) in comparison to the IH class ($M = 74.61$; $SD = 13.02$), which means that these students experienced more positive improvement during the intervention compared to the IH class. No significant difference between classes was found for the post-test or the delayed post-test; $t(84) = -0.04$, $p = 0.97$ and $t(84) = 0.56$; $p = 0.58$, respectively. Figure 4.7 shows these results.

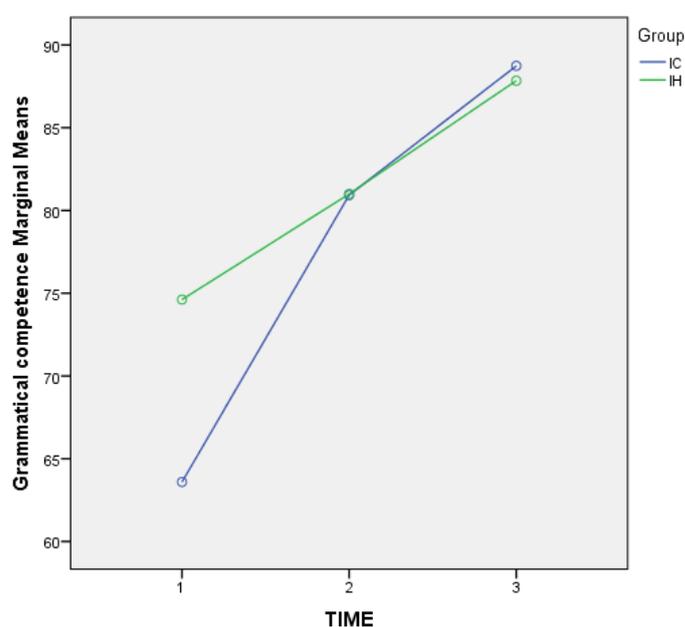


Figure 4.7 Mode Intervention and Grammatical Competence over Time

As shown in Figure 4.7, the grades of the classes at the beginning of the intervention in the grammatical competence were different, with the IC students demonstrating a lower competence in comparison to their IH peers. However, as the intervention progressed, both classes improved, which means that the IC class had a greater improvement in their performance than the IH class did in the area of grammatical competence. Overall, the classes' grammatical competence experienced a positive change compared to the start of the intervention, regardless of the different WCF modes that were used.

4.2.6 The groups' grammatical competence

In addition to using two WCF modes, the participating group members also attended the TA sessions. Any effect or lack of effect on their grammatical competence was therefore related to both the WCF mode and the TA.

Capitalisation Competence

On the pre-test, the ICG learners were able to use the capitalisation rules correctly on an average of 15 out of 23 opportunities (65.21%), which indicated a high level of performance in this group. The IHG students used capitalisation rules correctly 24 out of 35 times (68.59%), which is also a high degree of performance. The percentages of correct usage on the pre-tests indicated that the group levels were comparable and the baseline for their accuracy had been established (Table 4.23).

Table 4.23 Capitalisation competence in Weeks 2, 9 and 13

	Pre-test					Post-test					Delayed Post-test				
	%	SUM	M	SD	SE	%	SUM	M	SD	SE	%	SUM	M	SD	SE
ICG	65.21	15/23	3.00	2.92	1.30	88.09	37/42	7.40	4.56	2.1	89.24	83/93	16.60	4.16	1.89
IHG	68.59	24/35	4.80	3.70	1.68	85.71	60/70	12.00	7.31	3.3	91.58	98/107	19.60	5.98	2.70

Table 4.23 indicates that the groups' capitalisation competence improved during the intervention. For example, ICG learners were able to use capitalisation correctly in their writing on 37 out of 42 opportunities on the post-test, which is equivalent to 88.09%. IHG students used the correct forms 60 times out of 70 opportunities (85.71%). Both percentages indicate an exceptionally high performance.

On the delayed post-test, the ICG used the correct form 83 out of 93 times, which is a rate of 89.24%. IHG learners used the correct forms in 98 out of 107 opportunities, which is the equivalent to 91.58%. These figures indicate an exceptionally high performance. Hence, the data prove that the learners were competent in using capitalisation rules after the intervention. The data also show improvement in the groups' L2 writing performance regardless of the modes used to deliver the CF to them (Figure 4.8).

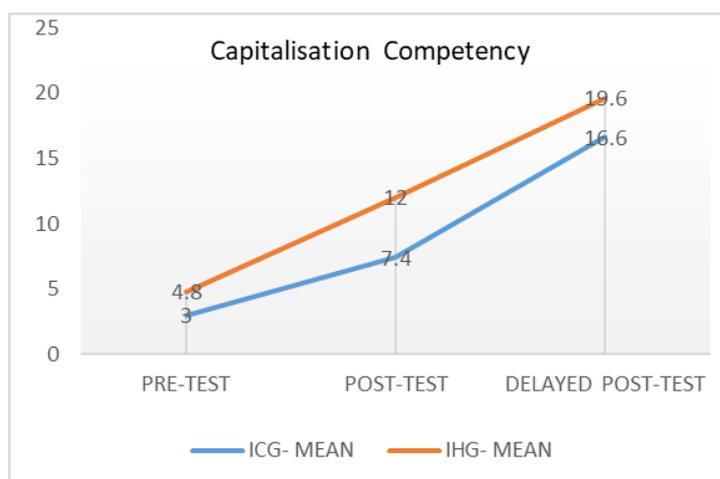


Figure 4.8 ICG and IHG Capitalisation Competence

Figure 4.8 depicts the learners' improvement. However, a closer look at the number of correct uses for each learner revealed that not all learners performed equally well at using capitalisation. (Tables 4.24 and 4.25).

Table 4.24 ICG Within-group Capitalisation Competence

	ICG										Σ
	1.1		1.2		1.3		1.4		1.5		
Test	%	Σ									
Pre-	46.67	7	20.83	5	6.67	1	13.33	2	0.00	0	15
Post-	37.84	14	13.51	5	13.51	5	27.02	10	21.62	8	37
Delayed post-	24.09	20	18.07	15	15.66	13	26.51	22	15.66	13	83

Σ : total of correct responses

Table 4.25 IHG Within-group Capitalisation Competence

	IHG										Σ
	2.1		2.2		2.3		2.4		2.5		
Test	%	Σ									
Pre-	2.94	1	5.88	2	20.59	7	29.41	10	41.18	14	34
Post-	6.67	4	28.33	17	30.00	18	28.33	17	6.67	4	60
Delayed Post-	13.27	13	21.43	21	23.47	23	27.55	27	14.27	14	98

Σ : total of correct responses

As shown in these tables, the learners' levels of improvement varied within groups. These numbers indicate that individual differences shape learners' experiences in the learning process, which influence the learning outcome (see 4.4.2).

Pronoun Competence

On the pre-test, ICG learners used pronoun rules correctly 47 out of 47 times (100%). IHG did the same 13 out of 15 times (86.66%). Both percentages indicated an exceptionally high performance for the groups (Table 4.26).

Table 4.26 Pronoun Competence in Weeks 2, 9 and 13

	Pre-test					Post-test					Delayed Post-test				
	%	SUM	M	SD	SE	%	SUM	M	SD	SE	%	SUM	M	SD	SE
ICG	100	47/47	9.40	5.03	2.30	97.77	44/45	8.80	4.27	1.9	100.00	62/62	12.40	3.91	1.70
IHG	86.66	13/15	4.20	1.30	0.69	90.90	60/66	12.00	5.15	2.3	97.77	68/72	13.60	2.41	1.09

Table 4.26 indicates that the ICG was more competent than the IHG at the beginning of the intervention in this category, as the former group used more pronouns correctly on the test than the IHG. During the following weeks, however, the IHG's pronoun competence improved. These learners used the rules of pronouns correctly on 60 out of 66 opportunities, which is equivalent to 90.90%. In contrast, ICG students chose the correct pronoun rules in their writing 44 out of 45 times (97.77%). These percentages both represent an exceptionally high performance. Based on these results, the competence of the IHG improved, while the ICG competence slightly declined during the first half of the intervention. This drop in performance could have been caused by the test, as it was poorly designed (see Appendix D2).

On the delayed post-test, learners in the ICG used the correct pronoun forms on all 62 opportunities (100%). The IHG students were correct 68 out of 70 times (97.14%). Both groups demonstrated an exceptionally high performance regardless of the WCF modes used and the influence of TA. Figure 4.9 shows the pronoun competence changes in these two groups.

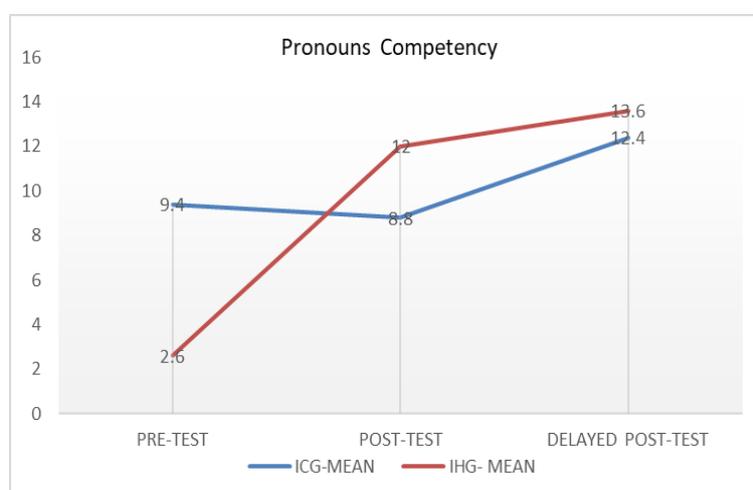


Figure 4.9 ICG and IHG Pronoun Competence

Figure 4.9 displays the positive changes that were noted in the groups' performance. However, since the tests were problematic, we were unable to draw any conclusions from these results on pronoun competence. The figures are reported here to show that the two groups were comparable in this regard at the beginning of the intervention and also to suggest that they had less room for improvement, as they had already mastered the rules of using the pronouns they were studying (see Appendix O for the course syllabus and 6.2 for recommendations).

A closer look at the number of correct uses for each learner showed that the learners performed well at using the pronoun rules, as indicated by the means of the groups in the three tests. However, their individual contributions to the total score on each test varied. The following tables display more details about the within-group results.

Table 4.27 Within-group ICG Pronoun Competence

Test	ICG										
	1.1		1.2		1.3		1.4		1.5		Σ
	%	Σ									
Pre-	23.40	11	12.76	6	23.40	11	34.04	16	6.38	3	47
Post-	36.36	16	15.91	7	15.91	7	20.45	9	11.36	5	44
Delayed Post-	27.42	17	16.13	10	17.74	11	25.81	16	12.09	8	62

Σ = total of correct responses

Table 4.28 Within-group IHG Pronoun Competence

Test	IHG										
	2.1		2.2		2.3		2.4		2.5		Σ
	%	Σ									
Pre-	7.69	1	15.38	2	23.08	3	38.46	5	15.38	2	13
Post-	6.67	4	23.33	14	25	15	28.33	17	16.67	10	60
Delayed Post-	17.64	12	19.12	13	25	17	22.06	15	18.33	11	68

Σ = total of correct responses

The numbers in Tables 4.27 and 4.28 show the within-group progress. As previously stated, each individual in the intervention increased the number of pronouns they used as the study progressed. The percentages indicate that some learners outperformed their colleagues in pronoun competence. These findings are more likely to represent personal differences in learners' engagement with the WCF and learning experiences and are less likely to support a particular WCF mode or the effect of TA. The learners' experiences are further explored in the following section (see 4.2.3).

English Article Competence

On the pre-test, the ICG and IHG students used English articles correctly 21 (60%) and 17 (48.75) out of 35 times each, respectively. The percentages of correct English articles used on the pre-test suggested that these groups were not very similar in their competence at the beginning of the intervention. More details are shown in Table 4.29.

Table 4.29 English Article Competence in Weeks 2, 9 and 13

	Pre-test					Post-test					Delayed Post-test				
	%	SUM	M	SD	SE	%	SUM	M	SD	SE	%	SUM	M	SD	SE
ICG	60.0	21/35	4.2	0.8	0.4	85.7	24/28	4.8	2.3	1.0	94.2	62/66	12.4	1.5	0.6
IHG	48.7	17/35	3.4	1.6	0.7	88.8	25/28	5.0	1.8	0.8	96.8	41/42	8.20	1.1	0.5

The numbers in Table 4.29 indicate that the learners' English article competence improved during the intervention in both groups. For example, on the post-test, ICG learners were able to use the correct rules in their writing 60 out of 70 times (85.71%), while IHG students were correct on 24 out of 27 opportunities (88.88%). On the delayed post-test, learners in the ICG used the correct form 66 out of 70 times (94.29%), while IHG learners correctly answered 62 out of 64 questions (96.88%). Therefore, after the intervention, the IHG and ICG learners were all proficient at using English articles. The findings also showed that the ICG students improved their L2 writing performance more than IHG learners (Figure 4.10).

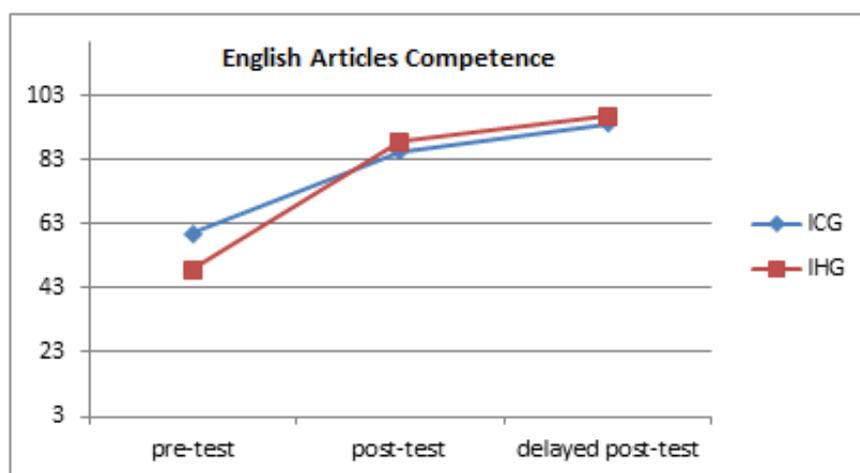


Figure 4.10 ICG and IHG English Article Competence

Figure 4.10 shows that the groups had different levels of competence when they started the intervention and they also both improved over time, which aligns with the earlier findings about the classes (see 4.2.5). A closer look at the number of correct uses for each learner showed that some learners outperformed their group members at using English articles. Tables 4.30 and 4.31 show the within-group English article competence.

Table 4.30 ICG Within-group English Article Competence

Test	ICG										Σ
	1.1		1.2		1.3		1.4		1.5		
	%	Σ									
Pre-	9.52	2	23.81	5	19.05	4	23.81	5	23.81	5	21
Post-	6.67	4	23.33	14	25.00	15	28.33	17	16.67	10	60
Delayed Post-	17.65	12	19.12	13	25.00	17	22.06	15	16.18	11	68

Σ = total of correct responses

Table 4.31 IHG Within-group English Article Competence

Test	IHG										
	2.1		2.2		2.3		2.4		2.5		Σ
	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	
Pre-	17.65	3	17.65	3	35.29	4	17.65	3	35.29	4	17
Post-	20.83	5	12.50	3	12.50	3	16.67	4	37.50	9	24
Delayed post-	16.13	10	20.97	13	19.35	12	22.58	14	20.97	13	62

Σ = total of correct responses

As these two tables indicate, the learners' competence varied. Although all of the learners used English articles more in the post- and delayed post-tests than they did on the pre-test, their contribution to the total number of correct responses decreased as their group members improved their competence in their writing. These results are further examined in the following chapter (see sections 5.3 and 5.4).

4.3 Quantitative TA findings

As mentioned earlier (see 3.7.2), the classes were trained to perform the TA technique. However, only the ICG and IHG learners were monitored during the TA sessions. This section presents the participants' results for writing fluency that were scored using their weekly TA assignments. Table 4.32 summarises the means of the learners' performance both before and after the TA sessions (see 3.6.2 for details on how the ICG* and IHG* participants were chosen).

The numbers demonstrate an increase in the word count after the treatment, which represents a writing fluency change during this experiment (see 3.8.2). A complete list of the learners' performance scores obtained in this intervention is attached (see Appendix P1). Descriptive statistics of the changes in each group are presented in Table 4.32.

Table 4.32 The Mean of the ICG and ICG* L2 Writing Performance Changes

	Group	N	M	SD
Change	ICG	5	72.42	7.78
	ICG*	5	21.48	12.55

* denotes 'comparison groups that did not participate in TA sessions'

As shown in Table 4.32, the degree of L2 writing performance change in the ICG learners was higher than that of the ICG* students, who were not monitored or required to use any TA strategy to engage with the teacher's WCF. The average amount of content generated by an ICG learner was 72.42 words, while ICG* learners, who were not monitored or required to use any TA strategy to engage with the teacher's WCF, wrote 21.48 words more on average

in their subsequent writing assignments than they had initially (A complete list of the learners' performance scores for this intervention is attached in Appendix P2). To test the significance of these results, an independent samples t-test was used. The results of the test revealed a statistically significant difference in the writing fluency change between ICG and ICG*; $t(8) = 7.72, p < 0.001$. The SD, however, indicates that the ICG members were more homogenous than ICG* learners as the within-group differences were greater in ICG* members, which could have been caused by the TA technique, as it was the only difference between ICG and ICG* participants (see 3.2 and 3.3 for the research design).

Similarly, the IHG and IHG* L2 writing performance change is presented in Table 4.33. It shows the means of the two groups, which is the average of the increase in word count in each group.

Table 4.33 The Mean of the IHG and IHG* L2 Writing Performance Change

	Group	N	M	SD
Change	IHG	5	44.18	14.21
	IHG*	5	5.68	4.66

* denotes 'comparison groups that did not participate in TA sessions'

Table 4.33 shows the difference in the performance change between the IHG and IHG* learners. The average for an IHG learner was 44.18 words more, while IHG* members who were not monitored or required to use the TA strategy to engage with the teacher's WCF, wrote only 5.68 words more on average in their subsequent writings. The SD, however, was greater in the IHG members than for IHG* students, which suggests that within-group differences might have influenced the L2 writing performance (see 5.2 for the key findings). These differences could have been caused by the personal learning experiences that took place during the intervention (see also 4.3.2).

To test the significance of the aforementioned results, an independent sample t-test was applied. The results showed a statistically significant difference in writing fluency change between IHG and IHG* learners; $t(8) = 5.76, p < 0.001$.

To compare the influence of the WCF mode and TA, the two main imbedded groups' results had to be compared. An independent samples t-test was used to examine differences in the writing fluency change between the ICG and IHG members. The results indicated a statistically significant difference in the writing fluency change between the two groups; $t(8) = 3.90, p = 0.01$. The ICG showed a significantly higher mean change ($M = 72.42; SD = 7.78$) compared with the IHG ($M = 44.18; SD = 14.21$). This result indicates that the writing fluency of ICG members was higher than that demonstrated by the IHG. The mean score of the IHG

writing performance change was 44.18: a moderate improvement. ICG members produced more words as the experiment progressed, and their L2 performance change mean score was 72.42: also a high improvement (see Appendix M for the details). In addition, the SD, which represents the within-group gap, revealed that the differences between ICG members were lower than those among IHG members. This finding is likely to be linked to personal within-group differences (see also 4.2.2, 4.2.4 and 4.2.6) and will be explored further using other methods and discussed thoroughly in the discussion (Chapter 5).

Another quantitative dataset in the TA sessions was TA attendance and drafting. Tables 4.34 and 4.35 show the number of TA sessions carried out by each member of the participating groups and the time spent in the sessions during the intervention, as well as the number of second drafts each learner returned.

Table 4.34 Number of TA Sessions Carried Out by ICG Members

Pseudonym	1.1	1.2	1.3	1.4	1.5	Total
TA sessions completed	4	5	4	4	4	21
Second drafts returned	4	5	3	4	3	19
Time spent in TA sessions (minutes)	167	246	158	127	151	849

Table 4.35 Number of TA Sessions Carried Out by IHG Members

Pseudonym	2.1	2.2	2.3	2.4	2.5	Total
TA sessions completed	4	5	4	4	4	21
Second drafts returned	4	4	4	3	4	20
Time spent in TA sessions (minutes)	165	240	152	133	158	848

As shown in Tables 4.34 and 4.35, the numbers of completed sessions, second drafts returned and time spent in the TA sessions were similar between the ICG and IHG groups. Nonetheless, some learners were fully committed to attending the sessions, but their performance and engagement with the WCF did not align with their attendance, which might have resulted from a lack of awareness about the link between engagement with WCF and performance change (see also 4.5.2).

4.4 Think-aloud (TA) findings

Alongside the two WCF modes for the IC and IH classes, ICG and IHG members also practiced the TA technique as part of the intervention in this study. The aim of observing TA sessions was to record any indicators of the learners' cognitive engagement with the WCF (see 3.8.2). The TA observations also revealed aspects of social (behavioural) and affective

engagement. In the following sections, these findings are reported within their most relevant themes.

4.4.1 Theme 1: purposeful engagement with WCF

In this theme, purposeful engagement with WCF comprised cognitive, social and affective engagement. When the three constructs were aligned and balanced, the TA sessions were found useful for the learners as a learning activity. In such cases, the learners' engagement with WCF and their awareness of the connection between their engagement and future L2 writing changes was noticed. Likewise, learners' failure to purposefully engage with WCF in some of the learning episodes harmed their overall learning during the intervention.

During the TA sessions, deep-level engagement with WCF stood out as a common factor that influenced L2 writing improvement. Deep-level engagement also shaped the learners' experiences with the intervention and contributed to their performance changes (Fry *et al.*, 2008; Marton and Saljo, 1976). The learners in the two groups showed different levels of engagement with WCF. As seen in the observations, some members of the ICG and IHG interacted with WCF better than others. The learners who engaged deeply with WCF were found to be aware of the link between their engagement and their L2 writing change (see 6.2.1).

The first indicator of deep-level engagement was the learners' eagerness to self-correct their errors, which I noted during the TA observations. Among the ICG members, three learners (1.1, 1.2 and 1.4) were more eager to self-correct their errors than the other two

The personal trait that drove these learners to purposefully and deeply engage with WCF in order to learn was eagerness and self-efficacy. Learner 1.3 showed less eagerness to correct her errors, while Learner 1.5 started with a limited interest in correcting her errors but improved her engagement with WCF as the intervention proceeded. These attitudes were evident in the TA observations as the learners' behaviours changed along with their performance.

The second indicator of deep-level engagement was the learners' willingness and readiness to justify recurring errors. The same three learners were willing and able to justify their errors more than the other two students. To be more specific, Learners 1.1, 1.2 and 1.4 justified their errors and articulated their thinking as they worked. In addition, Learner 1.4 created a plan to overcome her recurring errors. This behaviour shows an independent, purposeful engagement with WCF that might have influenced L2 performance changes before causing more change to happen. In contrast, Learners 1.3 and 1.5 were not keen to articulate their thinking at the beginning. Learner 1.5 hardly provided any justifications for her errors,

which indicated only surface-level engagement with WCF (Fry *et al.*, 2008; Marton and Saljo, 1976).

The learners' processing of the WCF was also an indicator of purposeful engagement. Some learners showed depth in processing WCF during some sessions. For example, their ideas were well articulated, and they were alert and attentive, whereas in other sessions, the same learners were uninterested. Fluctuating purposefulness was evident in Learners 1.3 and 1.4, who were also less eager and less willing to justify or participate than the other learners. There were a few explanations for this tendency in these two specific learners. First, complex tasks can make learners afraid to try to engage with WCF (Biggs, 1987). Fear is a strong negative emotion that could hinder the learners' cognitive engagement and processing of WCF. In addition, topic familiarity and the learners' level of interest in the topic may also influence the depth of their WCF processing. Learner 1.2 was really interested in writing and revising her essay about women's rights to drive, but Learners 1.3 and 1.4 showed little interest in the topic. These incidents show that the learners' depth of cognitive engagement may also be influenced by affective factors and tasks (Biggs, 1987).

As explained earlier (see 3.8.2), a list of codes for non-verbal cues was used to recognise and track affective engagement (Ellis, 2010; Svalberg, 2009) (see Appendix L). All the participants expressed affective engagement through verbal reports as well as non-verbal cues during the sessions, including facial expressions, hand movements and eye contact. The learners' postures during the TA sessions were therefore noted. In total, seven participants expressed positive affective engagement with WCF during the TA sessions. Two students (Learners 1.4 and 2.4) were neutral towards the activity for the majority of the sessions they attended. One participant (Learner 2.2) expressed negative feelings towards TA as a learning activity by facial rejection and distressed leg movement. Her feelings were evident in her attitudes and non-verbal cues during the majority of the CF episodes and TA sessions she attended.

4.4.2 Theme 2: learners' awareness and L2 writing improvement

The TA technique raised the learners' awareness of their L2 writing performance and how it was linked to their active engagement with WCF. In this study, learners' awareness is a subjective measure of the degree of a learner's consciousness regarding the relationship between her engagement with WCF and her learning improvement. The learners' awareness is not static or constant. It varies and relates to many personal and contextual factors. While observing the learners in this study, three degrees of learner awareness was evident. First, some

learners were unaware of the connection between their engagement with WCF and their L2 writing improvements. These learners made fewer efforts to use the TA sessions as learning opportunities. As a result, their L2 writing improvement was limited in both quantity and quality (see Appendices I and L).

The second category is labelled ‘ignored awareness’. In this category, learners were aware of the connection between their engagement with WCF and L2 writing performance. However, their awareness was not always enough to spark their engagement with WCF during the TA sessions for different reasons, such as their limited interest in the topic or limited knowledge of L2. Hence, their L2 improvement was limited to the topics they had mastered or those they were interested in. These learners’ performance varied, and their engagement was influenced profoundly by their emotions.

The third category was the consciously aware group. This group of learners was always engaging with WCF during the TA sessions and using it to improve their L2 writing. They were self-motivated to learn. As a result, their L2 writing was improved and maintained in this study. This interest was also proven in their overall grades and final assessments. Table 4.36 shows the categorisations of the learners in the intervention and how the degrees of their awareness were associated with their overall grade as well.

Table 4.36 Degrees of learners’ awareness in the study and their final course marks

Degree of Awareness	Learner	Final Course Mark
Positively Aware	1.2	91
	2.5	78
Ignored Awareness	1.1	83
	1.3	80
	1.4	64
	1.5	68
	2.1	83
	2.3	85
Unaware	2.4	64
	2.2	69

In Table 4.36, the learners are distributed into three categories (unaware, ignored awareness and positively aware learners) according to their final marks. Their responses during the interviews were used to categorise their awareness. The learner who was unaware of the connection between engagement with WCF and L2 writing improvement was the only candidate who scored lower on the delayed post-test compared to the post-test. Despite this

fact, learner's 2.2 attendance records were perfect for all the lessons (see Table 4.35, p.139). In other words, although she was physically present, her presence was ineffective to her L2 performance change, which could have been influenced by her poor cognitive and affective engagement with WCF during the TA sessions. This point is elaborated later on in the discussion (see sections 5.1 and 5.2).

4.4.3 Theme 3: learners' agency and self-regulations

As previously defined, learners' agency is the inner power and the persistence learners develop that leads their choices and actions in learning situations (Mercer, 2011). It aligns with their self-regulatory strategies, which language learners attempt to follow to improve their performance. In this study, attending TA sessions and resubmitting written work were considered positive self-regulatory strategies for the learners. These figures have already been presented (see 4.3, table 4.34 and 4.35). However, the learners' agency and self-regulatory strategies varied both within and between the participants. As a result, the learners' L2 performance also varied between and within the groups (see 4.3 for the quantitative findings). These differences will be discussed later (see 5.4, 5.5, 5.6, and 5.7).

4.5 Interview findings

The interviews immediately followed the TA sessions (see 3.2). They were scheduled at that time because the two groups (ICG and IHG) had to be interviewed within a week of completing the TA sessions so they could still remember what had happened (Lumley, 2002). The learners were interviewed individually. The interview schedules contained 10 questions (see Appendix C), and the learners were encouraged to add more details during the task (see 3.7.4). The interview findings are presented in the following section under the headings best related to their content.

4.5.1 Theme 1: self-regulatory strategies and engagement with WCF

The learners were asked to describe the strategies they developed to improve their writing during the TA revision processes. Their answers showed how they regulated themselves and planned their learning (or demonstrated a lack of planning). There were three trends in how the learners regulated their learning according to the WCF they were offered: 'the focused learner', 'the accidental learner' and 'the unaware learner'. These different modes of self-regulation strategies may also have been evident in the same learner at different times during the intervention.

The first trend was ‘the focused learner’. In this trend, the learners aimed to use WCF effectively by writing corrections and committing to self-learning by both classifying the errors and using the WCF in their future writing. They also worked on developing their observation abilities and skills to compare the correct and incorrect examples (e.g. learning from earlier errors). When the learners were asked how they used WCF in their TA revisions, some of them stated that they used the teacher’s WCF to deepen their cognitive engagement with their writing. Specifically, Learner 1.2 stated:

‘As I paused at my errors, I thought of them in relation to my previous knowledge to find the answer or to guess the meaning’.

Learner 2.3 shared:

‘Some of the teacher’s handwriting was not clear to read, so I’d ask her to read it and I’d write the meaning myself’.

The focused learners (1.1, 1.3 and 2.5) mentioned the need to develop a routine to overcome their errors. For example, Learner 2.3 said, ‘I understood some of it [WCF], and I asked the teacher about the comments I did not understand.’ Another student, Learner 1.1, stated that she used a dictionary to find the answers and also asked some of her classmates for clarification. Focused learning was enhanced by the use of computers, as described by Learner 2.5: ‘The computers made it easier to understand the WCF because I do not have to guess the words’.

In addition, the learners’ views varied about whether short and indirect WCF had an influence on their engagement with it. For instance, one learner (1.2) asserted:

Receiving short and precise WCF made me think about my writing for longer. When I saw the correction codes, I had to recall them or to check in the list I had from the teacher, which made remembering the correct answers easier than before.

In addition, short corrections allowed the learners to notice their accomplishments while learning. Learner 2.4 stated:

Short corrections made me feel that I accomplished something, even if it was as simple as figuring out why I should have written (s) with this verb.

Nonetheless, some learners were used to receiving direct and detailed corrective feedback, and they found indirect, short corrective feedback less useful. According to Learner 2.1:

Short answers were not enough for me. I found them hard to figure out and recall. My English is poor, so I rely on the teacher to correct my work in detail. Maybe if I was better, I could have managed.

In this response, the learner was unaware of how important her engagement with the WCF was for enhancing her writing skills at the beginning of the intervention, but her attitude changed later. Learner 1.5 stated:

I received short answers, and that was annoying because they looked incomplete. I wanted full answers... but when I used to receive full corrections, I used to forget all of them after the class or after the test... I kept making the same errors over and over, so maybe this method is better. I do not know.

This response shows an explicit awareness of the connection between the WCF and writing improvement that led the learner to change her mindset to engage with WCF. She accepted WCF as a means to improve and learn from her mistakes. As a result, her self-efficacy and her writing performance changed (i.e. cognitive and affective engagement).

One aspect that many learners agreed on was the importance of supportive feedback. The students were not only looking for corrections; they also wanted the teacher's empathy and understanding. According to Learner 1.2, 'WCF needs to be positive and supportive to attract me and make me want to improve.' She added:

Teachers should care for our feelings when giving WCF. We want to write, but we do not know how to write or how to enhance our writing.

The last two comments show the interaction between positive WCF and positive affective engagement and how this interaction fuels self-regulation strategies, especially for beginners. In addition, the focused learners were determined to invest in TA as an opportunity to improve their writing and their awareness. In particular, regardless of the WCF mode used, the learners who had mastered the use of English articles were capable of applying their knowledge to their writing when an article error was pointed out to them. For example, Learners 1.3 and 2.5 both mentioned knowing the rules but failing to use them correctly because they were not paying enough attention to the task. In their case, the errors were caused by a lack of attention, and they were capable of correcting them once they had raised their own awareness during the TA sessions.

The second trend was 'the accidental learner'. In this trend, the learners tried to correct their errors and to establish a systematic way to self-learn. However, regardless of their efforts, they kept making the same errors until, at some point during the intervention, they mastered the rule and used it correctly. The instances of accidental learning happened when the learners were ready to learn a new fact. Learner 2.2 said:

I struggled with the object pronouns for some time. Even with WCF, I was unable to figure out what was wrong with the sentence. Once I noticed the differences between the pronouns, it became clear.

For accidental learning to happen, learners are required to be alert and pay attention and to use WCF to lead their learning process, even when noticing minimum changes and improvements. According to Learner 1.2:

My attention changed. Maybe my writing did not change a lot because we do not write a lot, but I can spot errors faster now.

The third trend was ‘the unaware learners’. As the name suggests, in this category, the learners ignored their errors, mostly because they were incapable of correcting them as they had not yet reached the appropriate level of proficiency. For example, some learners were likely to give up, such as Learner 1.3, who said ‘if I do not understand [WCF], I just pass the error and move to the next one.’ Learner 2.5 added:

I have mixed feelings towards WCF. When I do not know what to do with it, I just ignore it. But in this experiment, it [WCF] was understandable. I actually enjoyed reading it and learning from it.

In addition, some of the unaware learners did not seek help from their teacher or their classmates. According to Learner 2.1:

I don’t ask my teacher or my classmates, but I ask a private tutor sometimes. I do not ask anyone because I hate to be a burden or to feel less capable than the others.

Another learner (1.3) stated:

If I do not understand it [WCF], I do not ask because I had a bad experience with my teacher when I asked before, so I decided not to ask.

Here, the strategy was caused by negative affective engagement during a prior feedback session. Learners who had a negative opinion about TA or who did not commit to its specific rules as they were explained during training (see 3.8.2) experienced less cognitive engagement than the rest of the participants. Hence, their overall engagement with WCF was less than other participants’, as was observed in Learners 1.3 and 2.2. This finding shows the close connection between the cognitive and affective engagement in shaping the learners’ experiences. Indeed, learners who were not actively immersed in the TA strategy struggled to commit to it. For example, Learner 1.3 said that she was not convinced that TA is useful in helping her engage with the teacher’s WCF. She also questioned her ability to facilitate her learning, as she believed she was ‘not good enough,’ which indicates poor self-efficacy (see 5.7).

Moreover, some of the unaware learners did not develop a personal plan to work on improving their writing by using WCF. The strategies of these unaware learners were either to ignore the errors, as demonstrated by Learners 1.3 and 2.1, to leave the tasks incomplete or to avoid the rule in their future writing. Five learners stated they had done so at least once during the intervention.

As mentioned above, an individual could change her regulation strategies during the intervention according to the specific circumstances and their preferences. For example, Learners 1.1 and 2.3 followed a focused strategy in some lessons and an accidental strategy during others.

Other learners faced a challenge in using TA as a learning opportunity for writing because of the time factor, which inhibited their ability to plan and practice. For instance, Learner 2.4 stated:

I do not think my writing improved, but I do not think I practiced writing enough, either.
I do not have time for TA or for revisions.

According to Learner 2.5:

It [TA] made me feel pushed to write, and this was good and bad. It was good because I achieved some of the goals I set every time I join an English writing class, but it was bad because of the time I had to spend writing and revising.

Learner 1.1 realised that ‘more time must be allocated to teaching us how to use WCF and TA to improve our writing.’ She became aware that:

More time must be allocated to teach us how to write and respond to writing questions and to plan our writing. [TA] takes time. I need more time to practice writing and TA. It should be a compulsory activity when learning to write.

However, acknowledging the need for self-regulation strategies might have encouraged cognitive engagement in some students. A lack of planning time for regulation processes affected L2 writing improvements for several reasons. The techniques and reasons of changing the self-regulatory strategies are explained later on in the discussion (see 5.3, 5.4 and 5.6).

The learners were asked to describe their approaches to engaging with WCF when they received it and before rewriting their paragraphs. There were two types of approaches: a positive approach and a negative one. The positive approach included reading the WCF once, which all the learners did; rereading the comments more than once, which was done by three learners in each group; writing comments and clarifications on the provided WCF (three learners); finding out the meanings of the corrections if they were unclear (one in each group); looking for examples or clarifications online or in dictionaries (three learners); and seeking

help from other group members (five learners) as a strategy to engage with WCF. There were no obvious differences between the groups in this respect.

The negative approach included reading WCF without the intention to correct the errors, which two learners mentioned; putting minimal effort into thinking about the errors most of the time (three learners); relying on a private tutor's help (one learner); and ignoring the task altogether (three learners).

4.5.2 Theme 2: the learning experiences

Understanding specific phenomena, especially those that concern the behaviour of people, requires understanding the contexts within which they occur (Dewey, 1957). Therefore, learners' experiences with an intervention are linked to the context or contexts wherein they took place. This theme includes the range of experiences that resulted from the intervention and were reported in the interviews. It pins down the learners' experiences in the research study and how these experiences shaped their engagement with WCF mode and TA as well as how they viewed themselves, their peers and their teacher. This theme contains their responses and links the explanations to the theoretical framework and the other theories that appeared to influence their engagement with WCF as well (see 2.2.1, 2.3.3, 2.4.2 and 3.4).

According to the learners, the modes of WCF (e.g. computer-mediated or handwritten CF) did not cause a notable difference in the learners' cognitive engagement with WCF; this trait was also evident in their tests and writing assignments. However, the WCF mode seemed to influence their affective engagement. For example, some learners stated that they preferred receiving computer-mediated WCF for various reasons. First, as noted above, the mode of WCF was also the mode in which the learners made their corrections; it is likely that using computer screens to engage with WCF minimised the stress of handwriting in a L2, as reported by Learner 1.1:

Using the computer eased the stress I face when I write. I mean, the machine was there to support me, and my handwriting was not an issue anymore.

In addition, the screens also reduced other negative feelings, such as fear and shame. Learner 1.2 shared:

I used to fear making mistakes because they made me feel ashamed of myself, but using the keyboard took away some of the stress and focused my attention on the writing skill, not the writing itself.

Learner 1.5 found a solution for her anxiety and embarrassment of disorganised handwriting by engaging with the screen:

I hate my handwriting. it embarrasses me. Using Word suited my preferences in avoiding having to spend time on improving the spacing and the size of my writing.

However, three learners who received handwritten CF faced fear and anxiety. According to Learner 2.1:

Facing my spelling mistakes was hard. If I had a way to learn how to spell English words, I would master English easily.

This same idea was shared by four learners. When the learners were worried about their handwriting, their writing production fell. In fact, Learner 2.3 stated, ‘I worry about my handwriting and errors all the time, which makes me hate writing sessions and skip homework’. The ICG members found computer-mediated WCF easier to engage with for many reasons:

Using the labs is fashionable and trendy. We never used the English labs before for writing classes, but we used them for a listening course. It was a good change.

In addition, they mentioned the computer lab’s accessibility, ease and flexibility of time and place. Three learners stated that using the Track Changes feature was ‘a game changer’ for them: it [Track Changes] saved my time’ (Learner 1.1). The learners were able to use the Microsoft Word application on their smart devices to write the paragraphs without the need to use a desktop or laptop. Four learners said that using Track Changes helped them understand the instructor’s feedback better, as some instructors write their feedback without considering that some learners may be unable to read the teachers’ handwriting. The learners also mentioned that computer-mediated WCF made accessing the corrections easier. In the IHG environment, the teacher’s handwriting caused the learners to passively engage with WCF both affectively and cognitively. Some decided to ignore the WCF. In addition, Learner 2.1 stated:

I do not understand everything the teacher writes. Her handwriting is not clear, and it [is] frustrating. I just leave it and move on.

TA was a new experience for the learners as well. Each one received the sessions somewhat differently. Some found TA daunting and worthless when the intervention started. It took them some time to realise its usefulness. Learner 1.5 stated, ‘[I] hated being the centre of the TA sessions and hated being observed’.

This notion of being uncomfortable while being observed thinking aloud was mentioned by two learners. However, they stated that their feelings changed towards TA after the third session as they began to realise TA’s real aims and effectiveness. Some learners suggested that TA could be performed in pairs or groups. For example, Learner 1.2 said:

Writing is a sole-person production, but learning to write together is fun. I mean, I want to try it [TA] in pairs or groups sometime and see if it would work.

This comment justifies choosing SCT as the underpinning theory in this research study (see 2.2.1). It also opens the door for suggestions for future teaching and research as well. One of the queries in the current research concerns whether TA enables or hinders L2 writing. The learners stated that TA enabled their L2 writing by introducing them to the processes of writing, not only the outcome (i.e. a model paragraph or an example to follow). According to Learner 1.2:

I used to think that there was nothing much I can do about my writing after I have received it back from my teacher... but revising to rewrite, rethink and improve my paragraphs made learning to write seem possible and doable. I used to think writing is hard to fix, but this tool showed me ways to plan and repair my writing.

The learners indicated that they had noticed some changes in their thinking about writing; ‘Learning how to think about my writing was the best bit about TA. I did not try it before’.

They found TA to be useful not only in the writing course but also for writing in general. Learner 2.4 shared, ‘I think aloud about everything I write. It makes my thinking clearer’.

TA also enabled the students to use their writing plans, as Learner 1.1 stated; ‘I learned to plan my writing ahead before I start writing my paragraphs’. Learner 1.5 added:

Articulating my thoughts was not easy at the beginning, but when I learnt it, WCF made sense, and my ideas became clearer. It [TA] made the [WCF] notes clearer and easier to follow.

However, some learners disagreed with this information and claimed that TA was not useful. Learner 2.1 thought, ‘I do not see huge difference in my English because of TA’. The students also mentioned how WCF made them feel. For instance, Learner 1.3 stated:

I always hated feedback. It always sounded personal. It made me feel clueless. But in this experiment, WCF was part of learning from the beginning, and it did not offer final marks from only one try. It offered learning opportunities, which made WCF easier to digest.

As for writing fluency, the learners became aware of their limited vocabularies when they tried to increase the word counts of their paragraphs during the intervention. When they were asked about what could improve their writing skills, they mentioned increasing their vocabulary. Learner 2.4 thought that ‘Learning new vocabulary should be an aim for any language courses’. In addition, Learner 1.1 stated ‘I have ideas, but I do not have enough words to express them’. This limitation affected the learners’ production and limited their engagement with their writing. However, the testing numbers indicated that all the participants in the TA sessions, regardless of the WCF mode, produced more words in their writings as the

intervention progressed (see 4.3). The learners had used only a limited number of words when they started. As the intervention proceeded, their writing fluency improved, and they were able to write more.

This research study found that a readiness to learn was linked to learners' awareness of their L2 performance. Before the research study, the learners were not aware of their performance in writing (see 5.7). When they were asked about it in the interviews, four of the five participants in the ICG group thought their English writing was acceptable, and one learner was unsure about her level of proficiency. In the IHG members, three learners could not decide on their proficiency level in writing, and two participants thought that their writing was of acceptable standards. In total, six learners thought their writing was better than how it was assessed by the pre-test. This discrepancy indicated how unaware the learners were of their proficiency levels. When the students were asked to self-assess their L2 writing performance, four of them said that they were aware of recurring errors in their L2 writing, but they were unable to justify the reasons for these repeated errors. One of the learners stated, 'I knew this was the wrong tense, but it came out like this'.

When asked about TA's influence on affective engagement during the interviews, some learners mentioned that they did not like TA because it made them the centre of attention, which made them anxious. The learners shared that combining the CF group discussions with the TA technique opened their eyes to the importance of supporting peers emotionally and sharing their knowledge with them. The learners better understood their peers' experiences after the TA sessions. They stated that they realised how the others were facing similar challenges to engage with WCF. The learners' awareness of their similarities increased their empathy towards other learners and also increased their peers' support in the learning environment, which was likely to improve the learning experience for all of them. In fact, six learners noticed that they felt the difficulties their classmates were experiencing (see 5.6). They also mentioned an increase in their tolerance level with their less-capable peers after the TA sessions. They realised that all of them faced similar challenges with WCF as learners. The following excerpts show how the learners viewed their learning experiences after the intervention:

Although we were in the same class... there was big differences between us. We don't think or feel the same [as] others... When we chose to talk or stay quiet in the classroom, for example. When I'm tired, I don't take part... I just stay quiet and listen... but some of my peers used to think I didn't want to help them, or I was being [full of myself].

Learner 1.4

I forgive myself when I make mistakes... I stopped comparing myself to my friends or other learners... I receive teaching differently, and we also [react] to feedback [CF] differently. I think what made me commit to TA was not only the writing. I felt a genuine interest in the improvements I was making. I was noticed. I am not an excellent student in English, so I hardly participate in class. But here, I felt heard.

Learner 1.2

I never used TA before. At the beginning, I was not sure of its usefulness, but then my writing started to improve. I was writing more and with a clear purpose

Learner 1.5

In this experiment, I saw not only the errors but also the reasons that made me write them. At some points, I compared my errors to my friend's, and they looked similar. We helped each other by telling each other why something is wrong and how to get it right. For example, my friend noticed that I always misspell the word 'friend'. She taught me to separate the word into two words where 'end' is the second and the easier one to remember. I never wrote it wrong again.

Learner 2.4

As shown in the comments above, affective and social engagement influenced the learners' classroom and task engagement and also their cognitive engagement with WCF specifically. The three constructs of engagement interacted with and influenced the learners' experiences in their individual contexts. The discussion and implications chapters further explain the learners' experiences (see Chapters 5 and 6). The following section explores the classroom observation findings.

4.6 Classroom observation findings

As previously mentioned, the classroom observations were ethnographic (see section 3.7.3). Hence, they were focused on the indicators of the learners' engagement. The findings are organised according to their respective groups (see section 3.7.4). First, the results

concerning the ICG members are presented. Next, the findings related to the IHG members are outlined. This presentation is based on the major themes as well as the emerging themes that appeared to be linked to the research problems for both groups (see section 3.8.4).

4.6.1 Theme 1: the learners' levels of engagement with WCF

The learners' approaches to engaging with WCF vary from surface-level engagement with WCF, in which the learners apply minimal efforts to engage with WCF, to deep-level engagement, where the students engage with the WCF with the intention to improve their L2 writing. These classifications were inspired by the work of Marton (1975), Biggs (1987) and Fry *et al.* (2008) (see section 2.3.1).

In this research, the learners' engagement levels varied during the intervention. For example, Learner 1.1 showed a focused attitude towards learning. She was a very relaxed learner (not anxious). She was open to taking risks and trying unexplored methods. For example, she volunteered to answer new questions and was unafraid to make mistakes. During the classroom observations, this learner was alert, capable of leading her learning and able to use her body language and facial expressions effectively (e.g. eye contact). Learner 1.2 showed commitment in the classes. She had a deep appreciation for the knowledge and the help that was being offered. She was keen to scaffold. Her body language and verbal communication revealed interest. For example, the learner leaned forward to engage with her group many times. She had good eye contact with her classmates and worked well in group discussions. She took the lead in group discussions and even initiated some of the discussions. She was able to provide feedback that moved her group forward in their activities (see section 5.4).

Learner 1.3 missed one of the five activities, but she came later and offered to do them, which showed commitment and self-motivation. During the classroom observations, she was supportive of other learners; she initiated questions and answered questions, too. In contrast, Learner 1.4 failed to remain focused or engaged in two classes, and she did not show genuine interest in the tasks being offered in the classroom. This learner seemed to enjoy the class time only when she felt unchallenged by the tasks (e.g., if the tasks were within her abilities). On a few occasions, she avoided taking part in the activities, especially if the lesson involved an in-class writing task.

Learner 1.5 avoided some opportunities for group work and feedback. She liked to work alone or to work with one specific partner. She was very calm, and she rarely encouraged other learners to approach her for questions or suggestions.

Overall, the ICG observations revealed varied levels of engagement that the group exhibited at different times and for different tasks. Some learners were capable of demonstrating levels of classroom engagement cognitively, socially and affectively all the time; others had to be reminded of the tasks many times in order to engage them with the activities. Their attention to the general feedback activities in the classroom was often disrupted by looking at their own screens and by immediately trying to apply what they had learned to their writing.

The IHG learners showed different and varied levels of engagement as well. For example, Learner 2.1 missed none of the classes and was engaged during all learning sessions. She also showed some degree of operative social engagement during classroom activities by cooperating with others in discussions and helping other learners to understand the purpose of some activities or questions, as her level of proficiency permitted. She also asked other members of the group for help during some of the writing activities.

Learner 2.2 missed parts of two sessions. When she attended, she was socially active and engaging with the learners and the teacher. She showed aspects of engagement, such as leaning towards others during activities to learn or share. However, her attention was not focused on the learning activity in the majority of the sessions. She did not take an active role in learning, and her engagement was normally off the topic of discussion. She seemed to only pretend to be engaging in the activity. She may have been afraid of making mistakes, which made her avoid engaging with others (see section 4.5.2).

Learner 2.3 was attentive, self-motivated and an inquirer. She always scaffolded and corrected others. She was able to suggest other ways to answer the teacher's questions. She maintained eye contact with other learners while working in groups. Overall, she was a hard worker.

In the classroom observations, learner 2.4 did not show enough commitment to achieve her desired learning goals, which she mentioned during the interview. For example, she arrived late and submitted many of her assignments at the last minute or even after the deadline. She was a shy learner who avoided talking in the classroom. She followed the discussions but rarely participated in them, even when she was encouraged to do so. She did not take the lead in any of the classes she attended. She worked with the same partner all the time and refused to change groups/pairs, even when she was prompted. She was not bored in the classroom, but she was more than likely unable to participate due to her level of L2 proficiency.

Learner 2.5 showed interest in and commitment to the intervention not only by attending all sessions but also by being present in the learning activities. This learner exhibited

good social engagement during classroom activities. This behaviour was demonstrated through scaffolding, helping other learners and initiating discussions when the learners were allowed discussion time. She also volunteered to answer the teacher's questions for the group.

Overall, the IHG learners were socially and affectively uncomfortable when they received their papers after marking. For example, they would avoid eye contact when they were called on to participate or comment on the recurring errors during the class correction time. Some of the IHG members showed interest in and good levels of engagement with WCF. These learners were active and put effort into accessing their cognition to stimulate their L2 performance as their level of proficiency permitted and the levels of engagement varied in the classroom.

During the classroom observations, the learners were observed communicating and discussing WCF when they first received it and also before the individual TA session took place. They mainly used Arabic (L1) in these negotiations. This practise is widespread among L2 learners during peer discussions (Hyland, 2000; Villamail and de Guerrero, 1996). These discussions were a useful method to prepare the learners for knowledge construction during the TA sessions. The students' collaborative meaning-negotiations increased as the research study progressed. For example, there were fewer silent periods in the class between the learners, and the time they needed to finish the exercises decreased as the experiment progressed. In fact, peer scaffolding experiences during class exercises seemed to move the individuals' learning forward because they needed less time to correct their own writing as the study progressed (Orsmond *et al.*, 2013b; Williams and Smith, 2017). This evidence confirms the importance of social aspects of engagement in learning from the teacher's CF (e.g. Hyland, 2000, 2013; Orsmond *et al.*, 2013a, 2013b), and it also highlights the importance of individual time while learning to write in a second language. Social interaction and self-scaffolding were intertwined in this research study and the learners were capable of helping themselves through their own experiences.

4.6.2 Theme 2: the learners' regulation strategies and agency

LEARNERS' REGULATION STRATEGIES

One of the indicators of the learners' regulation strategies and self-efficacy was the individual's commitment to attending the intervention sessions. Table 4.37 shows the learners' records of attendance during the 13-week intervention.

Table 4.37 Learners' Attendance During the Intervention

The learner (ICG)	% Attendance	The learner (IHG)	% Attendance
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1.1	90%	2.1	100%
1.2	95%	2.2	90%
1.3	95%	2.3	75%
1.4	90%	2.4	85%
1.5	75%	2.5	100%

As shown in Table 4.37, the learners' attendance ranged from 75–100%. Attendance indicates the learners' tendency and attitude to uphold the aims of their participation in the intervention; they were aware that this study was also a learning opportunity. The learners' attendance records are a positive indication of their self-regulation and self-efficacy in the current research study.

Agency: the learners showed self- and collective agency in supporting each other's learning. Their tendency to cooperate emerged when the learners faced a common error during a class discussion. The learners realised that they were in control of their learning and that when they supported each other, all would benefit. For example, Learner 1.3 struggled with pronoun (him and his) recognition and use in Week 4. During the class discussion, Learners 1.1 and 1.4 clarified the pronouns to her in a collective act of scaffolding. Hence, she constructed her knowledge with the help of her colleagues before applying this knowledge again on her own time during the TA sessions. Collective agency was evident in many occurrences in the sessions. The learners who showed eagerness to support their colleagues in the sessions developed not only self-agency but also collective agency. Collective agency could also be linked to a sense of responsibility towards the group members, as expressed by the learners during the TA sessions and the interviews.

Overall, the classroom observations in this exploratory research study recorded indicators of the learners' cognitive, social and affective engagement during class time. The engagement indicators were recorded during the learners' interactions with each other in the group and also in their interactions with the teacher as well. The learners' impressions of the received WCF were also recorded to explain and explore the changes in their engagement as the intervention proceeded. These efforts aimed to understand the phenomena from different angles. The observations revealed that there were different levels of engagement with WCF during the sessions. They also suggested that the learners' positive regulation strategies and agency improved their engagement and their awareness, and vice versa.

4.7 Chapter summary

In this chapter, the qualitative and quantitative data findings of the research were presented. The findings revealed that the participants showed varied levels of engagement with WCF, regardless of the WCF mode. Hence, these findings suggest that the mode of delivery almost did not influence the learners' engagement with WCF. These findings are discussed thoroughly in the following chapter.

As for their L2 writing performance, all the participants exhibited positive learning changes in their writing fluency, grammatical accuracy and grammatical competence regardless of their particular WCF mode. The quantitative analysis of the writing assignments showed that the L2 performance varied both between and within the participants who took part in the TA sessions. The qualitative analysis also confirmed that time was an important factor in positive L2 performance change. The qualitative findings highlighted the importance of learners' agencies and self-regulation strategies in improving their engagement with WCF and their L2 performance. The learners' awareness of this link positively influenced their L2 performance change. The students' experiences shaped their engagement with WCF and were reflected in their L2 enhancement. Purposefulness and meaningfulness in the tasks and the WCF provided improved the learners' engagement. The findings are discussed in the following chapter, which presents the discussion and triangulation of the data.

CHAPTER 5 SYNTHESIS AND DISCUSSION

5.1 Introduction

There were two main purposes of this research study: to explore and explain the learners' engagement with the teacher's WCF in a holistic manner that included cognitive, social and affective domains, and to explore and explain the learners' L2 writing performance change during the intervention. The current research framework (see section 3.5.2) was created by merging elements of Svalberg (2009) and Ellis (2010). A quasi-experimental study was carried out with two experimental groups of learners (ICG and IHG) that were imbedded in two classes (IC and IH) to understand how WCF influenced the learners' engagement and their L2 writing performance improvement, or the lack thereof. In the research study, all the learners (i.e. both the classes and the groups) received indirect error-coded WCF. The research study employed a two-component intervention involving the WCF mode and TA technique. For the WCF mode component, the IC received computer-mediated CF using the Track Changes feature in Microsoft Word, while IH received traditional handwritten CF.

For the TA component, the embedded groups (ICG and IHG) participated in the TA sessions (see section 3.8.2 and 3.9.2 for the TA design and analysis). The TA technique was developed using one of Vygotsky's constructs, namely mediation (1987), and was therefore employed as a mediating strategy to determine how the learners' L2 writing performance would change as a result of the TA learning activity. Then, the students' progress was compared to two other groups of learners from their classes who had not been thinking aloud (see section 3.7 for details regarding the other groups' recruitment). The underpinning theory used to explain and explore these findings was the SCT (Vygotsky, 1987). A mixed-methods approach was adopted to explore the intervention from different perspectives and to evaluate both the subjective and objective data. This chapter discusses the findings of the empirical data presented in Chapter 4. The findings are described along with the research questions. It is really important to clarify that the study findings are limited to its participants, who are adult female learners in Saudi Arabia, and the findings are not intended for generalisation. The key findings of the intervention are summarised below.

5.2 Summary of the key study findings

Research Question 1: How does the learners' L2 writing performance change (if at all) following the WCF?

- In this research study, the learners' writing performance changed positively following the WCF.
- The learners' involvement in planning and choosing their writing topics as well as the task's purposefulness increased their engagement with WCF and influenced their overall L2 performance change.

Research Question 2: What effect does TA have on L2 writing fluency, and why?

- The data showed that in both WCF modes, TA increased the writing fluency (see section 4.3.3.1).
- TA plus computer-mediated WCF was more effective than TA plus handwritten WCF at enhancing the learners' writing fluency.
- TA enhanced the learners' engagement with WCF, which led to a positive change in L2.
- Some learners' cognitive engagement was hindered by a lack of motivation, perseverance and commitment.
- Although the participants were beginners at the L2, those who invested in the TA sessions were able to scaffold their own learning and improve their writing independently when they were given time and purposeful tasks during the TA sessions.

Research Question 3: Does the mode of WCF seem to affect the learners' L2 writing performance?

- The mode of WCF only had a marginal effect on the learners' L2 writing performance.
- The mode's interaction with time, as measured at the post- and delayed post-tests, had no significant influence on the classes' writing fluency or grammatical accuracy (see sections 4.3.2.1 and 4.3.2.2).
- Time had a significant influence on both classes. All the learners improved their writing fluency and grammatical accuracy over time (see sections 4.3.2.1 and 4.3.2.2).

- The grammatical competence of the IH class was significantly affected by mode and time. (see section 4.2.5).
- The grammatical accuracy of both IC and IH improved over time (see sections 4.2.3 and 3.1.8 for the grammatical features).

Research Question 4: How do the learners engage with WCF during TA?

- The TA sessions improved the learners' cognitive engagement with WCF because these sessions facilitated and mediated student learning through self-correction.
- The learners' reported that positive affective engagement with WCF following the TA sessions, such as enjoyment and commitment, resulted in improvements in their self-regulation strategies.
- The TA sessions encouraged the learners to regulate their learning by using private speech while they read-aloud and thought-aloud without the presence of an active other-regulation or expert assistance.

Research Question 5: Does the mode of WCF seem to affect the learners' engagement with WCF?

- The IC environment promoted cognitive engagement without affecting the learners emotionally.
- The IH environment was more emotionally challenging for the learners.
- Both modes encouraged emotional peer-scaffolding and content self-scaffolding.
- Collective agency and team commitment were evident in the two environments.
- As the learners' awareness of the interaction between their engagement with WCF and their performance enhancement increased, their commitment level also developed.

The discussion below combines the quantitative and qualitative findings and ties the data into a coherent holistic picture to explain the explorations that were made. The discussion is linked to the theoretical and empirical literature presented earlier (see Chapter 2). The triangulation is presented along with the research questions it answers.

5.3 Research question 1: how does the learners' L2 writing performance change (if at all) following the WCF?

The findings of this research study showed that WCF positively influenced L2 writing. The changes were evident in the classes' writing fluency, grammatical accuracy and grammatical competence (see section 4.2). WCF's positive influence on L2 writing has been demonstrated by other researchers, such as Santa (2006) and Russell and Spada (2006) (see sections 1.1 and 2.4.2). Nonetheless, these findings contradict the claims of Truscott about corrective feedback's limited usefulness (1996).

The current study revealed that corrective feedback was not harmful to the learners as claimed by Truscott (1996) (see sections 1.1 and 2.4.2). The current study also found that WCF was beneficial, which disagrees with some researchers who have argued that correcting learners' errors is useless as learners do not effectively use this correction to learn from their errors; therefore, the feedback wastes both the teachers' and the learners' times (Ferris and Hedgcock, 1998; Hairston, 1986; Leki, 1990; and Polio, 2012). However, these contradictions confirm the complexity of Ellis's framework (2010). Ellis's framework suggests that corrective feedback requires specific conditions to lead to L2 improvement. In this research study, the L2 performance change was likely caused by the interaction between the WCF and the varied personal, educational, emotional and contextual factors amongst the learners, which explains the variation in levels among them. One of the factors that influenced the L2 performance change was the learners' engagement with WCF via the intervention (Ellis, 2010; Svalberg, 2009). When the learners holistically engaged with WCF, their L2 performance was more likely to improve.

Moreover, the findings showed that the learners had different strategies for engaging with the WCF (see section 4.3). Overall, their involvement in planning the tasks and selecting the writing topics improved their engagement with WCF. They were motivated to learn, which prepared them emotionally and also enhanced their cognitive engagement with WCF due to contextual factors (Ellis, 2009). In fact, learners' involvement has been mentioned by many researchers as an important factor to improve learners' engagement through encouraging learner agency (Kearsley and Shneiderman, 1998; Mubarak, 2013; Svalberg and Askham, 2014).

In addition, task purposefulness and meaningfulness increased the learners' engagement with WCF and influenced their overall L2 performance change (Little, 2007; Svalberg, 2009; Dewaele *et al.*, 2016). Cognitive engagement was enhanced gradually as the barriers of negative affective engagement decreased. The learners who engaged socially with the feedback sessions were able to adjust their cognitive and affective engagement faster in this experiment, which in turn gradually improved their results. Improvements did not happen instantly, but the learners were becoming more aware of the strong link between their engagement with WCF and their progress and understanding. Hence, they were more relaxed in their approaches to WCF, which improved their engagement and was reflected in their L2 writing performance change as well. However, as the responses and the observations were obtained from a very small group over a limited period of time, these conclusions are merely suggestive and can only show a tendency.

In addition, the writing fluency of the learners in the participating groups (ICG and IHG) improved more than the ICG* and IHG* members, which proves the positive influence of using TA as a mediating strategy to improve L2 writing through engagement with WCF. TA protocols were also found useful in Han and Hyland's study (2015) to engage the learners with the teacher's WCF. In the current study, however, learners' L2 performance change was influenced by their awareness of the connection between their performance change and their engagement with WCF. The interaction between many dynamic systems, including the learners' awareness, agency, and constructive engagement, provided satisfactory results (Figure 5.1). Nonetheless, both the current study and Han and Hyland's (2015) investigation dealt with very small numbers of participants. Therefore, the results must be interpreted with caution.

5.4 Research question 2: what effects does TA have on L2 writing performance, and why?

The findings showed that in both WCF modes, the learners who used TA as a mediating strategy outperformed those who did not in their writing fluency (see section 4.3.3.1). The ICG members slightly outperformed the IHG learners in writing fluency (see section 4.2). In other words, the ICG produced more words in succeeding writings as the experiment progressed (see Table 4.5, p. 118). These results indicate that the learners who

combined computer-mediated CF with TA as a mediating strategy outperformed both the learners who received handwritten CF and used TA as a mediating strategy and those who did not use the TA strategy at all in their writing fluency (see section 4.3.3.1). TA likely enhanced the learners' engagement with WCF by leading the learners' thinking while they were rewriting their essays, which led to a positive L2 performance change. Mediating strategies are advised and have been proven to have helped learners to master L2 skills. For example, Lantolf and Thorne (2006) found that mediation improved their participants' performance. In their research, the learners confirmed that mediation helped them acquire the skills without any external help from an expert and also minimised the continuous need for external help, as predicted by Vygotsky's theory (1987).

Some learners lacked motivation, perseverance and commitment, which hindered their cognitive engagement with TA. As a result, their L2 performance change was limited and controlled by affective engagement. Negative feelings impacted the learners' performance in this study, which agrees with the results of Ferris and Roberts (2001). The learners' poor achievement may have been a sign of limited cognitive engagement linked to weak motivation, which resulted in poor affective engagement. Similarly, positive feelings may enable social and cognitive engagement with mediation strategies, which could enhance the L2 performance (Suzuki, 2012; Kang and Han, 2015; Fukuta *et al.* 2018). Therefore, educators are advised to use mediation strategies that attract learners and encourage their participation. The chosen strategies should eliminate the learners' negative feelings toward the targeted skills and towards their progress, even if the progress is slow. In other words, giving learners the time to try and use their errors as building blocks in their learning could benefit their language production and thinking (Fukuta *et al.*, 2018).

In this research, although the participants were beginners at the L2, those who invested in the TA sessions as mediating strategies were able to scaffold their own learning and improve their writing independently when they were given the time and purposeful tasks. These findings contradict the need for an expert-other to learn, which other scholars have previously agreed upon (Bandura, 1963; Bandura and Walters, 1977). Social learning is important, but self-learning and self-editing could open doors for performance improvements that social learning alone could not achieve (Boggs, 2019; Kurzer, 2018) (also see section 4.2).

TA sessions helped the learners' writing fluency. As the intervention progressed, the ICG wrote more words than the IHG. The test results were in favour of the computer-mediated WCF, which aligned with the interview data (see section 4.3.1). The ICG learners stated that they enjoyed using technology to write, correct and revise their work. Four of them described the experience as fun and enjoyable. Enjoyment is an important emotional factor that drives learners' engagement and enhances second language learning (Dewaele *et al.*, 2016). Enjoyment is a powerful drive that keeps learners motivated and emotionally engaged, which in turn helps with their cognitive engagement.

In contrast, the IHG members faced another type of issue during the TA sessions that might have hindered their cognitive engagement: fear and anxiety. The learners stated that they were afraid of writing because they knew they would make a lot of spelling mistakes, which they did not know how to correct. They did not want to be judged by their low abilities in writing in their second language. Their fear of making mistakes capped their affective engagement with the task and stopped them from trying, which limited their cognitive engagement and impacted their progress. In the TA observations, the ICG members were more likely to engage in writing on the computer screens than the IHG members, who always mentioned poor spelling as a barrier to their writing fluency. These affective and emotional factors resulted in limited changes in their L2 performance. The IHG learners assumed that their mistakes were embarrassing because they thought of their L2 writing as a course that they needed to pass in order to graduate, which resulted in poor cognitive engagement with the topic.

Johnson (2006) asserts that learning to write in a second language requires different approaches and mindsets. The learners must develop patience, commitment and open-mindedness to find alternatives to the methods they are used to following in other courses (Johnson, 2006). Nonetheless, the writing tasks must also be meaningful and purposeful to maintain the learners' engagement (Svalberg, 2018) with or without technology-enhanced teaching and learning. Ensuring these qualities should result in constructive engagement and better results. Affective and cognitive engagement are strongly linked (Svalberg, 2012). Hence, the ICG members were willing to focus on the task because they enjoyed the technology-enhanced activity; they wrote more words, and their fluency increased. However, the opposite happened in the IHG learners, who rushed through the TA activity

with minimal cognitive engagement to avoid embarrassment. The computer WCF was easy to read, and the learners' computer mediated revised texts looked neat and competent. The opposite was true in the IHG learners. These findings agree with what other researchers have found about the effect of negative feelings on L2 improvements (Harmer, 1991; Hyland, 1990; Mubarak, 2013). Thus, investing in technology, such as L2 writing labs and applications, must be joined with culture and methods changes to arrive at the desired results.

The TA observations revealed that the learners were able to scaffold their own learning and improve their writing independently when they were given the time and were taught to TA as a proper mediating technique (Bowles, 2010; Lumley, 2002). Although the other members of the class were taught how to think-aloud, they were not required to practice it, nor were they monitored while doing it. When the results were reviewed, the numbers indicated that the ICG and IHG learners outperformed their classmates in writing fluency (see section 4.3), which supports TA;s usefulness as a mediating strategy (Bowles, 2010; Han and Hayland, 2015; Lumley, 2002).

In the interviews, three IHG learners expressed that the teacher's WCF was difficult to read and sometimes unclear. Their answers highlight the importance of catering to the needs of the learners in order to make the WCF useful. For example, teachers who choose to provide handwritten corrective feedback notes should print for clarity (instead of writing in cursive) and should also allow time for revisions. These struggles were evident in other studies such as Mubarak (2013) and Alkhatib (2015). The similarities in the learners' responses assert the need for changing the teachers' practises. This study's findings indicated the importance of the follow-up stage when we teach L2 writing. Language teachers should allow time for revision in groups and also for individuals in order to encourage learners' constructive engagement with WCF (Han and Hyland, 2015). Some learners have the knowledge but need more time to overcome their lack of discipline and poor self-regulation skills due to the existing teaching and learning culture. Only by establishing a robust WCF culture can useful and meaningful changes be encouraged, achieved and maintained (Ellis, 2010; Mubarak, 2013).

The emotional factors associated with L2 writing were very important for the learners' progress. The learners were initially unmotivated to engage with WCF, which hindered their L2 performance change. This trend indicates the influence affective factors

have on cognitive engagement (Svalberg, 2009, 2012). The learners who failed to maintain a positive emotional engagement while practising TA wrote a lower number of words on their assignments, which resulted in a lower change in their writing fluency. In contrast, the learners expressed their appreciation for being heard and noticed during the TA sessions, which agrees with the findings of previous authors, such as Lunt and Curran (2010) and Ellis (2010). Some learners stated that they enjoyed the attention during the TA experience and felt supported by the TA technique. Their words indicate that they viewed the TA sessions as a sign of caring. The tailored WCF provided during the TA sessions, regardless of the WCF mode, meant they mattered to their teacher, which positively influenced the learners' affective engagement and catered to their cognitive engagement. The learners' perception that the teacher genuinely cared and listened may have improved the environment for WCF engagement and enhanced the L2 performance change (Ellis, 2010; Lunt and Curran, 2010).

The groups' writing fluency was tested against the rest of the population in this study (see section 4.3). In the selected control groups (ICG* and IHG*), the writing fluency increased. Overall, the increase was lower than that seen in the ICG and IHG. Hence, although all the participants produced more words over time, the learners who received tailored WCF followed by TA sessions outperformed those who only participated in the WCF mode component of the intervention. This result suggests that the learners need to be trained how to use WCF in order to enhance their L2 writing performance. The other members in the IH class improved less than the experimental group, which highlights the influence of the teacher's tailored WCF on L2 learners' writing (Chandler, 2003; Kepner, 1991; Tardy, 2006) and at the same time indicates the influence of the TA strategy on a positive L2 writing performance change.

The enhancement in writing fluency of the learners in the IC class members who did not participate in the TA sessions is more likely the result of teaching, self-learning and technology-enhanced WCF. Providing the learners with WCF without guiding them through the thinking process produced poorer results than WCF plus TA. This result shows the value of monitoring the learners' performance during mediating activities until they can practice self-agency (Mercer, 2011), self-efficacy (Bandura, 1986) and self-regulation strategies (Zimmerman, 2002) correctly to become independent and agentic learners (Svalberg, 2012; Vygotsky, 1978). This approach might not be practical in an everyday class, but there should

be some hours of contact with all learners individually to allow them to practise what they have learned.

To answer Research Question 2, TA influenced the groups' writing performance positively by enriching their cognitive engagement with WCF when the affective factors were suitable and less intimidating to them, such as when they felt making mistakes was acceptable as a stage of learning to write (Alkhatib, 2015; Hedge, 2005; Matsuda, 2003). However, the TA technique was one change that required other factors in order to be useful for the learners' L2 writing performance change. To be more specific, the CF revisions prepared the learners for the TA activities and increased the quality of their individual TA sessions. Some of the learners were observed teaching and supporting each other during class time, specifically during the CF episodes, by offering content scaffolding and emotional scaffolding as well (see section 4.3). Learners who content-scaffolded others were capable of correcting their own work with less effort because they recalled what the group had discussed in the classroom while they were rewriting their essays. Hence, group discussions and social engagement had a lasting benefit that helped improve individual learners' L2 performance change. This trend highlights the importance of learning as a social activity (Bandura, 1986) in supporting learners' independency and agency in learning generally and in language learning as well (Svalberg, 2012; Vygotsky, 1978).

5.5 Research question 3: does the mode of WCF seem to affect the learners' L2 writing performance?

The qualitative findings confirmed a positive link between the WCF and the learners' L2 writing performance as the experimental participants' L2 writing improved. Hence, all the learners improved their writing fluency, regardless of the WCF mode. Grammatical accuracy and grammatical competence improvements depended on the learners' ability to use WCF (i.e. their efficacy and their levels of L2 proficiency), which agrees with Kang and Han's (2015) and Fukuta *et al.*'s (2018) findings (see section 2.4.2).

For the writing fluency, the learners wrote more words in their texts as the experiments progressed (see section 4.2.1). These increasing numbers of words could be a result of training, teaching and following up, i.e. asking the learners to submit a second draft after corrections. This observation supports the claims made by other researchers that assure

the effects of corrective feedback in improving the learners' writing, including Robb *et al.*'s (1986) study on Japanese EFL students and Lizotte's (2001) investigations of bilingual Hispanic and ESL students at a US community college, as well as Chandler's experimental study (2003) that found teachers' CF improved learners' fluency and accuracy. Each of these studies used a specific type of corrective feedback (see section 2.4.3).

The other measure in learners' L2 writing performance was their grammatical accuracy. The learners in the two groups improved their accuracy compared to their pre-test findings (see section 4.2). This result agrees with Chandler's experimental study (2003), which found that the learners' accuracy improved because of CF. In the current study, the learners' grammatical competence, i.e. their ability to use the specified grammatical features, also improved, regardless of the WCF mode, which indicated the usefulness of the WCF.

Different levels of changes in L2 writing fluency, grammatical accuracy and grammatical competence were noted among the learners. However, these improvements and changes were not linked to a specific mode used with the students. For example, some learners in both groups improved more than other group members that were provided with a similar or different mode of WCF. In fact, the learners who progressed the most were those who had developed strategies to regulate their L2 learning and aligned their strategies to their learning habits and goals. For example, learners who spent more time writing and correcting their work and who sought help and advice from their teacher or classmates were able to meet their learning targets and excel. This finding agrees with the features of self-regulated learners suggested by Zimmermann (2002) and Zimmerman and Schunk (2001).

Zimmermann (2002) stated that self-regulated learners are more likely to achieve their learning goals. The learners who took control of their learning and developed a sense of agentic self were able to show more progress in their L2 writing (see Appendix P1 and P2). This finding aligns with Mercer's (2011) report about agency as an essential criterion for learners who succeed at improving their learning. Moreover, learners who were unafraid to make mistakes within their groups and who used their errors as points of improvement outperformed the perfectionists who were worried to make mistakes or afraid to explore all possibilities within their groups. Fear and hesitation were a hindrance to learners' engagement with WCF (Alshwiah, 2017; Biggs, 1987).

In contrast, aware learners who were able to notice the patterns that the WCF offered to them about their writing and also the patterns in others' writing also managed to write more words, which was also evident in Fukuta *et al.* (2018). In addition, the learners' openness to acknowledge their weaknesses during the TA sessions likely prepared them mentally to learn compared to those who resisted the new method, namely TA. Developing a growth mindset in learning improves the learners' chances at learning and enhances their L2 performance (Kang and Han, 2015). The learners' mindset influences how they attend to the corrections offered to them and also how they used WCF in their future writings as well (Kang and Han, 2015).

To answer Research Question 3, the quantitative and qualitative data in this study showed that the mode of WCF did not have a major influence on the learners' L2 writing performance. The learners in both classes improved their L2 writing performance to various degrees due to complex factors, such as their prior proficiency, the quality of their engagement with WCF, their regulation strategies and their self-efficacy. Learners are more likely to improve their L2 writing performance by applying constructive engagement (see Figure 5.1, p. 182; also see Swain, 2000).

5.6 Research question 4: how do the learners engage with WCF during TA?

The answers to the fourth research question came from interviewing the learners after the TA sessions and also from the observations made during these sessions. In general, the learners in both the ICG and IHG found the TA sessions to be cognitively engaging and effective. These sessions forced them to focus on and recall what they already knew. These findings are similar to those associated with using the process of languaging to think, which has also been shown to improve learning (Fukuta *et al.*, 2018). The learners used the TA strategy as a mediation tool to enhance their engagement with WCF (Vygotsky, 1978). While using an expert's help (e.g., the teacher's WCF), most of the learners succeeded in engaging with their existing knowledge and correcting their errors, which indicates their enhanced cognitive engagement and autonomy (Fukuta *et al.*, 2018; Reeve, 2012). Moreover, emotional scaffolding among the group members increased their collective readiness to engage with their writing and revising activity. In the current research study, scaffolding

integrates with the complexity of the role of emotions in the L2 classroom, which is in line with the research findings reported by other researchers (Park, 2014; Reeve, 2012).

Some learners were observed talking to themselves during the TA sessions and using segments or signal words such as ‘oh’, ‘ok’, ‘how’, ‘maybe’ and ‘done’. Frawley and Lantolf (1985) pointed out that self-talking indicates cognitive activities through ‘private speech’ (see section 2.2). It suggests the learners’ intention to move their focus to a specific task that needs to be accomplished or an intention to plan for how to accomplish it (Frawley, 1997). These mental activities indicate the learners’ ability to focus their attention and self-scaffold while engaging with TA as a learning activity (Boggs, 2019; Vygotsky, 1978).

In this research study, the learners engaged in elective activities to improve their learning through mediation using a TA strategy as individuals, not in groups or pairs (for a recent study on these aspects, see Kim and Emeliyanova, 2019). In addition, the current research study allowed the learners’ use of private speech in their L1 while they were thinking-aloud about a learning activity in their L2, which engaged them cognitively as they reported and is an accepted practice in learning a second language (Fukuta *et al.*, 2018; Mubarak, 2013).

In contrast, learners who had a negative attitude to TA or who did not commit to its specific rules as they were explained to them during training (see section 2.2) displayed less cognitive engagement than the rest of the participants. Hence, their overall engagement with WCF was less than that of other participants (see section 4.3 for these results). This tendency shows the close connection between cognitive and affective engagement in shaping the learners’ experiences (Svalberg, 2009). Indeed, learners who were not actively engaged in the strategy reported that they struggled to commit to it and did not achieve what they expected to achieve in the sessions (see section 4.3 for these results). By holding on to negative attitudes, the learners were more likely to achieve less during the TA sessions. The learners’ experiences with TA confirmed how fear and resistance to change can deter affective engagement, which as a negative emotional factor could hinder cognitive engagement (Alshwaih, 2017; Dewaele *et al.*, 2016; Dörnyei, 1994).

In this research study, learners claimed that engaging in TA was more useful than the WCF mode. They justified these claims by stating that during the TA sessions, they were able to see their progress and that their efforts worked for them. This sense of

accomplishment motivated them and also enhanced their cognitive and affective engagement with WCF, which, in turn, increased their awareness of their L2 performance, and vice versa. A sense of achievement is a great motivation that can move learners forward (Dörnyei, 2005).

As an emotional factor, a lack of motivation hindered active engagement in the TA sessions. Many researchers have indicated the importance of motivation and achievement in learning a foreign language and its related activities (Lambert and Gardner, 1972; McClelland, 1953). In one publication from his continuous work on motivation and emotions in L2 learning, Dörnyei (1994) indicated the importance of keeping the learners motivated by fulfilling their need for achievement. He highlighted the importance of using their successful and failed experiences as a critical drive for learning (Dörnyei, 1994). These suggestions align with the importance of providing learners with useful WCF and teaching them how to use it, which the learners stated earlier (see section 4.2).

When CF, which is part of the learning cycle, fails to meet the learners' emotional needs, the learning accomplishments can be inadequate (Horwitz, 1987; cited in Hashwani, 2008). Hence, as teachers are normally required to provide learners with CF that is usable and useful, they are advised to motivate and engage their learners in learning activities that are associated with CF, such as the TA technique, languaging or others (Fukuta *et al.*, 2018).

The individuals who played an active role in their learning by attending to the TA strategy were able to bridge the gap in their awareness, construct their knowledge and enhance their writing more than those who simply acted as passive learners. This finding aligns with the conclusions made by Svalberg (2009) about the learners' roles as active agents in their L2 learning. It also agrees with the role of learners' engagement with CF proposed by Ellis's framework (2010).

The TA sessions provided an opportunity for guided self-learning that was safe, non-judgemental and supportive. It gave the learners the chance to control the speed of their thinking instead of asking them to adjust to the speed of the class or the teacher. In fact, Lam (2007) suggests that learners who feel in control are expected to be more motivated, independent and engaging (also see Boggs 2019; Svalberg, 2009). TA nurtured and revealed the students' personal qualities, such as perseverance and focused attention. These qualities reflect the close connections that are present between cognitive and affective engagement as

central constructs in language learning. In addition, TA also directed the learners' focus to regulation strategies, which led them to reach internalisation independently through the ZPD. This process, however, happened on an individual level as they thought-aloud after being exposed to CF discussions in class.

The TA sessions empowered a sense of learner empathy, which increased the level of social engagement. The students' improved understanding of themselves as learners led to greater empathy for others. TA indirectly influenced affective and social engagement and promoted qualities, such as content scaffolding, emotional scaffolding and thoughtfulness, which I consider a main original contribution of this research (see section 4.4.1). This notion reinforces the idea that the learners' empathy towards other learners increases peer support in the learning environment and creates a positive collective agency, which improved the learning experiences for all the learners in this study. Therefore, self- and collective agency were found essential to lead the learners to maturation and progress, which agrees with previous research (Mercer, 2011; Vygotsky, 1978). In addition, learners' empathy towards their peers enhanced peer scaffolding experiences during class exercises and moved their learning forward (Orsmond *et al.*, 2013; Williams and Smith, 2017). This characteristic confirmed the importance of the social aspects of engagement in learning from the teacher's CF (e.g. Orsmond *et al.*, 2013a, 2013b; Hyland, 2000, 2013).

The learners mainly used Arabic (L1) in these negotiations. This practise is widespread among L2 learners during peer discussions (Hyland, 2000; Villamail and de Guerrero, 1996). The learners stated that combining the CF group discussions with the TA technique opened their eyes to the importance of supporting peers emotionally and sharing their knowledge with them. They realised how their cooperation helped their engagement not only with WCF or L2 writing changes, as this research intended, but also with the learners' experiences and agency as well. The TA strategy enhanced the learners' social (behavioural) engagement, which agrees with Klem and Connell's conclusions (2004).

Nevertheless, generalisations were difficult to apply to the groups because group dynamics are constantly changing, which affects social engagement and the other two engagement constructs as well (Bandura, 1997; Mercer and Howe, 2012). As seen in the current and previous research studies, learners' engagement is not stable even on an individual level. Learners tend to be engaged and effective for their own reasons, and their

levels of engagement vary continuously (Biggs, 1987; Fry *et al.*, 2008; Marton, 1975). For example, the learners evaluated how a specific activity was connected to their goals and then decided whether to engage in it. These observations apply to learners' engagement through the TA strategy as well as to any learning activity that occurs in a socially constructed environment, such as the classroom (Fukuta *et al.*, 2018). Self-initiated attention marked out the learners' ZPD and led to their engagement (Fukuta *et al.*, 2018; Lantolf and Thorne, 2006; Vygotsky, 1978).

To answer the fourth research question, the TA technique enhanced the learners' engagement with WCF in the current experiment. It improved the learners' cognitive engagement with WCF, which facilitated and mediated learning through error correction. It also enhanced the learners' affective engagement with WCF practices, which improved their self-regulation strategies. TA requires motivation and perseverance; these features enable the learners' engagement with TA. The TA technique increased the learners' empathy and team commitment, which enhances their social engagement during CF episodes and, in return, influences the overall experience positively.

5.7 Research question 5: does the mode of WCF seem to affect the learners' engagement with WCF?

The fifth research question aimed to exploring and explaining how the modes of intervention influenced the participating groups (ICG and IHG). The answers to this research question came from the classroom and TA observations and the retrospective interviews.

Exploring the learners' experiences about WCF required looking at the situation from three different perspectives: the learners' emotional responses to WCF (e.g. affective engagement); their attitudes towards the engagement with WCF during the intervention (e.g. social [behavioural] engagement); and their cognitive engagement with WCF in the current study. It should be clear that answering this question does not aim to compare the findings between the two groups. Instead, the aim is to describe and explore each environment and how it shaped the targeted groups' experiences.

Overall, the learners in both environments actively engaged with WCF, and the degree of learner engagement varied during the experiment and throughout the CF episodes for various reasons, such as personal, educational, emotional and contextual factors (Ellis,

2010). The learners' engagement was not a fixed phenomenon (see sections 2.3.1 and 2.12); hence, the learner's experiences influenced the degree of their engagement. During the interviews, the learners confirmed that their interest in WCF varied depending on the topic, the amount of WCF in the document and the atmospheres in a specific class. They also stated that the degree of their engagement was highly affected by their overall feeling that day. These emotional factors play a strong role in learners' engagement, as noted in other studies (Han and Hyland, 2014; Molloy *et al.*, 2012; Svalberg, 2009).

The learners in the ICG environment engaged with WCF through technology using computer-mediated CF (see sections 3.2.11 and 3.3). The learners stated that using the Track Changes feature to provide the corrections saved time. It directed the learners' attention to their errors faster, and they were able to work on improving their writing directly, which AbuSeileek and Abualshar (2014) and AbuSeileek (2012) also found in their research. The IC environment allowed for more personalised time and promoted both noticing and cognitive engagement by allowing the learners to focus on their writing at their own pace. Adopting a positive mindset towards the IC environment likely influenced the learners emotionally and also prepared them mentally to effectively take part in the TA, which is in line with the findings from studies carried out by Thornbury (1997) and Qi and Lapkin (2001). The learners' positive mindset towards the IC mode may also be related to the learners' age group, the technology-enhanced environment they live within and their peers' influences.

Another point that the learners highlighted in the interviews was that sharing the learning in a supportive, non-judgemental environment that acknowledged their attempts made them adopt a positive attitude. TA as a learning activity allowed them to believe in their abilities to learn and improve their writing by minimising their anxiety, which aligns with Hashwani's findings about how anxiety decreases with an increasing incidence of positive attitudes (2008). This belief made reaching the learners' potentials achievable, which aligns with Bandura's theory of self-efficacy (1977, 1985, 1997). The learners' perceived abilities to engage were nurtured during the intervention, which enhanced their agency (Mercer, 2012; Bandura, 1997). This approach, however, would not have been possible if the learners had not been open to trying new methods and exploring possibilities. The intervention promoted collective agency, which I identified as the learners' collective

work that is carried out together to achieve their individual goals. Collective agency empowers and was empowered by individual agencies.

Sharing their experiences with WCF modes increased the learners' empathy towards each other. In return, the learners who were helpful and supportive of others achieved their learning goals and showed great progress. Empathy is a strong emotional factor that has been proven to influence learners' emotions in the L2 classroom, especially in the writing process (Hyland, 2000; Villamil and Guerrero, 1996). Considerate and caring learners promote their learning and the learning of their classmates as well (Hyland, 2000; Villamil and Guerrero, 1996).

Our findings confirmed that the mode of WCF delivery did not have a major impact on the learners' cognitive engagement. Regardless of the modes used, the two groups of learners showed varied levels of cognitive engagement with their writing throughout the experiment, which led to better writing. However, the computer-mediated environment was less emotionally challenging for the learners, which supported their cognitive engagement levels. In addition, the learners' cognitive engagement was also elicited by the learners' interest in the writing task offered, the learners' familiarity with the writing topic and the learners' readiness to learn new information or their ZPD (Vygotsky, 1974, 1989). Each of these cognitive-related reasons has its justifications.

To answer the fifth research question, the data proved that regardless of the WCF mode, the learners' engagement with WCF helped their learning in the long term. Constructive engagement entails catering to the cognitive, social and affective domains, and creating aware learners (see Figure 5.1, p. 182).

5.8 The aware learner's engagement with WCF

The learners' cognitive engagement was presented as attention, thinking and positive changes in the L2 performance. The attention dimension was evident and noticeable when the writing task was interesting and relevant to the students. For example, one of the learners' best attempts at writing was when they were asked to write about 'women's empowerment in Saudi Arabia'. This topic was relevant, engaging and interesting to them, which created a viable learning opportunity. Choosing the writing topics or the teaching topics in general is a skill every educator should apply (Crimmins *et al.*, 2016). In fact, in this research, the

learners' attention to their writing was enhanced by offering the learners a range of interesting and relevant writing tasks. This decision created room for knowledge construction through writing (Ryshina-Pankova and Byrnes, 2013) and made self-editing more beneficial (Boggs, 2019). However, when the tasks were irrelevant, boring or mismatched to learners' interests, the learners were more likely to write fewer words and to ignore the corrections and the follow-up re-writing process as well. Learners' cognitive engagement is influenced by the CF and the teaching they are provided with (Ellis, 2009). When we develop our writing lessons, CF episodes and practice assignments with the learners' preferences and interests in mind, an opportunity for successful writing sessions is created (Black and William, 1998; Boud and Dochy, 2010; Crimmins *et al.*, 2016; Sadler, 2010).

In the interviews, the learners stated that they devoted more thinking and analysis when they wrote essays on a topic for which they had an interest or when they had to write essays about their preferred topics. The learners stated that they enjoyed planning their writing in advance and described how they did it. First, they brainstormed for expressions and looked for words to use. These cognitive tasks increased the learners' awareness of the associations between their cognitive engagement and their L2 writing performance as well (see section 5.2). This outcome aligns with the research assumption about the iterative nature of learners' engagement and their awareness of their performance (see section 3.2).

In this research study, the learners' familiarity with the writing topics increased their observed cognitive engagement. Observed cognitive engagement includes noticeable actions, such as brainstorming, planning, looking in their dictionaries, mind mapping and writing more words in their tasks. This was not a surprising observation because as suggested by Mubarak (2013), writing within the comfort zone of familiar topics provides fewer challenges to the learners, which only seems to be a good cognitive engagement but is actually really one. It can be argued that in such situations, learners recall the previous writing tasks from their working memories and rewrite them from what they have already learned (Johnstone *et al.*, 2002; Mubarak, 2013). While remembering is a crucial part of the learning cycle as it proves the working memory has constructed the knowledge and stored it correctly so that it can be recalled when needed, the use of only familiar writing topics limits the learners' active vocabulary growth. Balancing interesting writing topics with less

familiar ones increases active engagement and active awareness as well (Ryshina-Pankova and Byrnes, 2013).

The third feature that marked learners' cognitive engagement was the learners' readiness to learn certain information. This indicator relates to Vygotsky's (ZPD). In his theory, Vygotsky claimed that learners must scaffold their learning with the help of another expert or knowledgeable individual within their ZPD in order to learn new things (1974, 1989). He posited that the learners can only learn new things if the previous stage is satisfied.

This research study found that readiness to learn was linked to the learners' awareness of their L2 performance. Before the research study, the learners were not aware of their performance in writing (see section 4.4.1). Pokorny and Pickford's (2010) research suggests that one way of explaining the gap between the learners' perceptions and reality is the limited training on writing that the learners had received during their studies, which did not prepare them for writing's complexity and failed to provide them with opportunities to engage with WCF. The TA sessions helped them engage with their writing by initiating a private speech that involved talking, reviewing and rewriting (see section 5.6). The learners' awareness of their performance improved as they practised writing, and vice versa. At the beginning of the study, the learners' responses to the fourth statement in the survey, 'I ignore the whole task after reading the teacher's feedback', revealed their initial attitude towards the teachers' feedback. The majority of learners agreed that they ignored the writing task; only two learners were undecided. This trend has also been seen in other studies as well, where self-motivation was low (Alkhatib, 2015; Al-Seghayer, 2014). In the current study, this tendency changed after the intervention as the learners' awareness of the iteration between their engagement with WCF and their L2 writing performance was enhanced, which supports the assumptions that initiated this research study that aware learners are more likely to use language and mediation strategies to improve their L2 writing performance (see section 1.3 and Figure 3.3). In fact, some learners were willing to cooperate with other learners in joint TA sessions because they thought 'it would be fun to learn writing that way.' This comment reflects the importance of understanding the learners' need to learn in pairs and in groups. Learning in general, and specifically language learning, is a social activity in which learners need to work with other members of their community to reach their learning goals, which agrees with SCT as a learning theory. Therefore, allowing the learners to test

new methods to engage with WCF in learning writing skills might encourage their creativity to find other ways to scaffold their learning both alone and with others, which aligns with Vygotsky's concepts of SCT (1978, 1989) (also see section 2.2.1).

Writing entails preparations, such as drafting and outlining ideas. In the current research study, these preparations were found to improve cognitive engagement with WCF. In addition, the majority of the learners confirmed that they only paid attention to WCF if they had been asked to resubmit their writing for further assessment, which shows how important assessment is in the current context (see section 6.2.5).

According to Ellis (2010), teachers need to plan the quantity and quality of their feedback in order for it to be useful. For example, in the current research study, different responses were given when the learners were asked if the corrective feedback had helped them to change their writing. Two learners stated that the feedback was somewhat helpful. Two learners said that their low proficiency level was a barrier to benefitting from the feedback because it was above their proficiency level. Other learners stated that it was an overwhelming experience, as WCF covered many aspects of their writing at once, which indicates a need to change the WCF culture and practices (Nicol *et al.*, 2014; Nixon *et al.*, 2017) (see section 6.2.5).

The learners' social engagement was evident in the common error correction time, during which the teacher discussed the errors most common in the learners' writing after she had returned their essays to them either via email or by handing the essays to them in class. It was noticeable when the learners engaged with the teacher and with other group members. In fact, social and cognitive engagement connections during the writing tasks were growing closer as the learners progressed (Atkinson, 2002). For example, the engaging learners discussed the errors and shared their experiences, which is a form of scaffolding that leads to learning. They were not only physically present in the classroom but they also contributed to the discussion. They understood and supported each other's attempts at learning, which in return helped to construct their collective knowledge in the language classroom because learning a second language skill is a social activity that cannot happen in isolation from other learners (Atkinson, 2002).

Classroom interaction in CF episodes created opportunities for social engagement by promoting learners' awareness of their performance. For example, the learners stated that

their collective agency was present in the discussions as they exchanged information about the targeted skills. The learners realised that working together helped their learning and benefited all of them, which they did and produced a collective agency that was similar in its usefulness to self-agency in meeting the learners' need to engage and allow learning to take place (Mercer, 2011).

In this study, the learners' social engagement was not static. It varied during the experiment for different reasons related to the learners, the content of the tasks or the classroom atmosphere during the lesson. Reasons related to the learners were linked to their proficiency and also their motivation, persistence and willingness to learn by doing. Proficient learners were easier to engage, but none of them was motivated the entire time. They all had occasions when they were less socially active and engaging. It can be argued these pauses did not directly mean that they were disengaged because not participating is not always a sign of disengagement (Svalberg, 2012).

In fact, four learners stated they used a method to digest what they had learned, which required them to think in silence. When they were asked about this approach in the interviews, they said that these quiet moments were essential for them to think and arrange their knowledge before re-joining in the group discussions. This finding relates to Zimmerman's regulated-learner model (1998, 2002). Self-regulation strategies align cognitive engagement with social and affective engagement, which improves the overall quality of the learners' engagement. This link proves a strong association between the domains of engagement and the importance of understanding them as a whole (Atkinson, 2002; Lantolf, 1994, 2014; Svalberg, 2009).

The other factor of social engagement has been linked to the effects of the group's dynamics in improving the learning environment (Poupore, 2016) and also social engagement. In this study, working with highly motivated learners helped less motivated learners to engage, and vice versa. Motivated learners elevated the levels of engagement in their groups, which encouraged the less-proficient learners to engage with the group and beyond, such as in the TA sessions. This was an important finding because it created a learning community that valued the learning process and not only the learning product. Most of the learners required a mindset shift to accept their failing attempts in order to learn. In the interviews, five learners confirmed that they felt encouraged because of another group

member. This result confirms the importance of investing in learning as a social activity (Atkinson, 2002; Lantolf, 1994). To remain socially engaged, the learners were allowed to use their first language in their discussions. Most of the corrections in the group discussions were in Arabic, and the teacher did not ask them to limit their discussions to English in the writing classes. Six learners stated that using Arabic made engaging with the group easier. Using the learners' first language while learning to write in a second language and for second language acquisition in general is useful (Ho and Savignon, 2007).

Learners' social engagement was also linked to the topic of the discussion. Some topics were more engaging than others for the learners. If the tasks were enjoyable and interesting or at least debatable, the learners were more keen and committed to discuss their ideas and their writing. For example, topics such as a future job or a dream car were more engaging than describing a farm or writing about a childhood memory. During the interviews, eight learners stated that they were more likely to engage in the revision sessions when the topics matched their interests. This finding suggests that learners must be considered active agents in their own learning by offering them choices of writing topics to choose from.

Social engagement is represented in the social theory (Lantolf and Thorne, 2006; Vygotsky, 1978), which argues that language development occurs through social interaction between individuals whose cognition is a result of social processes. This concept also applies to social and cognitive engagement. However, the current research study acknowledged the need for individual processing time when learning to write in an L2, which is time to focus on cognitive engagement, which Storch and Wigglesworth cited as an important factor for learning (2010, 2012).

The learners' affective engagement was present in this research study from the beginning. The learners were asked to volunteer for the research, and they were told that this experiment was a learning opportunity. Hence, all the learners who were selected to participate were initially interested in improving their writing. Other indicators of affective engagement appeared later as the research progressed, and they were noted in the interviews and observations.

Each group of learners (IHG and ICG) received WCF through a different mode, which had a different impact on the learners' affective engagement because each of these

modes had different characteristics that attracted or obstructed the learners' engagement. After analysing the data for each group, two main categories of feelings were noted: the enablers and the hindrances. As the categorisations suggest, the enablers encouraged and strengthened learners' affective engagement, whereas the hindrances limited it.

The enablers were the emotions that moved the learners' engagement with their writing forward after receiving WCF, such as the learners' determination to practice writing, their confidence in their abilities and the self-regulation strategies they adopted to achieve their learning goals. The hindrances, in contrast, were factors that limited learners' abilities to engage affectively with the CF or altered their feelings while working on their tasks. Hindrances included questioning their abilities or disbelieving in their potential.

The affective factors of engagement are strongly related to self-efficacy theory (Bandura, 1977, 1986, 1989, 1997), agency theory (Mercer, 2011) and the self-regulated learners theory (Zimmermann, 2002). Learners look up to their teachers and adjust their engagement according to their teachers' commitment, empathy and efforts. Teacher apathy regarding the learners' efforts hinders the learners' engagement. This lack of concern could take many forms. One form is offering unhelpful WCF or using class time to explain and clarify the feedback without encouraging the learners to ask questions, testing their understanding or back channelling their answers. Learners can sense how uncaring a teacher is; this negativity directly influences how they affectively engage with the learning activities (Kordi *et al.*, 2012). Learners need their teachers to listen to them and meet their expectations (Robinson *et al.*, 2013). The learners stated that they were afraid of receiving WCF because of how they felt afterwards, which shows how sensitive some learners could be to corrective feedback. However, when the learners were asked to give examples of what they deemed to be a negative WCF, the answers revealed how sensitive the learners were to criticism; they considered suggestions to improve their handwriting or spelling or to submit their homework on time to be negative feedback. This finding suggests that teachers need training on how to provide constructive feedback. It also highlights the learners' need to engage with the feedback in a professional manner, which agrees with previous findings and suggestions as well (see for example, Alkhatib, 2015; Mubarak, 2013).

The learners were asked to describe their feelings when they engaged with WCF. The learners' ability to recognise the enablers and hindrances of engagement was a starting

point for them to increase their awareness of their role in their learning: in other words, their self-efficacy and self-agency. Realising that engagement with WCF was the most effective way to improve created a new level of affective engagement that influenced their cognitive and social engagement as well, which could be called the aware learners' engagement. The following diagram (Figure 5.1) shows the matrix for the aware learner's engagement.

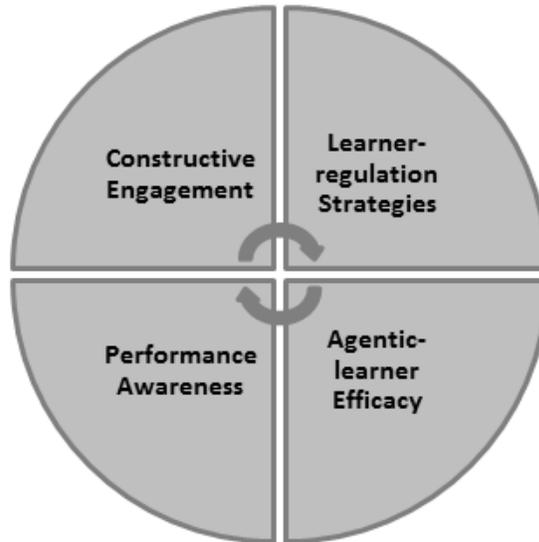


Figure 5.1 The Aware Learner's Engagement Matrix

In Figure 5.1, the Aware Learner's Engagement Matrix shows the interrelations of the mechanisms involved in learners' engagement with their L2 learning tasks, such as writing. When learners receive meaningful WCF and demonstrate meaningful engagement with it through learner-regulation strategies, agency and self-efficacy, their performance is enhanced. When these mechanisms are used effectively, they are likely to lead to L2 performance enhancement.

The learners' awareness of the link between their engagement and performance create optimal conditions for using WCF in SL learning. Adult SL learners and teachers should be reminded that SL learning is different than learning other subjects. Aware learners demonstrate self-efficacy and practice their agency when they work as individuals or when they are in groups as well. They express discipline towards the tasks and manage their time effectively. They visualise their goals, which improves their engagement by raising their awareness of their performance. In addition, aware learners' constructive engagement uses

learners' social, affective and cognitive variables to enhance the learners' cooperative construction of knowledge, which aligns with Swain's (2000) theory of language use and language learning.

Aware learners also show a dynamic characteristic in which they interact with their L2 tasks thoroughly through various internal cognitive and affective variables, such as using meditation and regulation to reach internalisation (Vygotsky, 1978). These variables interact iteratively with various (or 'a range of') elements in the social environment to influence L2 performance changes. The aware learners' engagement matrix is not fixed. Instead, it is continuously evolving; the makeup of each of the four components of the matrix is unique for each individual, as is the process by which the components interact with the type of tasks and WCF any learner encounters. The learners' interest in the tasks offered to them and their personal and professional agendas are important contextual factors that direct their engagement, which proves the suitability of Ellis's framework (2010) to explore learners' engagement (Svalberg, 2009). The following chapter presents the study's implications, contributions and recommendations.

CHAPTER 6 IMPLICATIONS, RECOMMENDATIONS AND CONCLUSION

6.1 Summary of the study and its key findings

This research study aimed to explore and explain the learners' engagement with WCF and how it shaped their L2 performance change. To achieve these aims, a quasi-experimental study was designed, which included two experimental groups without a control group. The intervention contained two components: WCF mode and the TA technique. The study addressed five research questions. The first explored the learners' L2 writing performance change (if any) following WCF. The second investigated the effects of TA on L2 writing performance, and their reasons. The third question focused on whether the mode of WCF affected the learners' L2 writing performance. The fourth examined the learners' engagement with WCF during TA. The fifth question explored the influence of WCF mode on the learners' engagement with WCF. In answering these questions, the learning environment was controlled, and the changes were measured both quantitatively and qualitatively through a mixed-methods approach.

The WCF mode investigated the influence of the different modes, namely computer-mediated WCF and handwritten CF, on the two participating classes (IC and IH) respectively. To measure their L2 performance change, the two classes were tested three times; a pre-test in Week 2 followed by the treatment; a post-test in Week 9; and a delayed post-test in Week 13. The findings of this intervention showed no significant difference in the learners' performance change in writing fluency, grammatical accuracy or grammatical competence due to the WCF mode. The tests showed changes in writing fluency, grammatical accuracy and grammatical competence for both classes over time. These findings were discussed in detail in Chapter 5. The recommendations and implications are discussed below (see section 6.2).

The influence of the WCF modes was examined in terms of the three domains of learners' engagement (cognitive, social [behavioural] and affective domains) to determine if one mode successfully engaged the learners better than another. The two embedded groups were observed in the classes during the CF episodes to see indicators of their engagement (see section 3.7.3). The participants were also interviewed to answer questions about the same phenomenon.

The use of technology to deliver the WCF had several positive points. For example, the learners found it appealing and fashionable. It saved time and effort, and accessing the documents was possible, regardless of the place or time. However, some learners stated that slower internet connections made working on the files frustrating. Others reported that their thinking was clearer when they used a paper and pen to plan, outline and write their texts. The IHG members stated that reading the teachers' WCF stimulated their thinking and engaged them cognitively when it was readable for them. Both groups shared that receiving personalised WCF encouraged them to engage with their writing and to set personal goals to improve their writing processes, not only the final product that would receive a grade.

The second part in this intervention was the TA technique, in which the TA was used as a mediating strategy to internalise the WCF. In other words, the TA was a miniature study inside the main one, which was the WCF modes intervention (see Chapter 3 for the research design and methodology). The two embedded groups (ICG and IHG) were the experimental groups. Their writing assignments were analysed for any L2 performance change, and they were interviewed to reveal their opinions about TA's influence on their engagement with WCF.

The findings proved that the TA helped the learners internalise and regulate their learning through self-editing and self-scaffolding (see section 5.3 for details). The results also revealed that the best conditions in which the learners performed and engaged positively were when the learners realised the link between their engagement and their performance (see section 5.4). The iterative relation between the learners' awareness of the effect of their engagement with WCF on their L2 performance change was confirmed (see sections 4.2.1 and 5.4).

The amalgamation of the findings showed that the learners' affective engagement, such as their agencies, directed and enhanced their cognitive engagement to help them attain their aims. In addition, the learners' regulation strategies were enhanced when they were asked to take part in a meaningful and purposeful writing task that met their interests. These tasks helped them remain focused to achieve their learning goals. Similarly, the learners' social (behavioural) engagement was evident, and it shaped their overall engagement, either positively or negatively. The learners' collective agency and demonstrative scaffolding was also evident and powerful in this experiment. The concept of demonstrative scaffolding merged emotional, cognitive and social scaffolding

when the learners expressed empathy for their colleagues because they realised how all of them had experienced similar challenges.

As expected, the learners want their teachers to praise their efforts in writing. Most of the teachers forget that adult learners need encouragement as well. Underappreciated learners are harder to engage or improve, as they lack confidence in their abilities as learners and writers.

Overall, learners' engagement with WCF as well as their L2 performance do not happen in a vacuum. Progress and change in performance is not a result of teaching alone. Learners must also take control and invest in creating an active learners' agency as individuals and in groups to construct their knowledge. The learners' awareness of their performance and progress drives their engagement and maintain their openness to learning. Providing the learners with indirect personalised WCF that challenges them but does not discourage them may enhance their L2 learning to write. These conclusions were discussed in detail in Chapter 5. The following section describes the implications and recommendations of this study.

6.2 Implications and recommendations

This experimental study has many implications that could inform pedagogy and further research. Although these suggestions were generated from a language-related experiment, several deductions are applicable to other learning fields too. They could provide useful insights for teachers and learners alike. Most importantly, these implications could contribute to research work in the field of language learning and SLA, L2 writing instruction and WCF research.

As the findings of the present study have revealed, learners' engagement with WCF influenced their L2 writing skills, which improved their subsequent writing. Engagement with WCF also enhanced their awareness of the changes in their L2 performance. In other words, the learners realised their roles as effective learners in their own progress, which promoted their self-efficacy (Bandura, 1986; Mercer, 2012; Svalberg, 2012).

The previous results do not suggest that the learners' engagement is not uninterrupted; it can be distracted by various factors during their learning journey. Learning to write approach (the process approach) requires teachers to change the focus from teaching activities to learning activities. Learners' engagement in many instances

is not consistent with their L2 performance. This discrepancy is likely to be due to the mismatch between complex systems, such as the learners' agency, their level of language proficiency and their ZPD (Vygotsky, 1974, 1989). Understanding the learners' preferences and their challenges are key factors in helping their progress in L2 writing.

Learners' awareness of the firm link between their performance and their active engagement in their learning could create a driving force in the learners' engagement with WCF. Therefore, creating a space for the learners to think-aloud and self-edit after giving them effective learning opportunities, supporting them through guided learning and locating their errors by indicating their misuse of the target form are likely to help them reflect on what they already know and improve what they can from their current level of proficiency by themselves, i.e. self-scaffolding (Boggs, 2019). This technique would increase their self-efficacy, independence and autonomy in learning, which are indicators of constructive engagement that lead to an aware-learner engagement (see Figure 5.1, p.182).

As far as for teachers, they are advised to revise the syllabus regularly to meet the learners' needs and to provide the learners with a measurable and explicit expected level of performance to work with. If the learners' needs are assessed regularly to check their levels, and if they are aware of the teacher's expectations, then the learners would be more likely to focus their emotions, mindset, beliefs and actions on achieving these expectations. Likewise, any detrimental emotions and actions that emerge during the teaching can be challenged and modified. This process involves understanding and acknowledging the learners' emotions and actions. It also entails using these factors for critical self-scaffolding and self-editing as well as in collaborative feedback discussions. Challenging these learning situations and overcoming boundaries, even on a moderate scale, could enhance learners' performance and confidence.

The effects of the contextual factors in the present study indicate the need for training the learners and the teachers as well to try a wider range of feedback techniques. Hence, the administrators are encouraged to initiate practices and invite experts in feedback to hold specialised seminars, training sessions and workshops about teaching writing in general and encouraging learners' engagement with WCF in particular. This recommendation is supported by the present study's findings, where most learners lacked the necessary training and experience to use WCF as a learning opportunity. Simultaneously, the instructor expected the learners to know how to use WCF to improve

their writing without training them. The present study proved this idea wrong. Learners and teachers alike need training that focuses on the following:

- 1) Creating a learner-centred learning environment;
- 2) Promoting self-editing and self-scaffolding strategies;
- 3) Focusing on specific error patterns to correct each time;
- 4) Encouraging learners' engagement through WCF;
- 5) Understanding the learners' needs and expectations for WCF in the learning activities;
- 6) Providing teachers with continuous development and training.

These implications are discussed in the following subsections.

6.2.1 Creating a learner-centred learning environment

The findings of this study suggested that learners' engagement with WCF increases in classrooms that are learner-centred. Hence, building a learning culture that allows learners to play an active role in scaffolding and knowledge construction might enhance the learners' engagement and performance. A teacher-centred classroom is unlikely to engage the learners or sustain their engagement for long. The learners might read the teacher's WCF without the motivation to respond to the comments, as they are general and direct comments that are less likely to encourage learners to think and engage with their own writing immensely.

Teachers can modify their learners' attitudes towards WCF mainly by encouraging them to play an active role in the learning-to-write process. Learners' perceptions and expectations of CF are still under-researched. Teachers need to adopt strategies that meet learners' expectations and guide them to take an active role and reflect on the WCF received (Agius and Wilkinson, 2014). For example, encouraging learners to self-edit or carry out peer-evaluations and peer-editing sessions could help increase learners' awareness of their own error patterns and performance. This method could lead to lasting improvements.

Although the idea of peer CF was not among the research focus, the results indicated its importance. Therefore, learners and teachers are encouraged to experience peer CF. Peer CF allows the participants to 'consolidate and recognize the knowledge of the L2 and make this knowledge explicit for each other's benefit' (Villamil and Guerrero, 2006, p. 39). The underutilisation of peer CF feedback means less interaction will take

place between the learners, which goes against the social construction theory of knowledge.

Using mediating strategies with WCF could enhance learners' engagement if the participants are encouraged to reflect on WCF. If the main stakeholders, such as administrators or the teaching norms, require teachers to use a certain method to address learners' texts, then it is unlikely that innovative mediating strategies of engaging with WCF will gain ground (Lee and Schallert, 2008). Hence, there is a practical need for more studies that examine the stakeholders' views of learners' engagement with WCF. Likewise, future studies that aim to identify ways of changing the current attitudes towards learners' engagement and WCF culture are also advised.

6.2.2 Promoting self-editing and self-scaffolding strategies among beginner learners

The learners in this study had never experienced self-editing strategies before, and they had also never tried self-scaffolding. The lack of such experience resulted not only from a teacher-centred culture but also because the learners believed they were incapable of improving their writing independently due to their proficiency levels. Recent research, however, has shown that L2 learners are capable of editing their errors and helping their peers with their writing when they are given the guidelines, time and motivation to practise editing and scaffolding strategies (Boggs, 2019).

Training the learners to become better learners aligns with Ferris and Helt's (2000) claim that teachers' WCF should provide explicit instructions that help learners understand the issues in their texts and therefore avoid making the same errors in future writing. In addition to linguistic knowledge (e.g. grammar and vocabulary), learners with limited proficiency levels should be taught useful self-editing skills (i.e. strategies for how to edit their writing). Learning these skills and practising them with other learners will likely improve their engagement with WCF as well as their L2 performance. Researchers have suggested a number of editing strategies that are useful to practise with L2 learners as follows:

1. Breaking up tasks into chunks and allowing the learners to work at their own speed while supporting them to improve their performance.
2. Thinking aloud helps the learner to notice when a word is missing or is unnecessarily used. These techniques also draw the learners' attention to where a

word does not sound right and when sentences are lengthy, repetitive or make no sense.

3. Focused editing of specific error patterns allows learners to take their time in understanding the CF that is being provided to them. It may also eliminate the fear factor from the learning process.
4. Using electronic tools effectively (a word processor or online text editing) to facilitate CF can enhance learners' thinking skills through technology. Technology-enhanced learning caters to the needs and the qualities of these younger generations. Nonetheless, teachers and educators need to listen to the learners and tailor their teaching to the targeted audience's needs to maximise the usefulness of CF (Lunt and Curran, 2010; Rae and Cochrane, 2008).
5. Asking higher-achieving classmates to work with their peers' in CF teams could support learning (Ferris and Hedgcock, 2005). Advising the learners to adopt this practice may also allow the learners to exchange and construct their knowledge and strengthen the learners' understanding of the targeted linguistic forms.

It is vital that teachers monitor the learners' progress to ensure that they are practising these strategies correctly with the CF that is provided to them. Introducing the learners to the strategies without encouraging them to work with them does not guarantee improvement in their L2 performance. However, research suggests that direct error correction is efficient, leads to better revision and improves second drafts for low proficiency learners; therefore, teachers are recommended to utilise it. Research has found a 'strong association between teachers' error markings and successful student revision on the subsequent drafts of their essays' (Ferris, 2006, p. 97). Chandler (2003) also reported that direct error correction leads to better second drafts.

Direct CF was not used in the current research study. However, the learners in this study stated they preferred indirect CF because it made them think about their errors and work on them independently, which enhanced their cognitive engagement and future writing.

6.2.3 Focusing on specific errors when providing CF

The learners in the current study reported that they would disengage when the teacher provided very detailed and long error corrections. In addition, most of the learners believed that indirect feedback was a better option to engage them cognitively. These

findings align with prior studies (Alkhatib, 2015; Ferris, 2002; Mubarak, 2013) that advised against the comprehensive approach by suggesting that feedback may be most effective when it treats a recurring pattern of errors. For example, teachers could correct two or three major error types at a time instead of correcting every error (Ferris, 2002).

In addition, correcting patterns of errors may help learners construct their knowledge by learning the language one item at a given time, which might suit lower-level learners as a learning style. The use WCF to increase learners' engagement with their texts and awareness of their performance also requires self-regulation strategies when planning the lessons and the revising sessions. In addition, some learners thought that their teacher's comments were not explicit (Bailey and Garner, 2010). Hence, teachers are reminded to convey clear messages to the learners through CF, either in written or oral feedback.

The interviews showed that the learners found shorter corrections more engaging. When they were asked to explain why, they said that longer corrections made them lose track and disengage (see sections 5.3 and 5.4). Therefore, teachers are advised to correct two or three major error types each time instead of correcting every error (Ferris, 2002).

6.2.4 Encouraging learners' engagement through WCF

The study has shown that constantly providing negative feedback to learners can demotivate them and stop them from using WCF to improve their writing skills (Lee, 2013; Lee and Schallert, 2008). Teacher WCF that increases the learners' confidence, self-esteem and interest in writing is more likely to help the learners develop their written performance than any other policy that focuses on error-free writing (Straub, 2000). Moreover, low-achieving learners are vulnerable, so it is necessary to enhance their affective engagement in the form of motivation through encouraging comments (Lee, 2011; Lee *et al.*, 2019; Lee and Schallert 2008). Otherwise, the learners are likely to lose interest in writing and to experience a lack of emotional engagement that shows as lowered self-esteem and carelessness. In fact, previous research has found that providing learners with WCF that does not motivate the learners is destined to fail (Gu nette, 2007).

Future research could address the WCF strategies that lower-proficiency learners need in order to remain motivated while learning. Teachers should also be reminded that learners' needs and learning styles differ, which requires varying the CF given to them to make it individually useful. For example, teachers could use praise, criticism or suggestions based on individual learners' needs and efforts. Praise might engage some

learners and disengage others who become less motivated when praised. Tailoring the CF is essential to deal with individuals, to bridge their learning gaps and most importantly, to listen to them (Lunt and Curran, 2010). In addition, teachers and researchers are encouraged to continue researching in this area (Bailey and Garner, 2010).

6.2.5 Understanding learners' needs

This study found that learners lacked the skills to identify and apply useful CF in their writing. This finding agreed with previous research that has revealed similar results (Ferris, 1995b; Leki, 1991; Radecki and Swales; 1988; Saito, 1994; Schulz, 2001). Without the ability to identify the usefulness of WCF, learners could fail to engage with it successfully. Many learners in this study struggled to understand the WCF they were given. One reason was the learners' level of proficiency (see section 5.2, 5.5); the teacher did not know the learners well enough to provide them with constructive CF based on their needs, nor did she allocate enough time for them to ask questions during the class or CF episodes. Therefore, teachers would be advised to take their time and get to know their learners' levels in the targeted skill (i.e. writing) by analysing short examples of their writing at the beginning of the semester. With this approach, the teacher can provide effective WCF that matches the learners' needs and individual levels of proficiency.

In addition, some learners complained about not having enough time to discuss their errors and the CF with the expert (i.e. the teacher). Therefore, teachers are encouraged to allow enough time for teacher-learner conferences either in class or during their office hours to help the learners find their writing voices. Teachers could also arrange for student-student conferencing to encourage learner communication, which might help the learners improve their cognitive engagement by using follow-up sessions from time to time with the instructors. Because many of the learners only cared to improve their writing when they were asked to resubmit an assignment, teachers are advised to close the feedback loop and to turn feedback into feedforward by allowing time for discussions and giving guidance in order to allow the learners to focus on future assignments, not only on the final assessment (Li and De Luca, 2014). These suggestions agree with those of previous researchers (Hounsell *et al.*, 2008; Ion *et al.*, 2017; Jonsson, 2013).

Another reason for the learners' inability to learn from the WCF was related to the writing materials that were used in the course. The teachers were assigned the textbooks, and they were required to follow them regardless of whether the material represented a critical area of need or concern for the learners. Teachers should always be allowed to choose writing topics that are interesting to and relevant for their learners, which would be more likely to enhance their engagement and, consequently, their L2 performance. Without understanding the learners' needs and expectations, the teachers might fail to incorporate these types of topics in their teaching or CF. In fact, Ferris *et al.* (1997) recommended that teachers help their learners understand the effect of WCF on their writing and provide justifications for why it is given in a certain way. If the learners see that the teacher understands their individual needs, it will very likely positively influence learner engagement with WCF (see section 5.3).

6.2.6 Teachers' continuous development and training

Some of the challenges that were recognised in this research study were beyond the learners' and the teachers' control, so they need to be addressed by the administration and the other stakeholders. A new culture of trust needs to be created where teachers welcome observations by their colleagues and observe them in turn in their classes to learn from each other and to promote new methods of CF application (Tuck, 2012). This approach would encourage less-experienced teachers to enhance their performance in teaching and assessing learners by watching the experienced ones. At the same time, experienced teachers might be introduced to new methods of providing learners with WCF and engaging them in learning activities that enhance their language skills.

Teachers can also learn from each other by holding workshops for L2 writing teachers to introduce them to L2 writing theories and pedagogical developments in the field. Teaching the learners to improve their writing skills should include preparing the teachers to teach writing skills in the best manner. Hence, continuous professional development courses and training on how to teach writing skills productively and how to give constructive, engaging feedback should be made available for teachers. During these courses, the more-experienced teachers could transfer their tacit knowledge to their colleagues. For example, the teachers could be made aware of the importance of drafting and redrafting for the learners' engagement with WCF. During these training sessions, teachers should be instructed how to use different CF methods, such as direct, indirect and underlining, depending on the learners' needs, level of proficiency and goals. Only

college leaders have the power and the resources to advise the teachers and arrange for these opportunities.

6.3 Main contributions of the study

The present study provided several contributions to the field of learners' engagement and WCF research. This study was an original contribution as the first of its type to examine and explain learners' engagement with WCF in the target context (i.e. Saudi adult female learners). This is an important contribution because it fills a gap in the literature, especially as learner engagement and WCF in general are still under-researched.

In addition, this study provided a methodological contribution as it used TA to collect data and also as a learning aid. TA was the meditating strategy used to study how thinking influenced learners' engagement with WCF and what effects it had on L2 writing performance (see Chapter 3). TA indeed allowed access to the learners' thinking in a way that would not have been possible otherwise. Hence, using TA with other strategies, such as languaging, in the future might open doors to understanding learners' needs and their learning styles when they aim to master language skills. In addition, this study has shown how WCF practice can enable learners to improve their L2 performance. More specifically, this study used TA to test the effectiveness of indirect WCF and described the process by which the learners' comprehended the feedback and used it as a stepping stone to improve their future writing.

Moreover, this study provided ways for understanding the learners' emotional and social engagement with WCF. This information could help teachers improve their CF in order to engage learners' affectively and socially and to keep their learners' motivation high, as suggested by earlier researchers (Alamer, 2015; Yang and Carless, 2013).

6.4 Limitations of the study

Although the current research study provided a comprehensive analysis of the learners' engagement with WCF, the originality of examining the topics, the complexity and diversity of the research areas and the space allocated for the research study all had some limitations.

For instance, the participants knew what this research study was investigating. Therefore, it is arguable that their responses might have been influenced by this knowledge. However, the triangulation of the research methods increased the validity and trustworthiness of the findings as they were cross-checked. For example, the use of TA, interviews and classroom observations increased the scope of examination and allowed for the observation of the learners' engagement. Testing the learners provided quantitative figures to support or refute the qualitative data.

For the research design, if the study had been longer, more time between the post-test and the delayed post-test could have been allowed. However, this approach was not possible due to the participants' timetable as well as the time and venue restrictions. The learners were expected to receive their work placements during the following semester, which meant they were not required to attend classes or be available on-site the following semester. Therefore, it would have been impossible to meet with all of them in the same place or at the same time at a later date.

Another limitation was the small number of the participants in the TA intervention. If this study were to be carried out again, the TA intervention would be applied to half of each class as an experimental group, with the other half as a control group. This approach would enhance the reliability of the quantitative findings.

6.5 Suggestions for future research

This study has opened up numerous areas worthy of future research. As the feedback investigation in this study was restricted to only one type of feedback (i.e. indirect written), future research could examine the learners' engagement with other types of feedback (i.e. oral and written feedback). Research designs to investigate this question could also include mixed-methods approaches of surveys, interviews and analyses of texts with teacher corrections.

Future research should go beyond learners' engagement with WCF and also examine other types of classroom engagement, such as task engagement activities that could support the learners' language and writing development (Ferris, 1995b, 2002; Manchón, 2012). Other support activities should include languaging in peer groups after receiving WCF, or other aspects that are problematic, to allow learners to accomplish specific writing tasks successfully.

Finally, future research may also be undertaken into changing trends in learners' engagement with their texts after attending training courses that aim to develop and raise learners' awareness of the target language and how it is learnt.

The corrective feedback field of research and pedagogy is very large. When it was combined with learners' engagement, it made an even bigger topic to research. However, if we are aiming to build evidence-based educational institutions, researchers and teachers must be encouraged and motivated to continue working on similar but diverse and interesting areas of research.

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Appendices

Appendix A: The Introductory Letter and Survey

FOR RESEARCH PURPOSES ONLY

(Translation from Arabic)

Dear participant,

My name is Nadia Alshahrani. I am studying for a PhD degree at the University of Leicester, UK. The focus of my study is learners' engagement with the written corrective feedback (WCF) they receive from their teachers. To help me recruit participants for my study, I need your response to a short survey. All the information obtained will be used solely for this current study. Your identity will not be disclosed to anyone, and the information will be kept confidential and deleted after the completion of the study. You have the right to withdraw from this study at any stage of the data collection. If you do, all the information you have provided will be excluded from the study. However, I would really appreciate it if you could be part of this study, which aims to enhance our understanding of corrective feedback and to suggest ways of improvement. I will never be able to do this without the help of the learners (i.e. you).

Please read the following questions and statements and answer them as openly and as accurately as you can. I need your honest response for my research. If you have any questions at any stage, please feel free to contact me using the email below.

Best regards,

Nadia Alshahrani
The researcher

Email: Na286@le.ac.uk

CONSENT FORM

I, the participant, hereby acknowledge that I have read and understood the information in this letter, and I am willing to participate in this research. I give the researcher the right to use my responses in this study and for any further research related to these data.

Signature:

Name:

Date:

A SURVEY FOR RESEARCH PURPOSES ONLY (ENGLISH VERSION)

(Translation from Arabic)

SECTION 1: Personal Data

Name: _____

Age: _____

Nationality: _____

Class: _____

SECTION 2: Academic Background

1. Where did you complete your secondary school? Private school Public school
2. How long have you been studying English?

3. How old were you when you started learning English?

4. Have you spent any extended time (more than a month) in any country where English is the first language? YES NO
5. If yes:
For how long?

6. How old were you when you moved abroad?

7. Have you taken any English language proficiency tests? YES NO
8. If yes, please name it. _____
9. What was your overall score? _____

SECTION 3: General Overview

A. Please select the answer that best describes your response to the following. Please answer based upon your experiences, NOT as you think you should answer. I rely on your honest responses.

Statement	1	2	3	4	5
1. I think my English writing is fine.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2. I get useful feedback on my writing from the instructor.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
3. I look up the corrections after I receive feedback.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4. I ignore the whole task after reading the teacher's feedback.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5. I don't understand all the comments/corrections I get from my tutor.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
6. The changes I make in the second draft make my writing better.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
7. The feedback makes me feel unwilling to do the task again.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
8. I believe I will overcome my mistakes with practice.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
9. I prefer to have extra corrections and explanations on my paper.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
10. I prefer to have my mistakes underlined only without corrections.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
11. I benefit from discussing common errors as a group in the sessions.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
12. Overall, I am usually happy with the corrective feedback I receive.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

B. Based on your prior experience, please answer the following questions in the space provided. Please respond in a manner that accurately describes the current situation, NOT in the way that you think is desired. I rely on your honest responses.

1. What are your goals in learning to write in English? What do you hope to achieve?

2. How would you describe your feelings about the writing class (fun, enjoyable, burden, struggle, pointless)?

3. What type of feedback do you usually receive from your teacher? Does the teacher give you any written feedback on your writing?

4. Can you describe what you do directly after getting your writing homework back?

5. What are the main things you look at or look for when you read your teacher's feedback?

6. Can you describe the process that you go through when you read the teacher's feedback?

7. Do you understand all the feedback you get? If you have trouble understanding some of the feedback, what do you do? How do you feel about asking your teacher about it?

8. Do you ask your peers for clarification or help to understand any of the ambiguous comments? Why (or why not)?

9. What kind of feedback/comments from the teacher would you most/least like to see, and why?

10. Do you think your writing is improving as a result of teacher feedback? Can you tell me more? (Prompts: make the same mistakes in your writing again, retain the learning for a long time, practice, writing more than one draft)

Appendix B: Detailed Consent Form

Project title: Learners' engagement with written corrective feedback and writing skill improvements

Please tick the appropriate boxes	Agree	Disagree
<i>Taking Part</i>		
I have read and understood the project information sheet.		
I have been given the opportunity to ask questions about the project.		
I agree to take part in the project.		
I understand that my participation is voluntary. I can withdraw from the study at any time, and I do not have to give any reasons for why I no longer want to participate.		
<i>Use of the information I provide for this project only</i>		
I understand my personal details, such as phone number and address, will <u>not</u> be revealed to people outside the project.		
I understand that my words may be quoted in publications, reports, web pages and other research outputs.		
I understand that my real name will not be used in publications or other research outputs.		
<i>Use of the information I provide beyond this project</i>		
Other researchers may have access to these data only if they agree to preserve the confidentiality of the information.		
Other researchers may use my words in publications, reports, web pages and other research output only if they agree to preserve the confidentiality of the information.		
<i>So we can use the information you provide legally</i>		
I agree to assign the copyright I hold for any materials related to this project to the researcher, Nadia Alshahrani.		

Name of Participant.....

SignatureDate

Researcher Signature

Date

Adapted from the UK Data Archive (2011) 'Managing and Sharing Data: Best Practice for Researchers (available at <http://www.data-archive.ac.uk/media/2894/managingsharing.pdf>).

Appendix C: The Interview Schedules

TA Interview Schedule for ICG Students

1. Reflecting on the recent TA, can you describe the feelings you had when you read the CF?
2. Can you describe the process you went through when you read your teacher's feedback? How did you TA?
3. What kind of feedback/comments did you receive from the teacher? Was it enough?
4. Did you understand all the feedback you got?
5. Did your writing change after the TA? Could you tell me more?
6. What was the best part of the TA method? What was the worst?
7. Can you tell me how using computer-mediated WCF to revise your drafts affected your L2 writing?
8. Is there anything you would like to add about your experience in the intervention?
9. Is there anything you would like to add about your experience with written feedback in general?
10. Is there anything you would like to add about your experience with writing class in general?

TA Interview Schedule for IHG Learners

1. Reflecting on the recent TA, can you describe the feelings you had when you read the CF?
2. Can you describe the process you went through when you read your teacher's feedback? How did you TA?
3. What kind of feedback/comments did you receive from the teacher? Was it enough?
4. Did you understand all the feedback you got?
5. Did your writing change with the TA? Could you tell me more?
6. Can you tell me how using the guided handwritten CF to revise your drafts influenced your L2 writing?
7. What was the best part of the TA method? What was the worst?
8. Is there anything you would like to add about your experience in the intervention?
9. Is there anything you would like to add about your experience with written feedback in general?
10. Is there anything you would like to add about your experience with writing class in general?

(Translation from Arabic)

Appendix D: The Tests

D 1: The Pre-Test

1) In the following sentences, find the words that need to be capitalised and underline them, then write them down correctly on the answer sheet.

as we send our children to school every day, it's important to know how clean and healthy their schools are. because students spend approximately 14,000 hours inside buildings over the course of their school years, one area of growing concern is air quality in schools - particularly for children suffering from allergies or asthma.

asthma affects close to five million children and leads to 10 million missed school days every year, according to the american lung association. that makes asthma the number one cause of school absenteeism due to chronic illness.

2) For each of the following sentences, fill in the blank with either "a", "an", "the", or "no article".

- i. _____ Abha is the main city in southern province.
 - ii. Most people who live in _____ small town are happy.
 - iii. I have been playing _____ football for three years.
 - iv. I am _____ only person here who speaks French in my family.
 - v. I have _____ cat.
-

3) Choose the correct pronouns to complete the sentences.

- i. The old woman lived alone, with no one to look after (she, her).
 - ii. This ring here on my little finger belonged to (mine - my) late mother.
 - iii. (My - Mine) father works for the government.
-

4) On the answer sheet, write a paragraph about 'a memorable event in your childhood'

D 2: The Post-Test

1) In the following sentences, find the words that need to be capitalised and underline them. Then write them down correctly.

a young couple from india lives next door to me. the husband's name is ajay. the wife's name is amani. everyone calls her ami. this couple are fluent speakers of three languages, english, arabic and urdo. they work in the local hospital as technicians.

.....

2) On the answer sheet, write a paragraph about 'a memory with your best friend'

.....

3) In the following sentences, replace the underlined with the correct answer from the offered options.

- i. Many students wonder where (they / them) will go after college.
- ii. Teachers always wonders if (he is / they are) doing the best for their learners.
- iii. The father bird is building (their / its) nest in the tree.

4) For each of the following sentences, fill in the blank with either "a", "an", "the", or "no article".

I went to 1) _____ airport early yesterday. I had to catch 2) _____ flight to London. The lines at 3) _____ airport were very long, so I had to wait for 4) _____ long time. Once 5) _____ plane took off, I tried to get some sleep but I couldn't.

D 3: The Delayed Post-Test

1) In the following sentences, identify which letters should be capitalised and correct them.

- i. my sister, jana, likes japanese food; such as sushi and seafood soup.
 - ii. skyscraper are very popular in manhattan.
 - iii. he speaks french fluently.
 - iv. my brother saeed and I like travelling walking and shopping.
-

2) In the following sentences, replace the subject with the correct pronoun.

- i. All babies always look so beautiful. (He, they we)
 - ii. My uncle bought a new big house in Canada. (They, she, he)
 - iii. Reema's book was on the desk. She forgot it yesterday. (His, Her, My)
-

3) For each of the following sentences, fill in the blank with either "a", "an", "the", or "no article".

- i. Dammam is near _____ Arabian gulf.
- ii. Let's go to _____ mall.
- iii. _____ Nile is the longest river in the world.
- iv. I spoke with _____ Maths tutor that you told me about.
- v. I need _____ bottle of water.

4) On the answer sheet, write a paragraph about 'your summer holiday's plans'

Appendix E: The Think-aloud Sessions

E1: TA Instructions

Translation from Arabic

In this study, I am interested in your thinking when you read the WCF your teacher provides you with and while you are rewriting your paragraph. To do this, I am going to ask you to think-aloud as you perform the reading and rewriting. By 'think-aloud' I mean that I want you to say out loud your thoughts from the time you start reading the document until you finish the task of rewriting your paragraph. It is important that you do not plan out your responses or explain to me what you thinking. I want you to talk as if you were alone in the room talking to yourself. I will only talk to you to remind you to keep talking if you stopped talking for more than 7 seconds.

The training for this task includes a few practice tasks. It will familiarises you with the Think-aloud technique so you get used to saying everything in your mind about the task. When we have finished the training and once you are confident that you are able to Think-aloud about your writing then we will proceed to the actual task.

Please do not hesitate to ask me any questions about the task you are about to carry out as this is really important to my research.

E2: The Warm-up Tasks

(The instructions have been translated from Arabic)

Task 1

I will show you a series of letters and your task is to unscramble the letters and rearrange them to form an English word. For example, the letters 'LRGI' can be rearranged to form the word 'GIRL'.

- Please talk-aloud as you work on these two anagrams.

The anagram: CSTA

The anagram: DRENAG

Task 2

You are about to go shopping, I'd like you to think-aloud while you are writing your shopping list.

Write your shopping list. Start with the most needed items to the lesser needed ones.

E3: The TA Session Training Tasks

(Translation from Arabic)

Following the explanations of the TAPs, here are the training tasks. It is very important that you keep talking. I will remind you to talk if you stop talking for more than 7 seconds.

Task 1:

In this task, I want you to think-aloud as you count the doors in your house.

Now I would like you to tell me about your thinking from the time you start thinking about the task until you give me your answer. It is important to verbalise your actual thinking, please.

Task 2:

In this task, I want you to think-aloud as you multiply two digit numbers in your head. The numbers are 15 and 26

Now I would like you to tell me about your thinking from the time you start thinking about the task until you give me your answer. It is important to verbalise your actual thinking, please.

G2: A Picture of an Original Classroom Observation Sheet

1/2	<p>بطاقة ملا حظة رسم (٣) - المراكبة : ٣، ٢ (١.3) الترخ : الموضوع الثالث - الفترة : (٣) - قاعة [1.177] الملاحظات</p>
(وقت)	<p>خطة (كلوس) - الملاحظة $3 * \begin{pmatrix} 9 \\ 5 \end{pmatrix}$ الملاحظة</p>
11:10	<p>بدأت بملحة بطرح (لا مظاهر حركة) [CF] أي يوم لرض و طبع ملاحظات فتح الكتب لتسجيل الملاحظات الملاحظة - الملاحظة في هذه المرحلة؟ ما ستصبح ملاحظتك الملاحظات -</p>
11:20	<p>٣.٢ - أظن انظر في [٥]</p>
11:30	<p>١.٢ - ما نرى - كين - اسم - ٣.٢ [تأثيرات] - الملاحظة ملاحظة - ٢.٢ ما نرى [غير ملاحظة] - ١.٢ - اسم - انظر انظر في علم إضافة - ما نرى ٣.٢ - (القطر) - الملاحظة الملاحظة - الملاحظة الملاحظة - ٣.٢ - بالاجابة على (القطر) - الملاحظة الملاحظة الملاحظة - ٢.٢ - لم تكن ملاحظة - الملاحظة</p>
11:40	<p>بعد انقضاء (القطر) - وديان لفرادة (القطر) - اي (القطر) -</p>
12:15	

G3: An Original Classroom Observation Sheet (coded)

Learner ID: 2.3 Week: 3 session:3	
Time	Notes
11:10	<p>Seating plan:</p> <p>The teacher started by presenting the common errors and initiated a CF discussion. She asked the learners to open their books to write down their notes. T: in your group, find the errors in these examples.</p>
11:20-11:30	<p>2.2:...(leaning forward) maybe the [s]?</p> <p>2.1: I don't know (.) not sure.. mmm</p> <p>2.3: (moving back in her chair, searching the book, then she leaned forward to talk to the group) "look at the example here, this is the same rule, right?" (facial expression: excitement)</p> <p>2.2 I'm not sure (facial expression: uncertain, hand movement: tapping slowly on the book)</p> <p>2.1: yes I think you're right (name 2.3).there should be an (S) here.</p> <p>2.3: (facial expressions: satisfaction, smiling, enthusiasm to participate)</p> <p>2.4: what about this one? (moving to the next question)</p> <p>Private Speech 2.1: let see ...</p> <p>T (addressing the class): OK, can we start with the first question, please?</p> <p>The general atmosphere is supportive, 2.2 was not willing to take part in this lesson.</p>
11:45-12: 15	<p>After the CF discussion, the learners received their assignments back and they started to read them. The teacher asked them to put them away and move on to the new lesson.</p>

(translation from Arabic)

Appendix H: The Symbols Used for the Interviews and TA Transcriptions

(TA and Interviews)

Symbol	Meaning
()	Uncertain transcription.
Um	Fillers for hesitation.
ABC	Words in capital letters refer to a louder tone.
abc	Errors in the original writing.
X	An incomprehensible item, one word only.
Xx	An incomprehensible item of phrase length.
...	Three dots indicate a pause of five seconds or less.
-	A hyphen represents an incomplete word (e.g. plea-).
---	Three hyphens indicate an interrupted or incomplete sentence.

Adapted from Cumming *et al.* (2001)

Appendix I: The Codes Used to Analyse Learners' Engagement with WCF during the TA Sessions and Classroom Observations

Coding Cognitive Engagement: TA (verbal cues)

Code	Meaning	Example
RA	Reading the correction aloud	-
GE	Giving a reason for the error	It should have <i>a</i> because it is countable singular
NI	Cannot identify the error	[...] Where is the mistake?
NNR	Aware of the error but cannot explain it	Ummm I... I know it's wrong, but I don't know why
MC	Metacognitive explanations	[...] She work late. Mm [...] works, I used this just like we do in Arabic grammar
NK	Using new items (new knowledge) in rewriting	I used the word 'delighted', as in 'very happy', we are learning adjectives with -ed and -ing
AV	Avoiding interacting with the corrections	[...] I will come back to this later

Coding social/affective engagement in TAPs, interviews and classroom observations (verbal and non-verbal cues)

Code	Meaning	Markers
HE	The learner is hesitant to correct an error.	Facial expression and/or hand movement
EA	The learner is eager to correct an error.	Facial expression, voice tone and/or hand movement
AU	The learner corrects her errors autonomously.	Finds the answers on her own. Uses technology or books to find answers.
PU	The learner makes purposeful efforts to correct her writing.	Purposeful behaviours are the ones that lead to learning new knowledge or correcting an existing viewpoint.
WI	The learner is willing to participate in TA to correct her errors.	'I like this activity'
MA	The learner maintains a positive attitude while performing the TA sessions.	Facial expression, voice tone and/or hand movement 'I am excited to rewrite'. Voice tone
AP	The learner appreciates the TA sessions as learning opportunities.	Facial expression, voice tone and/or hand movement
RE	The learner is reluctant to use WCF to correct her writing.	The learner passes one or more errors without correcting them.

Adapted from Svalberg (2009) and Ellis (2010).

Appendix J: An Example of a Complete Transcription of a TA protocol TA session

(Translation from Arabic)

Session: 3 Starting time: 12:15 Ending time: 13:04 Duration: 49 minutes

	Time	Speaker	Content	Observation	Notes
The beginning of the task	12:16	1.3	OK. I wrote about my room. Um... One two three four fi- ...there are SO many mistakes!	She counts the corrections on the page.	
	12:22	1.3	My room is <u>big room in the house</u> . mm is underlined ... the big room? Oh, the biggest room. ... not <i>big</i> , the biggest. should write <i>the biggest room</i> .	She reads the paragraph aloud. She pauses at the corrections.	
	12:25	1.3	I have two <u>window</u> ... I don't know why I here is wrong. Windows, not window. should have added S because there are more than one window in the room.	She could not identify the first error. She thought aloud about her second mistake and was able to correct it.	Unaware of the error in the pronoun Thinking out loud about how to correct the error
	12:30	1.3	<u>My room colour white</u> . I should write the colour of my room is white. I guess I translated the sentence in my head from Arabic before writing it in English. I made three spelling mistakes here, too.	She was unsure of the reason for being wrong. She was annoyed by the spelling mistakes more than the grammar mistake	Thinking out loud about how to correct the error
	12:33	1.3	<u>My door brown</u> . Ok ... the verb 'is' is missing. I knew that a good sentence should have subject, verb, object, but I forgot to write the verb in this sentence. I think I was rushing to finish the writing asap. I hate writing.	She knew her mistake immediately. She was able to correct It.	Thinking out loud about how to correct the error
	12:35	Researcher	Can we go back to thinking aloud about the teacher's CF, please?		
	12:36	1.3	I have <u>small bed</u> . These are spelled wrongly! Bed not bead. ... The article, mmm, <i>a</i> It is also missing here. There, a small bed.	She knew her mistake immediately. She was able to correct it.	Thinking out loud about how to correct the error
	12:39	1.3	The <u>back ground</u> of my room. I don't know why this is wrong.	She was unable to recognise this error.	Thinking out loud about how to correct the error
	12:41	1.3	<u>In the room books bench</u> . I meant a bookshelf, to keep my books on it. We put books on shelves. ... There is bookshelf in my room. NO, there is A bookshelf in my room. There.	She expressed her ideas well. She was able to correct the word-choice error.	Thinking out loud about how to correct the error
	12:47	1.3	<u>In the room make-up bench</u> . Why is this wrong? Um... subject, verb, object. ... I have a table in my room to put my makeup... I have a makeup table in my room.	She was able to correct the error.	Thinking out loud about how to correct the error FEEL

	12:49	1.3	I <u>have photos in</u> my wall. Um... it must be a spelling mistake. Photos not fotos. I don't know what's wrong with 'in'.	She was able to correct the first error but not the second.	Thinking out loud about how to correct the error FEEL
	12:51	1.3	My sister <u>in the room</u> with me... No verb. So my sister uses the room with me. My sister share the room with me. My sister SHARES the room with me. Spelling errors again! I don't know how to spell...	She was able to correct the error and to make better choices to choose from.	Thinking out loud about how to correct the error Desperate FEEL
	12:57	Researcher	Can we go back to thinking aloud about the teacher's CF, please?		
	12:58	1.3	Ok. There are so many errors here, almost half of them are spelling mistakes and wrong word choices. I think I am good in grammar. I made very little grammar mistakes. I like grammar, but I hate using it in writing... I should learn spelling. I wish I knew this method earlier.	She justified her errors and planned ahead to overcome them, although I might disagree on the statement she made.	Thinking out loud about how to correct the error FEEL
End of task	13:04	Researcher	Thank you for your time. See you next time!		

Appendix K: An Example of Coding a Transcript for Engagement Cues in the Observations

(Translation from Arabic)

	Time	Speaker	Content	codes
The beginning of the task	12:16	1.3	OK, I wrote about my room. Um... One two three four fi- ... there are SO many mistakes!	Commented [AN1]: AU Commented [AN2]: EA facial expressions
	12:22	1.3	My room is <u>big room</u> in the house. It is underlined ... the big room? Oh the biggest room. It is not just <i>big</i> it is the biggest. I should have written <i>the biggest room</i> .	Commented [AN3]: MC
	12:25	1.3	I have two <u>window</u> ... I don't know why I here is wrong. Windows not window. I should have added S because there are more than one window in the room!	Commented [AN4]: NI Commented [AN5]: GE
	12:30	1.3	My room colour <u>white</u> . I should write the colour of my room is white. I guess I translated the sentence in my head from Arabic before writing it in English. I made three spelling mistakes here too.	Commented [AN6]: MC
	12:33	1.3	My <u>door brown</u> . Ok ... the verb 'is' is missing. I knew that a good sentence should have subject verb object but I forgot to write the verb in this sentence. I think I was rushing to finish the writing asap. I hate writing!	Commented [AN7]: AU facial expressions Commented [AN8]: MC Commented [AN9]: RE
	12:35	Researcher	Can we go back to thinking aloud about the teacher's CF. please?	
	12:36	1.3	I have <u>small bed</u> . These are spelled wrongly! Bed not bead. ... The article <i>a</i> is also missing here. A small bed.	Commented [AN10]: MC + WI
	12:39	1.3	The <u>back ground</u> of my room. I don't know why this is wrong.	Commented [AN11]: NI
	12:41	1.3	In the room books <u>bench</u> . I meant a bookshelf, to keep my books on it. We put books on shelves! ... There is bookshelf in my room. NO, there is A bookshelf in my room. There.	Commented [AN12]: NK Commented [AN13]: PU AU Commented [AN14]: NK
	12:47	1.3	In the room <u>make-up bench</u> . Why is this wrong? Um... subject verb object. ... I have a table in my room to put my makeup... I have a makeup table in my room.	Commented [AN15]: RA
	12:49	1.3	I have <u>photos</u> in my wall. Um... it must be a spelling mistake. Photos not fotos. I don't know what's wrong with 'in'.	Commented [AN16]: WI Commented [AN17]: NNR
	12:51	1.3	My sister in the room with me... No verb. So my sister uses the room with me. My sister share the room with me. My sister SHARES the room with me. Spelling errors again! I don't know how to spell	Commented [AN18]: MC Commented [AN19]: NK Commented [AN20]: RA
	12:57	Researcher	Can we go back to thinking aloud about the teacher's CF. please?	
	12:58	1.3	Ok. There are so many errors here, almost half of them are spelling mistakes and wrong word choices. I think I am good in grammar. I made very little grammar mistakes. I like grammar but I hate using it in writing... I should learn spelling. I wish I knew this method earlier.	Commented [AN21]: MC AP MA
End of task	13:04	Researcher	Thank you for your time. See you next time!	Commented [AN22]: AP MA

Appendix L: The Variables Used in the Learners' Engagement Data Analysis and Their Measurements

Variable	Code	Definition	Measurement
Social Engagement			
1. Commitment to TA	CTA	An objective measure of the total number of TA sessions attended by the learner as well as numbers of revisions submitted	Passive (1-3 sessions/ revisions), Moderate (4-6 sessions/ revisions), Active (≥ 7 sessions/ revisions).
2. Quality of the application of TA as a mediating activity	QTA	A subjective measure based on the researcher's evaluation of the overall quality of the application of TA as an activity by the learner. Also supported by the analysis of the interviews.	Passive Moderate Active
Affective Engagement			
3. Expressed feelings	FEEL	A subjective measure based on the analysis of qualitative data whereby feelings about WCF were expressed verbally by learners during TA sessions or in the interviews; or observed (nonverbal cues) in encounters with the researcher i.e. TA sessions and classroom observations	Negative, Neutral, Positive.
Cogitative Engagement			
4. Writing performance	WCH	A numerical measure based on learner's achievements in word-count and in specific grammatical rules. These are measured at the post-test and delayed post-test compared to the learners' pre-test.	Low (0-39 % improvement) Moderate (40-60 % improvement) High (61- 80 % improvement) Exceptionally high (≥ 81 % improvement)
5. Degree of Learner's Awareness	AWARE	A subjective measure of the degree of learner's awareness regarding the relation between their engagement with WCF and their learning improvement based on the evidence from the TA sessions and interviews.	Unaware Ignored awareness positively aware

Appendix M: Indicators of L2 Writing Performance Changes and Improvement

Feature	Expectation	Measurement
Writing Fluency	The learners are expected to increase the word-count they are capable of writing in response to a writing task (TWT) in a specific time.	Low (0-39 % improvement) Moderate (40-60 % improvement) High (61- 80 % improvement) Exceptionally high (\geq 81 % improvement)
Grammatical Accuracy	The learners are expected to respond to questions about (capitalisation, pronouns, and English articles) correctly.	Low (0-39 % improvement) Moderate (40-60 % improvement) High (61- 80 % improvement) Exceptionally high (\geq 81 % improvement)
Grammatical Competency	The learners are expected to use (capitalisation, pronouns, and English articles) correctly.	Low improvement (0-39 %) Moderate improvement (40-60 %) High improvement (61- 80 %) Exceptionally high improvement (\geq 81 %)

Appendix N: Writing Correction Codes and Their Meaning

Code	Use	Example
WW	Wrong word	Our plane flew on the mountains we saw snow.
WT	Wrong time	Our plane flew over the mountains we see snow.
WF	Wrong form	Our plane flew over the mountains we was seeing snow.
WO	Wrong order	Our plane over the mountain flew we saw snow.
SP	Spelling	Our plane <u>flue</u> over the mountains we saw snow.
P	Punctuation	Our plane flew over the mountains; we saw snow.
M	Missing word	Our plane flew over the mountains saw snow.
?	Not clear	Our plane flew over the mountains we saw snow.
RW	re-writing	Our vehicle flies, we snow find, over mountains you saw it.

Adapted from the British council website

Appendix O: Course Syllabus

Course Syllabus

Course title and code

Writing in English Language CENG 209

Week	Quiz	Date	Lecture Topic	Book page
1		17 th of Sep.	Revising Some Writing Rules & Writing a Paragraph: What is a Paragraph?	PPT p. 4-6 p. 38-44 p. 48-50
2		24 th of Sep.	Sentence Structure: Subject, Verb, & Pronouns	p. 10-15
3		1 st of Oct.	Using Grammatical Rules in Writing (Present Simple & Past Simple)	PPT
4		8 th of Oct.	Conjunctions & Free Writing	PPT p. 23-24 p. 56-57
5		15 th of Oct.	Descriptive Writing: Using Adjectives & Adverbs in Writing	PPT p. 104-111
6		22 nd of Oct.	Transition Signals	PPT p. 45-46 p. 129-133
7		29 th of Oct.	Introducing Punctuation Marks & Capitalization Rules	PPT p. 16-17 p. 86-92 p. 139-143
8		5 th of Nov.	Sentence Structure: Independent & Dependent Clauses, & Fragments	PPT p. 76-79 p. 82-83
9		12 th of Nov.	Outline, Brainstorm, & Free Writing	PPT p. 34-36 p. 51-52
10		19 th of Nov.	Introducing Abbreviations & Acronyms	PPT PDF
11		26 th of Nov.	Writing a Formal Business Email Part 1	PPT
12		3 rd of Dec.	Writing a Formal Business Email Part 2	PPT
13		10 th of Dec	CV Writing	PPT
14		17 th of Dec	Writing Final Drafts + Revision	PPT
15		24 th of Dec	Final Test	

Appendix P: The Learners' Writing Performance in TA Assignments

P1: ICG and ICG* L 2 Writing Performance Before and After TA Sessions

	Writing 1			Writing 2			Writing 3			Writing 4			Writing 5		
	Before	After	%	Before	After	%									
1.1	27	33	22.22	35	44	25.71	55	68	23.64	89	101	13.48	x	x	-
1.2	22	31	40.92	34	42	23.52	50	64	28	92	103	11.98	105	112	6.67
1.3	21	X	-	38	49	28.95	64	82	28.13	82	99	20.73	x	x	-
1.4	19	31	63.16	35	41	17.14	63	87	38.09	94	103	9.57	x	x	-
1.5	21	32	52.38	38	45	18.42	67	90	34.33	85	x	-	x	x	-
1.6	22	25	13.64	27	31	14.81	40	43	7.5	47	52	10.63	x	x	-
1.7	25	29	16	30	31	3.33	35	x	0	41	55	9.76	x	x	-
1.8	24	26	8.33	32	x	0	36	39	8.33	39	51	30.77	x	x	-
1.9	26	28	8.33	33	33	0	29	32	10.34	34	x	-	x	x	-
1.10	28	29	3.57	35	33	-5.71	38	40	5.26	39	x	-	x	x	-

**Weekly Change (%)= (After - before) / before X100

P2: IHG and IHG* Writing Performance Before and After TA Sessions

	Writing 1			Writing 2			Writing 3			Writing 4			Writing 5		
	Before	After	%												
2.1	26	29	11.54	32	36	12.5	55	60	9.09	66	79	19.69	X	X	-
2.2	21	27	28.57	33	39	18.18	50	52	4	62	78	40.32	88	102	15.91
2.3	22	26	18.18	36	X	-	64	69	6.15	71	82	15.49	X	X	-
2.4	21	25	19.05	30	31	3.33	63	70	11.11	68	83	22.05	X	X	-
2.5	24	X	-	32	38	15.63	67	72	7.46	73	91	24.66	X	X	-
2.6	23	23	0	25	X	-	40	44	10	45	51	13.33	X	X	-
2.7	24	24	0	29	32	31.03	35	X	-	32	X	-	X	X	-
2.8	26	X	-	30	X	-	36	38	5.56	37	42	13.51	X	X	-
2.9	22	X	-	30	X	-	29	29	-	33	33	0	X	X	-
2.10	30	32	6.67	31	33	6.45	35	X	-	37	X	-	X	X	-

**Weekly Change (%)= (After - before) / before X100