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A Sociocognitive Study of Writing Strategy Use Among EFL Writers at a University in Saudi Arabia and How Proficient and Less-Proficient Writers Employ Them Differently

by

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<u>Abstract</u>

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Cognition is central to writing and its development (Nishino & Atkinson, 2015). It is embodied and influenced by social factors. Cognition, the writer, and the context are intertwined elements in any writing activity. Therefore, they are important elements to consider when examining writing strategies, especially in contexts where social factors play an important role in strategy use, such as in the Saudi context. Other factors, such as textual elements like writing genres and the level of writing proficiency, also influence the employment of writing strategies. Although there is a considerable body of research on writing strategies, little is known about EFL writers' sociocognitive writing strategies. EFL students now interact with various technological tools, writing assistance tools, and AI tools to facilitate, scaffold, and improve their writing. Researchers need to explore what mediation tools students use and what factors influence their use. This research helps to identify which tools are most effective in helping EFL students improve their writing. Furthermore, it provides insights into how technology can be used to improve writing instruction.

 Previous research on writing strategies has explored cognitive writing strategies solely and separately from social contexts (Arliyanti & Hapsari, 2022; Alharthi, 2012; Alhaisoni, 2012). Other studies have investigated the mediating strategies used by writers to facilitate the writing process (Lei, 2008; Kang & Pyun, 2013; Lei, 2016). This study addresses the call to investigate L2 writing from multiple social and cognitive perspectives and examine the influence of sociocognitive factors on writing strategies (Atkinson, 2002; Hosseinpur & Kazemi, 2022; Overstreet et al., 2023). Specifically, this study has explored how EFL writers mediate cognitive loads through sociocultural affordances that involve interaction with human and non-human resources (Atkinson, 2011; Cumming, 2016). By reconceptualising L2/EFL writing as a sociocognitive activity (Atkinson, 2014), the study aims to understand the current EFL writing strategies employed by proficient and less-proficient students. Additionally, the study explores contextual and textual factors and how they influence EFL Saudi students' writing strategies.

Considering the study's objectives, the researcher used an interpretive qualitative approach. A number of research instruments were used, including semi-structured interviews, stimulated recall, writing strategies logs and diaries, and written texts. Sixteen undergraduate EFL students at medical college participated in semi-structured interviews, and seven of the 16 also participated in the stimulated recall interviews. Only eight out of 16 participants agreed to complete the research process, including writing strategies logs, diaries, and two types of written texts. Based on their writing proficiency test results, the eight students were classified as four proficient and four less-proficient writers. Abductive reflexive thematic analysis was applied to analyse the data.

The findings indicate that proficient and less-proficient EFL writers employed various writing strategies to mediate cognitive loads and facilitate the writing process, including interaction with tools, people (e.g., teachers, peers, and friends) and non-human resources. Although the two groups of writers had similar academic and professional writing goals, their writing strategies differed and were influenced by linguistic (English language and writing proficiency levels), contextual and textual factors. The findings stress the interplay between students' cognitive mediation strategies and social factors, including their learning writing history, social goals, and the social environment, such as writing in the classroom or at home. Furthermore, textual factors, including the writing genre, were found to significantly influence the use of writing strategies. Additionally, writer-related factors, such as language and writing proficiency, provided contextual insights that complemented the influence of textual factors.

The study contributes to the L2/EFL writing strategies field by developing a theoretical framework for examining EFL writing strategies based on previous learning and writing theories. It emphasises that cognition, writers, and contexts are inseparable elements in any writing act. The study also offers pedagogical implications and recommendations for teachers and curriculum designers. Finally, the thesis addresses the study's limitations and offers suggestions for future research.

Table of Contents

Table of Contents

Table of Tables

Table of Figures

Research Thesis: Declaration of Authorship

Samar Alharbi

A Sociocognitive Study of Writing Strategy Use Among EFL Writers at a University in Saudi Arabia and How Proficient and Less-Proficient Writers Employ Them Differently

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

I confirm that:

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

 Signature: ....Date: May 2025

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Definitions and Abbreviations

For the purpose of this thesis, the definitions of key terms and abbreviations are as follows:

Definitions

Writing Activity   A dynamic and sociocognitive process that is socially situated and influenced by the writer's context. It involves interactions with bodies, surroundings, relationships, and sociocultural affordances, which mediate cognitive processes and extend the writer's mind.

Writing Strategy   Conscious actions, plans, and tools that writers employ to enhance their writing process and outcomes. These strategies are deliberate and goal-oriented, addressing challenges such as organisation, idea generation, grammatical accuracy, and managing cognitive loads to facilitate more efficient and effective writing.

Cognitive Strategy   Techniques or mental processes that writers use to plan, organise, and execute writing tasks. These include brainstorming, outlining, self-monitoring, and revising, all of which reflect individual cognitive efforts to enhance writing.

Sociocultural Interactional Tools and Material Strategies   Strategies that involve the use of physical and digital tools, such as books, dictionaries, and Microsoft Word, to support and mediate the writing process.

Social Interaction Strategy   A subset of sociocultural strategies, focusing specifically on interpersonal interactions to improve writing. Examples include discussions with peers, group writing activities, and seeking input during peer reviews.

Sociocultural Affordances   The opportunities and resources within a sociocultural environment that writers can utilise to enhance their writing. These affordances include access to writing tools, collaboration with others, and engagement with cultural or linguistic resources, all of which mediate the writing process by supporting cognitive, social, and contextual interactions.

Abbreviations

AI .... Artificial Intelligence

EFL .... English as a Foreign Language

ELC .... English Language Centre

EMI....................................... English as a Medium of Instruction

ESL.. English as a Second Language

HE... Higher Education

ICT .... Information and Communication Technology

L1 .... First Language

L2 .... Second Language

PY... Preparatory Year

SLA .... Second Language Acquisition

TAP .... Think-Aloud Protocol

Chapter 1   Introduction

1.1   Introduction

This qualitative research project explores the sociocognitive writing strategies used by English as a Foreign Language (EFL) students at a Saudi university. This introductory chapter opens with accounts of the project aims and research questions before describing the research context. The research problems, rationale, and contribution follow.

1.2   Project Aims and Research Questions

This research addresses the call to investigate L2 writing from multiple perspectives: social and cognitive (Atkinson, 2002, 2010, 2011; Cumming, 2016; Vygotsky, 1978; Hosseinpur & Kazemi, 2022; Overstreet et al., 2023). The study reconceptualises L2/EFL writing as a sociocognitive activity (Atkinson, 2002) achieved through sociocultural affordances that involve interaction with people and resources and are influenced by contextual and textual factors. It also views writing as a personal strategic activity that follows different strategies that we can assume to be different between writers. The writing strategy is defined in this research as conscious actions, plans, and tools used to improve writing.

This research aims to understand and shed light on the current EFL writing strategies employed by proficient and less-proficient writers. According to Gustilo (2010) and He (2010), proficient writers create longer better-structured, highly graded texts with fewer mistakes. They take more time over planning, editing, and producing text (Connelly et al., 2012; McCutchen, 2006) while less-proficient writers write significantly shorter texts with more mistakes (Ferrari et al., 1998; He, 2010; He & Shi, 2012). The latter also produce short, simple sentences that lack cohesion (Khaldieh, 2000). Working memory limitations also make it difficult for them to balance the conflicting demands of planning, translating, and monitoring, which impairs their capacity to write clearly and coherently (Révész et al., 2022).

The central research aim encompasses specific, smaller aims: (a) to provide an understanding of how EFL writers mediate their cognitive load during the writing; (b) to explain the similarities and the differences of the sociocognitive writing strategies employed by proficient and less-proficient writers; and (c) to explain the influence of contextual and textual factors on the use of the writing strategies by the two groups of writers.

In order to achieve these goals, this research attempts to answer the following research questions:

1. How do proficient and less-proficient EFL students mediate their writing processes?
2. How do contextual factors influence the use of writing strategies among EFL Saudi writers?
3. How do textual factors influence the use of writing strategies among EFL Saudi writers?

To address the research questions outlined above, this research uses a qualitative study design to conduct an in-depth investigation into Saudi students' writing, in particular in relation to the writing strategies they employ to mediate the cognitive load during the process of writing. The study also examines the sociocognitive factors that influence the strategy use. To obtain in-depth and meaningful results, the researcher used a range of data collection methods: semi-structured interviews, writing strategies logs, reflective diary prompts, stimulated recalls, and writing samples. Collecting "thick" or in-depth data is a strong feature of qualitative research. (For more details, see Chapter 3).

1.3   Context

All high school graduates joining Higher Education (HE) must enrol in the Preparatory Year (PY) programme to prepare them for college courses. All undergraduate students study English as a compulsory subject to develop their English in a context where English is the Medium of Instruction (EMI), like the context of this study. The PY programme boosts students' academic achievements in college courses as it helps to bridge the gap between high school studies and the university environment (Al-Shahrani, 2019). In the Saudi context, undergraduate students join the PY programme to learn basic content information related to the college coursebook.

The participants in the current research were enrolled in the PY programme at a Saudi University College of Medicine. Students study an integrated English coursebook in the English Language Centre (ELC) to improve their language skills. Academic writing is one of the four skills taught and developed in the EMI context. It is considered the most important skill taught in the EMI context as it allows students to respond to exam questions, write assignments, and communicate in English academically and proficiently (Tahaineh, 2010; French, 2020; Schmied, 2011).

Most students' academic writing level when they first join the PY programme is around A2, aligned with the Common European Framework of Reference for Languages (Council of Europe 2001), and they are required to reach the B1 level or higher by the end of semester two. However, as the students learn in the EMI context, they need to reach a higher level of English writing competence. The main objective of the textbooks is to provide students with the writing skills they need in a real, practical context. According to the syllabus in the Evolve book, students are required to generate ideas, write an outline, and edit their texts (Hendra et al., 2018). The students are also expected to write limited texts incorporating science-specific concepts based on multi-genre structures in

different technical situations, such as writing a short email and report (Course Description for Medical English, ELC, 2018).

Academic writing is taught as an integrated skill in the English language coursebook in semesters one and two. For example, the writing course in the first semester focuses on the skills needed to write for general purposes, such as writing an email and describing a city. Conversely, in the second semester, the writing course highlights the writing skills that advance students in writing for medical purposes, such as case studies and symptom reports. Students focus on specific genres during both semesters' writing classes and practice with their instructors. The students compose simple and short texts of around one hundred words where they write an outline, form ideas, and edit.

There are two assessments that the students must complete in the writing course. The first assessment is ongoing and entails assessing the students' writing over the course of the semester. Students complete the continuing assessment as part of regular class sessions and in a variety of formats, such as individual writing, pair work, and group activities. Continuous assessments are designed to provide continuous feedback to students, facilitate gradual improvements in their writing abilities, and track students' progress. As part of the second assessment, students are required to create a written composition in the final exam that closely resembles the genres they have practised in class.

1.4   Research Problem and Rationale

English language competence is vital for students joining a university where English is the primary medium of instruction. Language proficiency will facilitate access to course content and help students to communicate effectively (Hyland, 2013). In addition, admission to science-based programmes such as those in medical college requires ability in all language skills (reading, writing, listening, and speaking), and writing is considered paramount.

However, most EFL learners joining HE find learning writing difficult (Tahaineh, 2010; Mohammad & Hazarika, 2016; McDonough et al., 2013; Aldabbus & Almansouri, 2022). Many studies conducted in the Saudi context have reported that EFL students suffer from deficiencies and general weaknesses in writing (Al-Hazmi, 2006; Al-Jarf, 2008; Al-Khairy, 2013; Alharbi, 2019). It is common for students who have studied English for almost six years to still write texts that contain many errors pertaining to spelling, word choice, rhetorical style, and unclear ideas (Al-Fadda, 2012; Azzouz, 2013; Grami, 2010; Khan, 2011).

When transitioning from high school to university, most EFL Saudi undergraduate students face a dramatic change in learning expectations and how writing is taught. For example, in a high school

setting, most classes are large, and the time allocated for teaching an integrated coursebook is limited compared to the course syllabus that needs to be covered (Al-Seghayer, 2014). In addition, the writing course content does not focus on basic writing skills such as outlines and drafting, and the students are expected to produce short paragraphs. In contrast, students are encouraged to work in small groups and implement critical thinking skills at university. Students are usually asked to produce long writing assignments in essay format and they should write no less than five hundred words in the second year of their academic study. The writing should follow correct grammar conventions and present elements of academic skills such as referencing and using concise language, which involve choosing precise words and avoiding redundancy to make the writing more effective and easier to read. Students are also expected to interact with new ideas, analyse and reflect on them, evaluate them, and draw conclusions.

However, according to recent research, a significant number of university teachers in Saudi Arabia are overwhelmed and complain about their students' writing levels for several reasons (Al-Seghayer, 2021). Firstly, students in high school do not receive enough writing instruction (Al-Seghayer, 2021; Al-Seghayer, 2014). Most teachers' methods focus on a product-oriented approach, which involves asking students to follow a writing model of a preconstructed writing text, expand an outline or complete a piece of writing (Al-Seghayer, 2021). These modelling writing practices prevent students from practising writing and negatively impact students' final products (Al-Seghayer, 2021; Alkubaidi, 2019; Khafaji, 2004). In other words, the teachers' main aim when teaching writing is to draw students' attention to grammatical and syntactic issues and they rarely emphasise the process of text production. Text production, in this context, refers to the process of generating and developing ideas, organising them into a coherent structure, and expressing them in a clear and effective manner. Secondly, the time constraints for teaching academic writing at universities are another reason for the frustration of university instructors in Saudi Arabia (Javid & Umer, 2014; Alkubaidi, 2019). Writing requires students to implement the language, ideas, resources, mechanisms, and conventions to form a text. In addition, students need time to practise individually and in pairs and continue writing outside the classroom.

In recent research conducted by Alkodimi and Al-Ahdal (2021), the teachers reported the main factors that attributed to students' poor academic writing performance; among these factors were few opportunities to practise English outside the classroom, inadequate teaching and learning facilities in the classroom, and inappropriate teaching methods. To bridge this gap, teachers need to implement new writing strategies so that undergraduate students can cope with writing course requirements and learn to write independently and overcome the difficulties they face. This research is, therefore, necessary to examine how EFL writers approach writing tasks, their mediating strategies for dealing with cognitive load (the mental effort required to process information and complete tasks), task

complexity (cognitive load associated with performing a task), and the way in which they interact with social affordances (the opportunities offered by the social environment to support writing such as resources and writing assistance tools, which are discussed further in Chapter 4) to scaffold their writing.

The origin of my interest in conducting the current study arose from my professional experience in teaching English in HE in a context where English is a foreign language. As an English lecturer, I have noticed that many EFL writers struggle with producing a short piece of writing. The source of these difficulties is the students' language learning experience, the writing strategies they use, their writing abilities in their first and second languages (L1 and L2), and the frequency with which they read in English. In a recent study conducted by Gaffas (2019) that evaluated the PY at a Saudi university, the participants revealed that their academic writing was not good, and they felt they did not receive sufficient writing instruction or practice in class, so their progress was hampered. Thus, the rationale for conducting this study is to provide better understanding of EFL students' typical writing strategies and how they interact with sociocultural affordance to mediate their cognitive load and scaffold them to write. This will give an overview of the students' typical challenges and their strategies to overcome these difficulties.

The study's theoretical framework is the sociocognitive approach (see Chapter 2). The rationale for implementing this theoretical perspective is to provide multiple theoretical understandings of social and cognitive aspects of L2 writing (Atkinson, 2002; Cumming, 2016). Atkinson (2002) argued that the mind, body, and ecological world are inseparable and integrated elements that all facilitate learning. Atkinson (2002) stated that cognition and environmental factors interplay in any learning process. Individual cognition is central to writing and its development (Nishino & Atkinson, 2015), and the context factors are interwinding elements that influence the writing processes and strategies (Manchon et al., 2007; Nishino & Atkinson, 2015). It is common to focus on individual writing processes, such as planning, transcribing, and reviewing, when we want to describe an individual's writing performance (Deane, 2018). However, to explore and understand students' writing strategies, the exploration should be done in a natural social setting (Cumming, 2016), where students interact naturally in the sociocultural environment. In addition, learning English cannot be separated from the Saudi cultural context. Thus, for this study, the sociocognitive factors influencing EFL Saudi students' writing strategies will be examined, including past educational experience, writing proficiency level, and the writing genre (see Section 2.9).

Another rationale for conducting this research is to shed light on students' current sociocognitive writing strategies. EFL writers use general and specific strategies to learn and develop their writing. With the dramatic shift to temporary online learning during the COVID-19 pandemic, students and

teachers have become aware of the use of different technological apps and software and they have adopted learning strategies that help them to cope with the new online learning environment (Limpo et al., 2020; Demuyakor, 2021; Abdulrahim & Mabrouk, 2020). On a daily basis, students interact with people, including teachers, peers, and family members, as well as material artefacts (e.g. textbooks and dictionaries), and cultural tools (e.g. language, technological artefacts) to scaffold and facilitate their learning. At the heart of the sociocognitive approach, interaction plays an important role in developing and facilitating language learning (Atkinson, 2002, 2010; Nishino & Atkinson, 2015; van Lier, 2004). Thus, it would be worthwhile exploring the current EFL writing strategies and how EFL writers interact with sociocultural affordances to mediate their cognitive load and overcome writing difficulties.

1.5   Contribution

This study explores the sociocognitive writing strategies implemented by Saudi EFL undergraduate students. This research addresses three main questions about EFL writing strategies through the lens of multiple perspectives, specifically the sociocognitive approach. The study hopes to be of significance as it responds to the call to investigate L2 writing from social and cognitive perspectives (Atkinson, 2002, 2010, 2011; Cumming, 2016; Vygotsky, 1978; Hosseinpur & Kazemi, 2022; Overstreet et al., 2023).

The researcher developed a theoretical framework for understanding and analysing writing behaviours and strategies based on established learning and writing theories (see Section 2.10). Investigating writing through the lens of the sociocognitive approach addresses criticism of the separation of the cognitive application of writing from the sociocultural artefacts and context that shape the writing (Chandrasegaran, 2013). Due to the complexity and multifaceted nature of writing (Hayes, 2012; Teng & Zhang, 2018), particularly in EFL, social and cognitive writing strategies are also essential in learning to write.

The study is also significant because it explains the sociocognitive writing strategies implemented by EFL writers. In addition, the study investigates the common patterns and differences in the strategies used by proficient and less-proficient EFL writers. It is important to explore the EFL sociocognitive writing strategies used by the two groups as this provides insights into how students with different writing abilities approach writing tasks and what strategies they employ to accomplish the task. This, in turn, will generate recommendations for L2 writing instructors aiming to help improve the writing performance of all EFL students with different writing proficiency levels.

In addition, the study will examine the influence of different factors on the use of sociocognitive writing strategies, including contextual factors such as past education experiences, social goals, and

social environment, as well as writer-related factors such as language and writing proficiency level, and textual factors such as the writing genre, or task types. It is hoped that the study results will help teachers to provide appropriate guidance and individualise writing strategy support. It is also hoped that the results will offer important insights into EFL writers and provide pedagogical implications for writing instruction in similar EFL contexts in other Arab countries. For example, Tigchelaar (2020) states that L2 writing instruction should be more flexible and fulfil students' writing needs and enhance their current abilities in L2 writing. Although, as mentioned earlier, many studies conducted in the Saudi context revealed that English writing is the main problem for Saudi students, most of these studies used an experimental approach (Alshumaimeri & Bamanger, 2013; Alqasham & Al-Ahdal, 2022) or writing strategies instruction interventions (Al-Zubeiry, 2019; Alharthi, 2012) to improve the students' writing performance. However, little attention has been given to how curriculum design and recommendations can improve students' writing outcomes. Therefore, this research will use a qualitative study design to employ in-depth analysis, focusing on the strategies used by Saudi EFL undergraduate students. Thus, based on the study outcomes, this research will offer recommendations to curriculum designers regarding writing strategies in the writing curriculum design to help improve and develop the writing practices of Saudi undergraduate students and enhance the quality of their writing skills.

1.6   Organisation of the Thesis

This thesis is divided into seven chapters. Chapter One provides the background of the study and its context. It also outlines the research aims, research questions, research problem and rationale, and contribution and concludes with the significance of the study. Chapter Two presents the relevant literature, theoretical background, and concepts in the L2 writing process and strategies research, such as sociocultural theory and its relevant concepts, cognitive theory, embodied cognition, and extended mind theories. The chapter also discusses the relevant previous studies from sociocultural and sociocognitive perspectives. The explanation of the sociocognitive theory to second language acquisition (SLA) and the sociocognitive factors influencing the writing strategies are also discussed. This paves the way for presenting the sociocognitive approach, serving as the study's theoretical framework.

Chapter Three describes the methodology used in this study. It starts by reviewing the research questions and provides an overview of the research paradigm, including the researcher's philosophical stance – interpretivism. It explains the study's design (qualitative methodology) and provides justifications for choosing this approach. The chapter also presents the research instruments and data collection and analysis procedures. Finally, the concept of trustworthiness and how it is maintained is discussed. Chapters Four and Five present the study's findings. Each section in Chapter

Four describes the results related to each research question, explaining the themes and subthemes that emerge from the data analysis. Chapter Five presents a comparative analysis of the results of writing strategies employed by proficient and less-proficient writers within the context of two writing genres: reflective journals and autobiographies.

Chapter Six includes a discussion of the main study's findings, discussing each research question and linking the discussion to the existing literature. It emphasises how the study's findings advance our knowledge of issues related to EFL writing and fill the identified gaps in L2 writing studies. Finally, Chapter Seven concludes with a summary of the findings and their significance for each research question. The chapter also outlines the study implications for writing teachers and course designers. Additionally, it identifies theoretical and pedagogical contributions to L2 writing research. Finally, the chapter highlights the current study's limitations and provides recommendations for future research.

Chapter 2   Literature Review

2.1   Introduction

This chapter reviews the literature related to L2 writing and English language strategies, specifically the techniques EFL students use to improve their writing, such as planning, drafting, and interaction with writing assistance tools. The chapter discusses the theories relevant to L2 learning to lay out the theoretical framework of the current study, the sociocognitive approach to L2 writing. First, the chapter discusses the sociocultural theory and its concepts that are relevant to the current study (see Section 2.2). This is followed by the literature review covering existing studies on L2, particularly those focusing on writing strategies from the sociocultural perspective (see Section 2.3).

The fourth section of this chapter focuses on the cognitive theories. It begins with a brief discussion of the cognitive theory of L2 writing (see Section 2.4). Then, Flower and Hayes' (1981) model is presented to provide a background on cognitive writing processes and to explore how EFL learners mediate these cognitive writing processes and what sociocognitive writing strategies they employ in L2 writing (see Section 2.5). This is followed by a review of embodied cognition and extended mind in relation to learning and instruction (see Section 2.6). Specifically, Section 2.6.1 discusses embodied cognition, including the 4E cognition, learning and teaching (see Section 2.6.1.1). The chapter then moves to review the extended mind paradigm (see Section 2.6.2) by focusing on the three extended mind dimensions in Sections 2.6.2.1, 2.6.2.2., and 2.6.2.3. A discussion of writing as extended mind follows (see Section 2.6.3). Finally, a review of the existing studies on L2 writing from the extended mind perspective is presented (see Section 2.7.1)

The final section of the literature review discusses the sociocognitive approach to SLA (see Section 2.8). The following section reviews sociocognitive factors and their influence on writing (see Section 2.9), including past educational experience (see Section 2.9.1), writing proficiency level (see Section 2.9.2), and influence of genre and task type (see Section 2.9.3). The sociocognitive framework for the study is presented, including elements previously discussed in the literature review and their relationship with the current study (see Section 2.10). The chapter ends with a summary section.

2.2   Sociocultural Theory

The sociocultural theory argues that the L2 learning process is shaped and affected by the context at the micro-level (classroom, assignment) and macro-level (demographics, culture, history) (Thorne, 2000). Sociocultural theory has its roots in the psychologist Vygotsky and his colleagues (Lantolf et al.,

2015). The underlying philosophy of sociocultural theory is that rules do not control human behaviours.

In his theory, Vygotsky (1986) argued that humans develop higher mental activities, such as intentional memory, planning, and problem-solving, through social interaction. Thus, from the sociocultural perspective, learning is a "socially situated activity" (Storch, 2013, p.41). In the current context, HE students in Saudi Arabia demonstrate the ability to negotiate meaning, debate ideas, and develop stages of writing through interaction with peers, groups, and social artefacts such as software programs. Through social interaction, the students can assist each other, share their learning experiences, and develop required learning skills such as problem-solving techniques. In addition, in most language classes, teachers implement technology to socially communicate with their students, through the use of Blackboard and different apps that play a central role in enhancing learning and developing individuals' specific skills. According to Vygotsky, individual development occurs within the material, social and historical contexts (Wertsch, 1985). Three central beliefs influenced his developmental research: 1) humans are social in origin; 2) human activity is accomplished and mediated through material artefacts (e.g., members of the society, and computers) and symbolic and physiological tools (e.g., language, and knowledge); 3) analysis undertaken to understand human interaction and activity should be done naturally (Wertsch, 1985).

Concerning writing developments, the sociocultural theory holds the view that an individual's written language developments occur within the social, cultural, and historical contexts (Zebroski, 1994). The ability of students to learn and write is not just the result of their own unique and individual cognitive processing (Prior, 2006). Individuals' social and cultural contexts also play an essential role in this process, consciously and subconsciously (Vygotsky, 1978). An individual's writing should not be perceived only from a cognitive standpoint (Prior, 2006). John-Steiner and Mahn (1996) state that "sociocultural approaches emphasise the interdependence of social and individual processes in the co-construction of knowledge" (p.1).

Unlike the cognitive theory, which emphasises the writer as a solo individual behaving in line with certain constraints, the sociocultural theory views writing as a communication vehicle and a dialogic activity between the writer's thoughts and the reader (Vygotsky, 1978; Lantolf, 2000; Prior, 2006). The sociocultural theory rejects the description of writing as a script; instead, it considers writing as "chains of short- and long-term production, representation, reception, and distribution" produced through a collaborative process between the writer and the reader (Prior, 2006, p.58). Thus, the developmental of the writer's cognitive abilities occurs through social interaction (in this case, interaction with people, cultural artefacts, and materials). The following subsections review the

central constructs in the sociocultural approach: social interaction, mediation, and scaffolding. It also presents these constructs and explains their roles in learning, mainly writing.

2.2.1   Social Interaction

As this study investigates how EFL writers interact with sociocultural affordances to mediate their cognitive load and learning in writing, it is essential to discuss the concept of social interaction. A central theme in Vygotsky's sociocultural theory is that social interaction is the primary means of human development. In Vygotsky's (1978, p. 30) words, "the social dimension of consciousness is primary in time and fact. The individual dimension of consciousness is derivative and secondary". Vygotsky (1978) proposed that we need to consider the nature of the interaction between individuals and society when we think about learning and development. In addition, Vygotsky's theory emphasised that the learners' cognitive and psychological development can be observed through their interaction with others. Vygotsky argued that learning will not be successful and effective until the expert considers the novice's actual developmental and potential development levels. The interaction between the expert and novice happens in the Zone of Proximal Development (ZPD). The main goal of this interaction is for the novice to receive appropriate assistance from the more knowledgeable expert until the novice exceeds his or her current developmental level and achieves a higher level. This type of assistance is termed scaffolding; this important element is discussed in greater detail in subsection 2.2.3. This means that learners' higher mental functions, such as problem-solving, are derived from social interaction.

Vygotsky's social interaction concept is described by Valsiner (1987) as the "genetic law of development". He said:

> Every function in the child's cultural development comes onto the stage twice, in two respects: first in the social, later in the psychological, first in relations between people as an interpsychological category, afterwards within the child as an intrapsychological category…. All higher psychological functions are internalised relationships of the social kind and constitute the social structure of personality (Vygotsky, 1960, pp. 197-198, as cited in Valsiner, 1987, p.67).

As this quotation makes clear, child cognitive development occurs on two levels. The first level, which is the development of cognitive activities such as planning and interpretive strategies, is initially social. The second level is when the child internalises the knowledge he or she obtains from social interaction and uses it as cognitive support in similar interactions in the future (Lantolf et al., 2015). Likewise, L2 learners internalise appropriate language structures and learning strategies through interactions with peers and experts.

Vygotsky's concept of social interaction within the ZPD was limited to face-to-face interaction between individuals. Today, applying this concept in L2 learning, social interaction can be conceptualised beyond the interaction between individuals. Xi and Lantolf (2021) confirm that it is not difficult to assume the value of social interaction for individuals' development. This indicates that the ZPD may well be a persistent aspect of human existence, given that we are not interacting with people regularly but with all types of "culturally constructed external mediating devices" (Lawrence & Valsiner, 1993, p. 151).

Vygotsky's theory proposes that development depends on interaction with people and cultural tools to support the construction of knowledge (Tomasello et al., 1993). With the new advancements in social tools and technology, L2 learners can internalise new knowledge independently and share it through interaction with online materials and cultural tools (Bouton et al., 2021). These tools function as sociocultural scaffolding for learners to accelerate cognitive functions during activities that require higher mental functions like writing. Thus, L2 writing researchers have examined the influence of L2 writers' use of tools on text production. The results of these studies confirmed that L2 writers' cognitive writing process enhanced and that their text quality improved when they interacted with tools such as Twitter (Khoiriyah & Safitri, 2017), educational blogs (Özdemir & Aydın, 2015; Alsubaie & Madini, 2018), Google Translation (Cancino & Panes, 2021), and Wikis (Li & Zhu, 2017; Alghasab et al., 2019). This means that when L2 writers interact with social tool affordances, they can improve their writing performance.

2.2.2 Mediation

Another central concept in Vygotsky's sociocultural theory is mediation. According to Vygotsky (1978), humans do not directly interact with the external world; instead, they use symbolic artefacts and tools to mediate and regulate activities and interactions with themselves and others. To say it differently, mediation is the central concept in sociocultural theory, confirming that the purpose of the interaction, whether with human or cultural tools, is to mediate human mental activities and facilitate learning (Vygotsky, 1978; Thorne, 2000). Vygotsky claimed that mediation happens early in a child's life as he or she is born into a pre-existing culture. The first and the most crucial cultural mediation tool is language. Children use language as a primary symbolic tool to mediate cognitive functions in maturing and physical activities (Throne, 2000). For instance, a child can mediate the physical activity of reaching an object in a high place by asking an adult or a taller person to fetch it for him or her. In this scenario, the child's interaction with the physical world is not direct but mediated using language.

Mediation denotes that human mental abilities, knowledge, and activities are influenced culturally and historically by social activities, and by symbolic and material tools (Cumming, 2016). That means any cognitive function or physical activity entails the mediation of symbolic tools (e.g., using language) or material tools (e.g., using a computer) (Cumming, 2016). From the sociocultural perspective, all human actions are meditated: humans use mediational means or semiotic mechanisms to mediate mental activities and behaviours and respond to the external world (Lantolf & Thorne, 2006; Vygotsky, 1987). The mediational means refers to "devices that intervene in the context of an interaction between human beings and the world of objects, events, and behaviour" (Block, 2003, p. 100). In some instances, these can be external and visible, such as a table, while in others, they can be internal and unseen, like inner speech and memorisation (Kang & Pyun, 2013).

Vygotsky proposed a unified theory to comprehend and explain the development and operation of human mental activities (Vygotsky, 1978; Xi & Lantolf, 2021). The human mind comprises a lower mental function, but human consciousness also has the capacity to be involved in voluntary actions and to respond to unpredicted events. These entail the application of the higher mental symbolic artefacts such as language, literacy, categorisation, and all types of conventional signs (Lantolf et al., 2015; Vygotsky, 1981). Thus, the higher cognitive processes of the learner need appropriate use of symbolic tools, physical affordances, and artefacts to mediate his/her activities (Vygotsky, 1981). These tools and artefacts develop from historical engagement in cultural activities and interaction with the social activities humans are involved in from birth to adulthood (Xi & Lantolf, 2021). These mediational tools and artefacts also act as a "buffer between the person and the environment and mediate the relationship between the individual and the social-material world" (Lantolf et al., 2015, p.3).

What is important to highlight here for this study is that sociocultural theory posits that the assistance and scaffolding of symbolic and material artefacts mediate human mental functions. The higher mental operations involved in writing activities such as planning, organising, transcribing, and reviewing require learners to interact with different resources, tools, affordances, and material artefacts to mediate the writing. Donato and McCormick (1994) stated that mediation could provide a framework to explain and understand the development of learning strategies. In addition, Mahn and John-Steiner (2012) confirmed that analysing learners' mediating actions could provide insights into their cognitive processes and how those processes are influenced by their social context. One of the primary goals of the sociocultural theory of learning is to understand how learners' cognitive processes and learning are interrelated with cultural, historical, and social contexts (Wertsch, 1991). The following subsection introduces the construct of scaffolding and its relation to the mediation of scaffold learning.

2.2.3   Scaffolding

The notion of scaffolding was first introduced in educational research by Wood, Wood, and Middleton (1976). They borrowed Vygotsky's metaphor of scaffolding, which was influenced by his definition of the ZPD (Xi & Lantolf, 2021). As mentioned in the previous section, social interaction, whether between people or individuals and social tools, mediates cognitive functions and scaffolds interaction and learning. The literal meaning of scaffolding from the architect's perspective is a temporary structure that supports workers in construction. The scaffolding is removed when each new building section is completed (Gibbons, 2002). Although the scaffolding is temporary, it is crucial for practical construction (Gibbons, 2002).

In their article, Wood et al. (1976, p.90) employ the term 'scaffold' to describe the interaction between a teacher and a child when putting together a wooden pyramidal puzzle. They represent the interaction as "a 'scaffolding' process that enables a child or novice to solve a problem, carry out a task or achieve a goal beyond his unassisted efforts" (p. 90). From an educational perspective, Bruner (1978) defines scaffolding in the metaphorical meaning as "the steps taken to reduce the degrees of freedom in carrying out some tasks so that the child can concentrate on the difficult skill she is in the process of acquiring" (p.19). In the classroom setting, scaffolding refers to temporary assistance provided by a teacher to help a learner move to new skills or levels of comprehension. Thus, scaffolding is temporary support that assists learners in gradually becoming more independent in learning a particular skill (Belland, 2014). Since scaffolding is relational, it involves the participation of teachers and students (Van de Pol, 2012). Thus, it is frequently associated with Vygotsky's ZPD, in which the expert (the teacher) assists the student in moving forward.

However, the scaffolding metaphor and its relation to the ZPD have been criticised by several educators. Butler (1998, p.380) criticises the metaphor for the constraints its meaning imposes. Butler said the metaphor limits "our understanding of the interplay between individual and social factors in learning," and although "it is critical to analyse in detail the nature of interactive instruction, the characteristics defined need not be associated with the scaffolding metaphor". The most substantial criticism of the scaffolding metaphor is from Scruggs and Mastropieri (1998). They argue that the metaphor fails to convey the dynamic interaction between teacher and child, as the literal scaffold is a solid object that accomplishes nothing. Therefore, the meaning generated from this metaphor fails to reflect the actual interaction. Furthermore, the actual people involved in the construction are only the workers who use the scaffold to carry out the work planned by someone else (e.g., the architect) (Scruggs & Mastropieri, 1998). However, Stone (1998) believes that scaffolding is worth considering, and he warned against understanding scaffolding as just a simple process. Stone argues that scaffolding is a complex social process with a rich history of learning developments, and it conveys

nuanced understandings and generates insights about the dynamic interactions in the learning processes between people.

Pea (2004) carefully analyses and critically explains other educators' interpretations of scaffolding. Consequently, Pea (2004, p.423) believes that scaffolding "has become so broad in its meaning … that it has become unclear in its significance". He indicates that scaffolding "has become a proxy for any cultural practices associated with advancing performance, knowledge, and skills, whether social, material, or reproducible patterns of interactivity (as in software systems) are involved". As a result, he is hesitant to extend the metaphor to beyond the individual (e.g., entire classrooms) or to "a cultural level".

Although the concept of scaffolding was documented around 60 years ago in Vygotsky's seminal works (1962), the latter are still relevant today as he "brought together the informal and formal, the natural and the designed, to achieve his theoretical ends" (Pea, 2004, p. 429). Pea believes that as a result of the informal and designed features of Vygotsky's theory, "scaffolding was destined to become a concept" that comprises "features of computer software, curriculum structure, conversational devices such as questions, and physically literal examples of scaffolding in the learning of a complex motor activity like tennis". In this respect, Pea advocates for two axes to assist learning: one axis is social, which involves adult–children interaction, and the other one is technological, which involves "designed artefacts" (p. 429). However, Xi and Lantolf (2021) problematise this distinction as they believe both interactions are social. In their opinion, interaction with technological tools is social because it is designed by humans for human use.

With the advanced use of technological tools to support learning and education, the concept of scaffolding is widely used to describe the characteristics and affordances these tools offer to learners (Belland, 2014; Pea, 2004; Quintana et al., 2004). Scaffolding through computer tools can develop higher-order mental activities (Belland, 2017). In learning and cognitive psychology, higher-order mental activities are cognitive processes that encompass problem-solving, critical thinking, and increased levels of mental engagement. Students are required to analyse, evaluate, synthesise, and apply information in these activities instead of simply recalling facts. Higher-order thinking skills indicate a deeper understanding of the subject matter and a higher intellectual capability. Scaffolding tools have the potential to facilitate the development of students' higher-order cognitive processes by offering them the necessary assistance to comprehend the content and effectively employ it in problem-solving and critical-thinking endeavours. The range of educational tools encompasses a variety of resources, such as materials, activities, visual aids, and computer programs. These tools are designed to facilitate students' comprehension of academic topics and enable them to apply their knowledge in practical contexts effectively.

Scaffolding through technological tools can also develop content learning. With large classes, teachers would not be able to provide enough scaffolding for each student (Tabak, 2004), especially in skills that require individual support, such as writing. Thus, scaffolding tools would be an appropriate strategy to assist the students' learning, particularly for activities requiring higher mental functions, like writing. For example, Grammarly is a scaffolding tool that can assist students with their self-editing process. Students can receive immediate feedback on grammar, spelling, and punctuation errors. Using this approach, students are empowered to rectify their errors independently, reducing the need for editing and teacher feedback. Grammarly can also provide valuable feedback regarding more intricate aspects of writing, including sentence structure and the whole paragraph organisation. However, learners might need immediate feedback from a teacher or peers and support from tools to help them in ongoing activities. Thus, they might employ integrated strategies and techniques for more support and assistance throughout the writing process.

Undergraduate students in Saudi Arabia frequently struggle with academic writing, especially those who are enrolled in the preparatory year. Systemic issues like differences in writing instruction between high school and university and a lack of opportunities to develop advanced writing abilities could be the cause of these difficulties. However, if these difficulties are only framed as deficiencies, it could reinforce a deficit perspective that views multilingual writers as fundamentally inferior to native English speakers (McKinley & Rose, 2018). Rather, it is critical to acknowledge and capitalise on the distinct linguistic and cultural assets that multilingual writers contribute to the classroom, as argued by Curry and Lillis (2014). Teachers can promote a more inclusive approach that enables students to successfully manage the demands of academic writing by acknowledging the value of these resources.

To address challenges such as those experienced by Saudi undergraduates, Tabak (2004) introduces the term 'distributed scaffolding'. This involves "a collection of agents, artefacts, and participant structures to support disciplinary learning, and is one way to capitalise on these affordances and constraints" (p.315). Distributed scaffolding acknowledges that no single source of support is sufficient, emphasising the importance of integrating multiple tools and supports to address diverse learning needs. Building on this, Tabak (2004) also describes 'synergy scaffolding,' which means "the characteristic that different components of distributed scaffolding, such as software supports and teacher coaching, address the same learning need and interact with each other to produce a robust support form" (p.305). These scaffolding approaches move beyond a deficit framework by focusing on providing targeted, dynamic support that builds on students' existing strengths and abilities.

In the current research, all the participants utilised integrated strategic techniques where more than one strategy was used to support the writing process. For instance, one participant integrated

YouTube and mind maps to scaffold and mediate her cognitive loads and functions during the planning stage. The participants used the affordances of YouTube to visually learn and understand the writing topic and the affordances of the mind maps to map their thoughts and observe connections. These strategies illustrate how distributed and synergy scaffolding can provide robust support for learners, addressing specific challenges while leveraging the strengths and resources they already possess. The following section presents a discussion of the affordance theory, an important construct in this research.

2.2.4   Affordance Theory

According to Vygotsky's concept of 'mediation', cultural and material artefacts provide opportunities for learning development. Closely related to this concept, the affordance theory was developed to explore the central role that cultural and material artefacts play in enhancing and supporting a learner's learning process. Affordance theory explains how environmental stimuli concerning animals (and humans) can facilitate learning (Gibson, 2000). Historically, the term 'affordance' was proposed and coined by an American psychologist, Gibson (1979), in his seminal book entitled *The Ecological Approach to Visual Perception* to describe the relationship between environment and organisms (McGrenere & Ho, 2000). Gibson (1979) initially presented the term as "the affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill" (p.127). This definition of affordances highlights environmental resources as crucial aspects relevant to the animal that can provide possibilities for specific behaviour. The fundamental proposition of Gibson's affordance is that the environment offers direct affordances to its users. These affordances are directly perceived and not mediated by mental activity or pre-existing knowledge about an object (Gibson, 1979).

However, Donald Norman (1988) conceptualises the term affordance differently. In his book *The Psychology of Everyday Things*, he argues that the concept of affordance should consider human differences in perception (Norman, 1988). He refers to affordance as a relationship between one's perceived object and real property. Norman mentioned that affordance is defined as the absolute property of an object and its actual benefit/harm to a person, but perceived affordance is defined as what the individual thinks the object can offer (Mihnkern, 1997). Thus, perceived affordance is distinct from the object's actual property. Norman (1992) further argues that the same object might have a variety of affordances depending on one's different perceptions. While affordance originated with Gibson and was inspired by visual perception of the natural world (hence the ecological psychology), Norman's concept of affordance is primarily associated with industrial design (Sadler & Given, 2007). Norman asserted in his work that "our previous knowledge and experience [are] applied to our perception of the objects that surround us" (Norman, 1988, p. 14).

However, a literature review reveals that there is no single accepted definition of affordances and that discussions of the term do not always follow Gibson's precisely in its purest form (e.g., Makris, Hadar, & Yarrow, 2013). In addition, Norman (2015) stated that affordance has been simplified and adapted to meet the needs and practical requirements of many fields. For instance, van Lier (2004, p.105) notes that the idea of affordance has been expanded in numerous ways; for example, academics increasingly employ terminology such as "cultural affordances, social affordances, cognitive affordances, and so on. These are indirect or mediated affordances, whereas Gibson's original form of affordance in visual perception is direct". This means that some tools or objects are designed for particular purposes, but they afford opportunities for actions in different ways. Some technological tools are intended for a specific purpose and are then shaped socially to achieve a particular purpose. For example, a word processor is designed to write and save texts; however, this tool is being changed from a tool for writing text to a technical, cultural artefact that allows users to develop language skills (Motteram, 2013). In other words, technological tools are shaped by educators in the language teaching field to achieve a particular purpose. To illustrate, Motteram (2013) points out that Skype was created to make an online telephone call using the internet. Later, language teachers developed and socially shaped this tool to allow learners to practise English globally with other speakers (ibid).

Students also adapt and internalise socially appropriate tools for mediating their learning process. They then use and transfer these tools and apply them in any learning context to facilitate their learning or use a particular tool to teach a specific skill. For instance, EFL students might use Telegram Messenger app chats as a writing strategy to practise writing in groups and to improve their writing, constructing ideas and arguments in a more informal, friendly environment. As a result, students can turn writing into a habit rather than practising it in the classroom with the teacher.

Concerning sociocultural affordances and writing strategies, the previous discussion highlights the critical argument that sociocultural artefacts afford learners features situated in their contexts, and learners can perceive, adapt, and use them in their writing. The current study focuses on the educational affordances of sociocultural artefacts and the materials students perceive and use as writing strategies. These affordances might include interaction with people, materials, and technological tools. Thus, this research looks at the portfolio of writing strategies of EFL writers and how they interact with sociocultural affordances to mediate their cognitive load and scaffold them during writing.

The previous sections and subsections have discussed key concepts associated with sociocultural theory that are crucial for understanding students' writing behaviours and strategies. Sociocultural concepts such as social interaction, mediation, scaffolding, and affordances are closely related to the context of writers. Several studies have demonstrated that writers mediate and scaffold their writing

through social interaction with social tools and materials. The following section reviews the literature on writing strategies from the sociocultural perspective.

2.3   Previous Studies of Writing Strategies from the Sociocultural Perspective

To search for relevant empirical studies,I carried out an extensive search using major databases like Google Scholar, Scopus, and Web of Science as well as specialised journals linked to writing research, such as the Journal of Writing Research and TESOL Quarterly, in order to methodically find relevant empirical studies. Keywords related to my study's thematic focus, such as peer interaction in EFL writing, group writing, collaborative writing, mediated writing strategies, and sociocultural perspectives on writing, served as a guide for my search. The selection of studies was based on their empirical focus on the strategies of EFL writers and their applicability to the sociocultural theoretical framework. However, I discovered a clear lack of empirical research on EFL writers, especially in Saudi Arabia, where there is still little data on how writing strategies are mediated. This emphasises the necessity of more research in this field.

The empirical studies that have been reviewed are arranged according to themes. The first group looks at mediated writing strategies, and the second group focuses on collaborative writing and how it affects writing outcomes.

The sociocognitive theory views writing as a social activity that involves an interplay between cognition and social features in any writing situation. Recently, researchers have tried to conceptualise writing strategies from the sociocultural perspective, to account for social and cognitive features and the relationship between the writer's knowledge and the writing context (Villamil & de Guerrero, 1996; Lei, 2008; Kang & Pyun, 2013; Lei, 2016).

Many scholarly studies have found that students use different mediating writing strategies. These studies have also discussed the types of mediating writing strategies used by students. In early research, Villamil and de Guerrero (1996) examined the writing and mediating strategies involved in the peer revision process. The participants were 54 Spanish students enrolled in a writing course. Interactions between the pairs of students in the revision sessions were recorded and transcribed. The results of the transcribed data revealed that peers were involved in seven sociocognitive activities in the revision sections: 1) reading, 2) assessing, 3) dealing with troublesources, 4) composing, 5) writing comments, 6) coping, and 7) discussing task procedures. To facilitate the revision process, the writers also used five mediating strategies: 1) employing symbols and external resources, 2) using the L1, 3) providing scaffolding, 4) resorting to interlanguage knowledge, and 5) vocalising inner speech. The researchers observed that semiotic or linguistic tools mediated the five strategies used by

students. In addition, the researchers noticed that students gained control of the revision task by deploying various cognitive activities, social practices, and mediating strategies.

Adapting the activity theory framework and the notion of mediation, Lei (2008) investigated two proficient Chinese writers' writing strategies. The researcher used a case study approach to explore how the two writers strategically mediated their writing process. The researcher utilised interviews, stimulated recall, and the writers' process logs to achieve the study aims. The results demonstrated that the two writers engaged in four L2 writing strategies: artefact-mediated (L1 & L2, literacy work, and the use of the internet), rule-mediated (rhetoric, evaluation criteria, and time), community-mediated (campus community and society), and role-mediated strategies (author and language learner).

Similarly, Kang and Pyun (2013) examined the writing strategies used by two advanced American learners of Korea, focusing on the mediated action involved in the writing process. The researchers utilised three data methods for data triangulation: interviews, think-aloud protocols (TAPs), and stimulated recall. The researchers observed different themes and trends in the strategies used by the two writers. They found that the participants were involved in three types of mediation, namely mediation by others (e.g., teacher), mediation by self (e.g., self-directive speech), and mediation by artefacts (e.g., dictionaries and the internet).

Studies cite differences between proficient and less-proficient writers in writing mediating resources. For instance, Lei (2016) investigated the strategic use of the mediating resources of four skilled and four unskilled student writers. The researcher used semi-structured interviews, stimulated recalls, and process logs. Drawing on activity theory and the concept of internalisation, the results revealed that both groups of writers used similar writing mediating resources; however, they differed in their internalisation of these resources. The result showed that the differences in internalisation were found in the sub-processes, namely noticing, imitating, and goal setting. Skilled writers were found to pay more attention to professional writers and imitate their writing styles and language use, which were all driven by their goal of improving L2 proficiency level and writing ability. In contrast, less-skilled writers were observed to pay little attention to language use while reading; they were rarely imitating skilled writers, and their goal was to complete the writing task and pass the course.

Previous studies (Villamil & de Guerrero, 1996; Lei, 2008; Kang & Pyun, 2013; Lei, 2016) highlight essential aspects of writing from the sociocultural perspective. These previous studies have demonstrated that writing is a social activity that is socially mediated through the involvement of certain strategies to facilitate the cognitive writing process. It is evident in Villamil and de Guerrero's (1996) study that their participants mediated their writing process through mediation strategies such as using L1 and vocalising private speech. Also, Lei's (2008) research is an important study as it

reconceptualised writing from the sociocognitive perspective and showed that writing is an activity constructed within "historical and sociocultural circumstances" (Roca and Murphy, 2001, p.27). EFL learners in Lie's (2008) study employed different artefacts to mediate their cognitive process, which resulted in writing high-quality essays. Her study explained the importance of the continuous adapting of sociocognitive theory when identifying and exploring L2 writing strategies. Lei (2008) pointed out that writing strategies research within the sociocognitive approach needs to be conducted in different contexts to understand L2 writing strategies.

The importance of Lei's (2016) study lies in its similarities to the current study in terms of the types and the number of research participants and the similarities of the research methods. The current study examined how proficient and less-proficient writers perceive and use sociocultural affordances to scaffold them to write. Therefore, the current study results might compare with Lei's (2016) research due to the similarities in the research aim. However, the current study examined the writing strategies through the sociocognitive lens and studied the impact of sociocognitive factors on students' use of mediating strategies. Thus, the influence of the contextual and textual factors resulted in differences in strategy use among the groups.

While previous studies have explored individual writing strategies through a sociocultural lens (Villamil & de Guerrero, 1996; Lei, 2008; Kang & Pyun, 2013; Lei, 2016), another strand of research examines how peer interaction mediates the writing process. Grounded in sociocultural theory, numerous studies (e.g., Villarreal & Gil-Sarratea, 2019; Aldossary, 2021; Moonma & Kaweera, 2021; Pham, 2023) have investigated the impact of peer interaction in collaborative writing on writing outcomes, highlighting the benefits of group collaboration in fostering linguistic accuracy, organisation, and cognitive engagement.

According to Villarreal and Gil-Sarratea (2019), argumentative essays produced in collaboration were shorter than those written alone, but they also had better writing structure, stronger content organisation, and higher grammatical and lexical accuracy. These results support the idea that peer interaction, which enables students to share ideas and offer feedback, offers cognitive and linguistic benefits in the writing process.

Building on this, Aldossary (2021) showed that collaborative writing significantly enhanced content, vocabulary, organisation, and language use in a longitudinal classroom study involving Saudi EFL learners. The collaborative group's students expressed very positive opinions, highlighting how peer interaction improved the revision process, increased grammatical accuracy, and facilitated idea generation. These findings demonstrate how scaffolding in collaborative writing promotes engagement and cognitive development, which is consistent with Vygotsky's sociocultural theory (Vygotsky, 1978).

Moonma and Kaweera (2021) examined group, pair, and individual writing exercises in an EFL context to further explore the efficacy of various collaborative writing structures. Across all proficiency levels, their results (Moonma &Kaweera, 2021) consistently demonstrated that group writing yielded the highest scores, followed by pair writing, while individual writing produced the lowest performance. Additionally, Moonma and Kaweera's study found that group writing improved critical thinking abilities, especially in the areas of analysis, evaluation, and idea generation. Qualitative data from interviews and classroom observations also showed that while individual writers found it difficult to generate ideas and lacked outside feedback, group collaboration promoted deeper discussions, collaborative decision-making, and stronger argumentative structures.

Likewise, Pham (2023) used a quasi-experimental design to investigate whether group writing improved Vietnamese EFL learners' individual writing abilities. The results demonstrated that the experimental group performed better than the control group in terms of content, coherence, and structure, demonstrating the value of peer interaction in honing writing skills. This study further demonstrated that group writing produces better texts than individual essays, supporting the claim that peer scaffolding and social interaction in collaborative dialogue improve learning.

According to the reviewed studies (Villarreal & Gil-Sarratea, 2019; Aldossary, 2021; Moonma & Kaweera, 2021; Pham, 2023), writing collaboratively improves writing quality, encourages engagement, and promotes cognitive development through scaffolding and peer interaction. Nevertheless, these studies use experimental and quasi-experimental designs, employing pre- and post-tests to examine the impact of collaborative writing on final writing results (e.g., Moonma & Kaweera, 2021; Pham, 2023). Even though these studies show the value of collaboration, they concentrate on quantitative performance gains rather than exploring the precise mechanisms by which collaboration reduces cognitive load and speeds up the writing process. Using an exploratory methodology, my research aims to comprehend how students interact with peers and non-human resources to mitigate cognitive load while writing. Instead of just evaluating how collaboration affects writing quality, my research explores how students deal with writing difficulties, focusing on peer-to-peer interactions as well as their use of tools, resources, and environmental affordances.

Most studies investigating the L2 writing process and strategies in most EFL contexts, particularly in the Saudi context, were cognitive-oriented, where researchers focused solely on the writers' mental process (Alhaysony, 2008; Alharthi, 2012; Alnufaie, 2014). Other studies in the EFL Saudi context used experimental research to examine the application of a specific tool, such as WebQuest writing instruction (Alshumaimeri & Bamanger, 2013) or the use of blogs (Aljumah, 2012), the use of digital mind maps (Alqasham & Al-Ahdal, 2022) and their influence on students' writing performance. Other studies examine the effect of a particular writing strategy, such as metacognitive strategies (Al-Zubeiry, 2019), on students' writing performance or explore specific writing strategies, such as

cognitive strategies (Alharthi, 2012). These studies yielded significant results, yet research investigating writing strategies from a sociocognitive perspective in the EFL Saudi context is needed to explore the writing strategies in a natural setting.

With the sudden and imperative change to online teaching as a method for continuous education and learning of writing during the global pandemic, most students are now obliged to use tools on computers and smartphones (Limpo et al., 2020). This unexpected situation demonstrated the effectiveness of these tools in assisting students' writing and learning and, more importantly, called the attention of L2 writing researchers to empirically investigating the effectiveness and the affordances of these tools to promote students' writing (Limpo et al., 2020). Hence, it could be worthwhile exploring EFL writing strategies through a sociocognitive lens to: (1) investigate how the students interact with sociocultural affordances to mediate their cognitive load and scaffold their writing; and (2) study the influence of the sociocognitive factors, including contextual and textual, on students' use of writing strategies. Applying the theoretical sociocognitive framework to EFL writing, this research expects to provide a more detailed picture and understanding of students' writing strategies.

The theoretical framework for the current thesis is a sociocognitive approach to L2 writing. In the previous section, the sociocultural theory and the concepts that are important to this study were discussed (see Section 2.2). The following section is devoted to discussing the cognitive theory and its application to L2 writing and to reviewing the literature related to embodied cognition and extended mind to lay the background for the theoretical framework. Subsequently, the developed framework used in the current study, the sociocognitive approach, is proposed as a unifying framework most appropriate to the research aims, the educational setting, and the curricular context of this study.

2.4 Cognitive Theory in L2 Writing: Definitions and Criticisms

For decades, the cognitive approach has been an important aspect of SLA research (Kroll & Sunderman, 2003; Thomas, 2013). Indeed, the cognitive theory is applied in most L2 writing research. The cognitive process approach emerged in L1 writing research in the early 1980s to understand learners' internal mental processes involved in problem-solving tasks and the operations and stages writers engage in while generating, formulating, and producing a text (Manchón, 2001). Cognitive process theory explains how the writer develops and builds a cognitive mechanism to construct knowledge (Philips & Soltis, 2004). Flower and Hayes' (1980, 1981) early work on the cognitive process model is still the most influential and widely used in L2 writing process research (see Section 2.5) as it provides rich information and forms the foundations for subsequent research in the writing field (de Larios & Murphy, 2001). The cognitive process theory of writing provides explanations of

writers' behaviours during writing (Flower & Hayes, 1981). It can also yield comparative data on the writing behaviours of skilled and unskilled writers, making it possible to classify the general writing processes associated with the two groups (de Larios & Murphy, 2001).

However, some researchers have noted certain deficiencies in the cognitive approach. For example, Atkinson (2010) contends that the brain alone cannot be considered the means to solve L2 learners' problems. Learners acquire and absorb the knowledge they internalise from the social context and then make it available as cognitive support (Atkinson, 2010). This suggests that learners' responses and cognitive behaviours are partly affected by the social setting (Myles, 2013). To clarify further, a learner with intellectual skills in learning a language cannot attain better performance in a discouraging environment. Their motivation will be constrained and affected by the social context to which they belong. In contrast, low-achieving learners can perform and learn well in a positive environment where they are encouraged to ask questions, build confidence, and believe they can succeed. The following section discusses Flower and Hayes's (1981) writing model. It also explains its contribution and deficiencies.

2.5   Flower and Hayes's (1981) Writing Model to Investigate EFL Cognitive Writing Strategies

L2 writing research has used L1 writing process models extensively. The most influential model among these is Flower and Hayes's (1981), which most L2 writing researchers use to explore the cognitive writing processes of L2 writers. This section reviews the main writing processes highlighted in Flower and Hayes's (1981) model and presents the criticisms made of this model. It also explains the rationale for the shift from the cognitive to sociocognitive when studying L2 writing strategies.

Flower and Hayes (1981) proposed a well-organised L1 model that builds upon the notion of the cognitive aspects of the writing process. The researchers created a model to explore writers' problems when composing a text in their L1. They claim that three cognitive processes underline any composition activity: planning (generating knowledge and organising thoughts into a logical structure), translating (putting ideas into language), and reviewing (improving and evaluating the existing text). These cognitive processes are hierarchal, and they are embedded in several sub-processes in their model that can occur simultaneously and in a recursive pattern during writing (Flower and Hayes, 1981). For example, idea generation from long-term memory is a sub-process of planning and generating new ideas, which might happen when evaluating and editing the text.

In Flower and Hayes's model, the writing process consists of three major processes, each with its sub-processes, as illustrated in Figure 1.
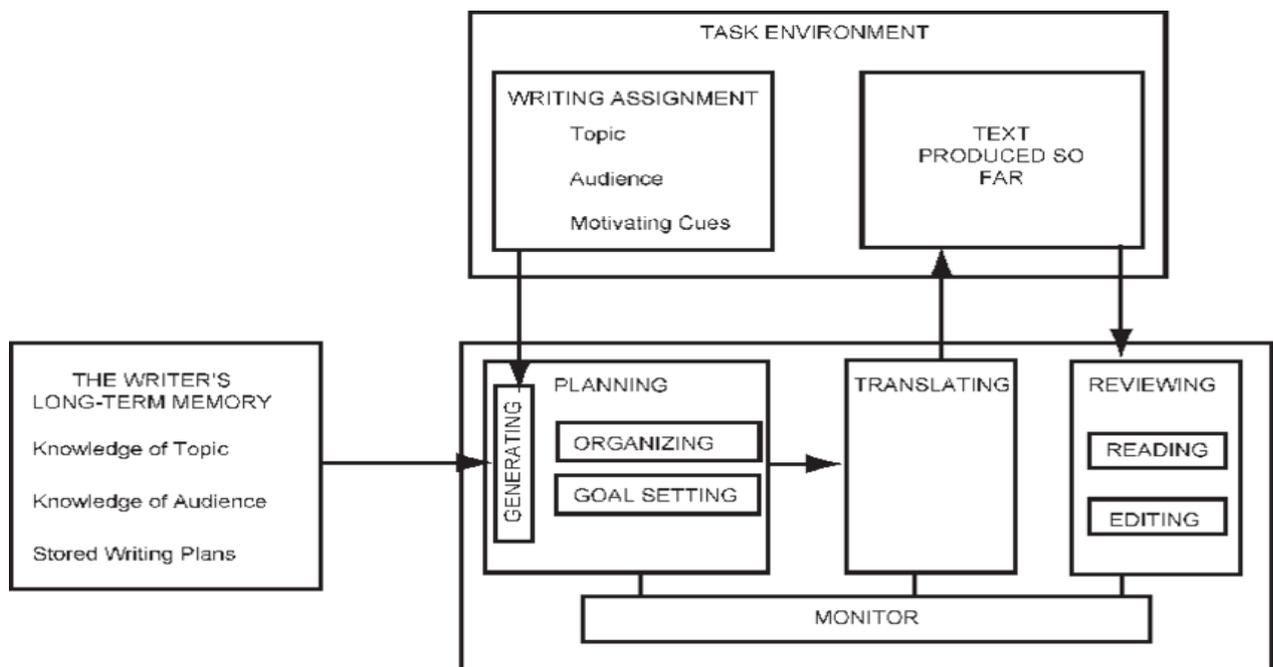
Figure 1   Flower and Hayes's Model (1981)

First, according to Flower and Hayes (1981), planning is "an internal representation of the knowledge that will be used in writing" (p. 372). This internal representation of information is not primarily represented in language but "could be held as a visual or perceptual code, e.g., as a fleeting vision that the writer must later capture in words" (Flower & Hayes, 1981, p. 372).

The second major writing process in the act of writing is translating. According to Flower and Hayes (1981), translating or formulating means "putting ideas into visible language" (p. 373). The translation process is guided by the writer's previously identified plans to produce language that fits with the writer's memory. Flower and Hayes, as well as Murray (1980), decided to use the term 'translate' instead of 'transcribe,' 'write', or 'compose' as they want to highlight that the function of this process is not only to translate plans into language, but to also include symbols such as imagery.

As Flower and Hayes (1981) perceived, the third cognitive process in writing is revision. The revision process relies on the two sub-processes of evaluating and revising to improve the quality of the written text. To achieve this, revision should involve rereading the text to spot and correct errors relating to language mechanisms or to evaluate the extent to which the writer's goals have been achieved (Flower and Hayes, 1981).

All of the above major writing elements are under the monitor's constant control (Flower & Hayes, 1981). The monitor is like 'a writing strategist' whose duty is to establish boundaries between processes and decide when to move from one process to another, which is determined by the writer's goals and writing habits. For instance, some writers plan the entire text and then translate it into

writing, while others prefer to plan every part of their text separately before translating their ideas into a written text.

In their cognitive process model and based on their writers' think-aloud protocol (TAP) analysis, Flower and Hayes (1981) divided the writing process into three major elements. The first element is the task environment, which includes all the elements outside the writer's skin that may influence the performance of the writing task. The second element is the writer's long-term memory, which can also be referred to as the schematics of different writing structures and patterns. It comprises the writer's knowledge about the topic, the audience, style, writing plans, and the language, such as spelling, grammar rules, and vocabulary. The third element is the writing process.

Although Flower and Hayes's (1981) writing model is considered an old model, it uncovers essential features that are still current and relevant in modern writing representations (Hayes, 2012). For example, the separation between the writer, the task environment, and the writer's long-term memory, the attempt to define various intermingling writing sub-processes, and the significance of the text generated so far are all still considered relevant concepts (Hayes, 2012).

Flower and Hayes's (1981) writing process model is considered the most influential model in L1 and L2 writing research in terms of examining the writing process (Zimmerman, 2000), but many researchers have criticised this model, including Faigley and Witte (1981), Cooper and Holzman (1983), North (1987), and Grabe and Kaplan (1996).

Many scholars and researchers have criticised the use of the TAP as the primary data collection tool in Flower and Hayes' (1981) cognitive writing process model. For example, Faigley and Witte (1981) criticised the model for relying solely on the verbal protocol as the main research instrument – this requires writers to simultaneously write and describe their cognitive thoughts. Similarly, Cooper and Holzman (1983) criticised the feasibility of the protocol data, as it requires time and training, and not every writer can generate valid data or verbalise their mental processes while writing. If writers verbalise or describe what they are doing instead of their actual cognitive writing process, the data in the protocol might not provide an appropriate explanation for the writing behaviour or the cognitive writing process. Moreover, Flower and Hayes's model did not consider the different writing activities that writers may engage in (Cooper & Holzman, 1983). These critiques are especially pertinent to my study because the Saudi EFL writers who participated may have more difficulty expressing their ideas in writing. This drawback emphasises the need for supplementary or alternative techniques to TAP, like process logs, diaries, and interviews. I used these in my research to obtain a more detailed picture of the participants' sociocognitive writing strategies.

Another drawback highlighted by North (1987) is that Flower and Hayes's model is too vague to construct a formal foundation for establishing a structured writing model. He also argued that the model did not clarify how the texts were formed or discuss the linguistic issues that might limit the texts' production. Grabe and Kaplan (1996) pointed out that writers are different and will differ in their writing processes and cognitive capacities. Several writing models suggest that individual writers usually approach a writing task differently, applying different writing processes and strategies (Grabe & Kaplan, 1996). These findings are consistent with my research, which examines how proficient and less-proficient Saudi EFL writers differ in their writing methods and approaches. My research broadens the use of Flower and Hayes's model to address individual differences and offer a better understanding of writing variability in multilingual contexts by looking at how these writers deal with linguistic and cognitive difficulties.

Even Flower (1989) and Hayes (1996), the pioneers of the cognitive theory, criticise Flower and Hayes's (1981) model, indicating that while it presents how the social and contextual aspects exist within the cognitive model, it neglects to explain how this shapes composition—that is, the cognition triggered initially by the environment surrounding the writer. Flower (1989) further argued that context guides cognition in several facets, including past experiences that form basic knowledge and assumptions. Context also mediates and directly influences the mental processes of the writer in terms of goals, rules, and strategies. For example, writing in a higher education context influences the learners to apply criteria and use strategies from past experience or those adapted from the current learning context. Even in the shared context, cognition is assumed to be mediated by individual cognition (Flower, 1989). My research responds to these criticisms by placing the writing process in the sociocultural and educational framework of Saudi EFL authors. With a more context-sensitive application of the model, my research recognises the impact of the learning environment, and past experiences on the mental processes and techniques used by these writers.

Writing is a complex activity, and cognitive writing process should be investigated from multiple perspectives and with different approaches (Cumming, 2016). For this reason, the lack of sociocultural perspectives in Flower and Hayes's model was highlighted and criticised by El-Mortaji (2001) and Alharthi (2012). Firstly, the researchers criticised the application of the model to multilingual learners as it was designed for monolingual writers, making it less applicable to multilingual contexts. The writing process can become more difficult for multilingual writers as they have to manage cross-linguistic transfer and limited linguistic resources like grammar and vocabulary. It is challenging to apply the model without modification because of these extra cognitive demands as well as differences in proficiency levels. Additionally, the model fails to take into consideration the way languages interact, which is essential to comprehending how bilingual and multilingual learners organise, translate, and edit their writing. Secondly, the model failed to consider essential writing

strategies, such as social and affective strategies (El-Mortaji, 2001; Alharthi, 2012). These are particularly relevant for multilingual learners, who often use collaborative and emotional support to manage the cognitive demands of writing. Finally, confusion could occur over the use of the term 'translation' when dealing with bilingual and multilingual writers (El-Mortaji, 2001), as their process of moving between languages involves complex cognitive tasks, such as cross-linguistic transfer, which are not addressed in the original model. My research, which focuses on the particular difficulties Saudi EFL writers encounter and the methods they employ to overcome these difficulties, was directly influenced by these criticisms. My study fills important gaps in the original model by incorporating a sociocognitive approach and explicitly examining the role of sociocognitive factors and strategies in mediating cognitive processes for EFL writers.

Despite its significant flaws, the Flower and Hayes (1981) model is still the most influential framework in L2 writing research (Kormos,2023; Roxas, 2020), and this study specifically addresses its limitations. The model has drawn criticism for failing to take into account the social and contextual elements that influence the writing process, even though it offers fundamental insights into the cognitive processes involved in writing (Flower,1989; Hayes,1996). By investigating the contextual and textual elements that impact students' interactions with sociocultural affordances, such as people, tools, and resources to learn, support, and scaffold their writing, this study also seeks to offer a more comprehensive understanding of writing strategies. This study fills in the gaps in the Flower and Hayes (1981) model, expanding and improving it to better suit the intricacies of EFL writing in modern multilingual settings while also building on its fundamental insights. As this research attempts to reconceptualise writing as a sociocognitive activity, the study will use the writing processes highlighted in the Flower and Hayes model as a guide to explore the sociocognitive writing strategies that EFL writers use to mediate their cognitive load and scaffold the process of planning, transcribing, and reviewing. The following section extends the above discussion of cognitive theory and the cognitive writing model proposed by Flower and Hayes (1981) to examine cognition from different perspectives.

2.6   Review of Embodied Cognition and Extended Mind in Learning and Instruction

This section provides a review of the literature related to cognition. It provides a critical examination of the fundamental principles and concepts of embodied cognition and extended mind within the context of learning and instruction. It examines prominent research investigations and theoretical frameworks that are devoted to understanding the role of the body and external tools and resources in cognitive processes within educational environments. The following section presents a review of

embodied cognition by discussing its main concepts in detail and highlighting how it contributes to learning and teaching.

2.6.1   Embodied Cognition

Throughout history, the comprehension of the human mind and the processes of cognition has posed a significant challenge for various disciplines, including philosophy, science, theory, education, and the arts (Macrine & Fugate, 2022). The prevailing understanding of the learning process has predominantly relied on theoretical frameworks and intuitive perspectives. However, the field of neuroscience is currently making significant progress in addressing these unresolved inquiries. Consequently, there is a growing acceptance of a paradigm shift in human cognition, which indicates a novel comprehension of our thought processes and, primarily, our learning mechanisms, based on scientific principles and understanding (Macrine & Fugate, 2022).

Within the field of cognitive science research, there has been a movement that promotes the idea that the body plays a significant role in the development and shaping of the mind (Wilson, 2002). This transition entails a departure from the traditional conceptualisation of cognition towards an "embodied" cognition framework for understanding human mind processes and knowledge acquisition. As a theoretical starting point, embodied cognition considers not only the mind as a tool for solving abstract problems but the body, which needs the involvement of a mind for its proper functioning (Wilson, 2002). In this paradigm shift, the human body is not merely a passive recipient of mental processes but rather an engaged contributor in the construction of knowledge and memory (Rupert, 2010). Therefore, numerous researchers have adopted embodied cognition as an innovative approach to comprehend how the body contributes to cognition.

Researchers in the field of embodied cognition contend that the body plays a crucial role in the production and development of cognition (Varela et al., 1991). Furthermore, they assert that cognitive processes are either grounded in or influenced by sensorimotor processes (Barsalou, 2016; Zona et al., 2018). This perspective presents a counterargument to the conventional perspective in cognitive research, which posits that the brain is the sole origin of cognition. In contrast, the theory of embodied cognition posits that the physical body plays a crucial role in mediating the interaction between the brain and the external environment (Wilson, 2002).

Scholars in the past have acknowledged the theoretical notion that cognition is not solely limited to the mind but is also influenced by the body, shaped by social factors (Vygotsky, 1978) within certain contexts (Lave, 1988), and influenced by cultural factors (O'Loughlin, 1995). One example of the extension of embodied cognition can be observed in its application to the cultural and social domain. According to Nisbett and Miyamoto (2005), culture plays a significant role in shaping our physical

encounters with the world, thereby exerting an influence on our cognitive processes. The way we understand the world is shaped both by our physical experiences and the cultural norms and values we inherit from our families and communities. Therefore, it may be argued that cognition is influenced by both the physical body and social interactions, indicating that it is both embodied and socially formed.

Furthermore, Gibson (1979) pointed out that the relationship between the individual and the environment is mutually dependent. For example, the concept of affordances in the framework of embodied cognition posits that our perception of items is not solely based on their physical attributes but also encompasses their possible functional uses (Wilson, 2002). When observing an object like a chair, our perception extends beyond its physical appearance to include its affordance or the potential action it enables, such as sitting (Wilson, 2002). This highlights that cognition is holistic in nature and emphasises the complex interaction between the brain, body, and environment. Additionally, it highlights the influence of physical and social factors on cognitive processes. The next subsection examines the developing paradigm of 4E cognition, which expands upon the traditional perspective by integrating the embodied, embedded, enacted, and extended dimensions of cognition.

2.6.1.1 The 4E cognition, learning and teaching

The concept of embodied cognition is widely acknowledged by most scholars, with the consensus that the cognitive process is rooted in the body and the environment. This perspective posits that knowledge is either directly experienced or indirectly mediated through mental constructs, as proposed by Wilson (2002) and Shapiro (2019).

According to Newen et al. (2018), the 4E cognition approach argues that cognition is not solely a mental activity that occurs within an individual, but rather it is characterised by embodiment, embeddedness, enactment, and extension. The concept of embodied cognition underscores the interconnectedness between cognitive processes and the body's interactions within its surrounding environment. The concept of embeddedness implies that cognitive processes are subject to impact and modification by the particular contexts and surroundings in which they take place. The enactive perspective posits that cognition arises through a dynamic interplay between an active organism and its surrounding environment. Finally, the concept of extended cognition suggests that cognitive processes have the ability to transcend the boundaries of an individual and extend into the surrounding world (Newen et al., 2018).

This viewpoint presents an alternative to the conventional representational-computational model of cognition by introducing a more dynamic and interactive framework. The field of study spans a wide array of subjects, such as the fundamental characteristics of cognition; the intricate interplay between

cognition, perception, and action; the comprehension of social dynamics; the complexities of emotions; the intricacies of language; and the influence of culture. The domain of inquiry encompasses a diverse array of scholarly efforts, encompassing works, hypotheses, theories, and experiments, all of which collectively contribute to the development of a thorough comprehension of cognition (Newen et al., 2018).

The potential implications of embodied cognition, also known as 4E cognition, as discussed by Newen et al. (2018), demonstrate significant potential for the field of education, as highlighted by Mangen and Pirhonen (2022). Moreover, this perspective has garnered substantial attention and interest across other academic disciplines in recent years (Carney, 2020). The fundamental tenets of embodied cognition, which involve the interconnectedness of cognition and the body, the situational integration of learning processes, the augmentation of cognitive abilities through external tools, and the active nature of learning experiences, present a paradigm shift in educational practices. In the particular domain of L2/EFL writing, the fundamental tenets of embodied cognition focus on the complex interplay among cognition, the physical body, and the use of technological tools. Integrating technology into the writing process plays a crucial role in students' cognitive engagement. As a result of this interaction, writing is not understood as a mental process but as a physical act of expressing, composing, and communicating, achieved through the mediation of technology.

According to Newen et al. (2018), acknowledging that cognition extends beyond the mind and is deeply entwined and connected to the body and the surrounding environment enables educators to create educational opportunities that actively include students on a comprehensive scale. This approach fosters embodied learning by incorporating sensory interaction, physical experiences and movements to improve understanding and retention. Additionally, Mangen and Pirhonen (2022) assert that the prioritisation of embedded contexts highlights the need to establish educational settings that reflect real-life scenarios, enhancing the practicality and significance of educational experiences. To support this assertion, Carney (2020) suggested that it is crucial to comprehend the contextual factors that influence the learning process in order to implement effective educational practices. By understanding the contextual factors that influence learning, educators can create educational environments that respond to the specific needs of students. There are multiple aspects to the context, including past experiences, as learning is a continuous process of past experiences that influence the present and the future. Educators can create a more engaging and practical environment by incorporating various contextual elements, making the learning process more meaningful and effective.

Extended cognition, as emphasised by Newen et al. (2018), promotes the incorporation of external tools and technology to enhance and extend cognitive abilities such as storing information, and

acquiring and processing knowledge, thereby providing additional resources to facilitate enhanced learning. Enactive learning, which emphasises a bidirectional interaction between the learner and the environment, is supported by Newen et al. (2018), asserting that engaging in active, dynamic, and tactile experiences facilitates the development of deeper comprehension and knowledge production. Educators can obtain a comprehensive understanding of cognition by utilising interdisciplinary methodologies and integrative learning strategies, and by prioritising the learner's holistic development. This proposition by Carney (2020) finds support in the fundamental concepts of 4E cognition. The findings, as mentioned earlier, make a valuable contribution to enhancing the educational experience by aligning with individuals' innate cognitive processes of perception, interaction, and comprehension (Newen et al., 2018; Mangen & Pirhonen, 2022; Carney, 2020). The next section examines the extended mind paradigm by examining the three domains of the extended mind that transcend the confines of the brain.

2.6.2   Extended Mind

According to Paul (2021), our excessive reliance on our brains hinders our capacity for intelligent thinking. She asserted that we must engage in thinking outside the confines of our brain. Paul (2021) explains:

> *Thinking outside the brain means skillfully engaging entities external to our heads—the feelings and movements of our bodies, the physical spaces in which we learn and work, and the minds of the other people around us—drawing them into our own mental processes. By reaching beyond the brain to recruit these 'extra-neural' resources, we are able to focus more intently, comprehend more deeply, and create more imaginatively—to entertain ideas that would be literally unthinkable by the brain alone.* (p.1)

In her recent book, *Extended Mind*, *The Power of Thinking Outside the Brain*, Paul (2021) reviews and summarises the work written by philosophers like Andy Clark and David Chalmers and other philosophers in the field of cognitive science for the past 20 years. Paul explores three main aspects of "the extended mind" that can enhance our utilisation of our cognitive abilities: embodied cognition, situated cognition, and distributed cognition. She examines how our thinking extends through our physical bodies, the environments in which we learn and work, and our relationships with others. She concludes that the mind extends through three main integrated types of thinking: (a) thinking with bodies, (b) thinking with surroundings, and (c) thinking with relationships. The use of these dimensions can enable a departure from the dominant metaphors that compare the mind to a computer with mechanical attributes or a muscle that may be strengthened over time by persistent and repetitive effort (Pitt et al., 2002). By providing ample proof that we are using physical

movement, engaging with environmental surroundings, and interacting with social relationships in our daily lives, Paul (2021) contends that we are able to tap into intelligence that extends beyond our brains.

2.6.2.1 Thinking with our bodies

Paul (2021) explains the use of our body movements, sensations, and gestures to facilitate the cognitive processes. She clarifies the role of the body in our mental processes. For example, the use of facial expressions and hand gestures can facilitate the understanding of abstract knowledge and concepts. The field of embodied cognition provides evidence that an individual's sensations and the physical movements of the body play an important role in the process of thinking effectively (for more information, see Section 2.6.1).

Embodied representations of gestures and speech can contribute to the enhancement of the student's mental functions in language classes (Kelly et al., 2008). In the education realm, the presence of the teacher in the class when demonstrating a lesson can highly influence the students' acquisition of information. The teacher's movements around the class and the use of hand gestures and language to visualise abstract information can facilitate the cognitive functions of understanding and remembering information. In other words, the teacher's movements and hand gestures help the students to understand, pay attention, and be involved in the lesson. By using gestures while speaking, our brain receives a dual signal from the spoken language as well as the physical action of the gesture. Consequently, the information is reinforced and becomes more understandable and memorable. Researchers in different disciplines, from linguistics to neuroscience, have claimed that speech and gestures are two integrated modalities that work together to convey meaning effectively and facilitate the comprehension process (Kelly et al., 2008). In addition, gestures can also serve as a means of 'offloading' information (Paul, 2021). Rather than relying solely on our brains to process and retain information, we use our hands to assist us. As a result, we are reducing the cognitive load on our brain by allowing our hands to assist in the retention of memories. Our mental resources are thus freed up to perform other tasks (ibid).

2.6.2.2 Thinking with our surroundings

In Paul's (2021, p.92) words, "While a laptop works the same way whether it is being used at the office or while we are sitting in a park, the brain is deeply affected by the setting in which it operates". This quotation illustrates that cognition is context-bound, meaning that cognition is situated in a social context, and its physical surroundings influence its functioning (Paul, 2021; Wilson & Clark, 2009). Our surroundings, including our social environments, atmosphere, and objects, can substantially influence and shape our thinking and cognitive functions. For example, the quiet

atmosphere of the library with digital equipment and resources such as books can promote focus, the generation and manipulation of ideas, and practical problem-solving strategies. Alternatively, working in a loud, distracting environment can reduce concentration, decrease creativity, and make it difficult to take decisions.

Extending the mind through physical environments can have benefits beyond enhancing our memory. It can improve our reasoning and thinking abilities, leading to better insights, problem-solving, and idea generation (Paul, 2021). For instance, working in a familiar environment such as our home may positively affect how we process mental functions. In a familiar and comfortable environment, our cognitive abilities are distributed over the entire environment, and the environment itself aids our thinking (Meagher, 2014). The social functions of a home, including familiarity with its surroundings and its objects, as well as a sense of control over the environment, can be useful for improving productivity and enhancing cognitive abilities. For example, moving furniture around the room may allow more space for studying, or adjusting the room's temperature may help to promote focus and concentration. Individuals' self-assurance and competence increase when they are situated within an environment they perceive as their own (Kaplan, 1989). As a result, their performance is enhanced, their concentration is improved, and they are more efficient when completing tasks: "[the] mind works better because it does not do all the work on its own; it gets an assist from the structure embedded in its environment" (Paul, 2021, p.126). Thus, the environment has a significant impact on our cognition and its function. Paul (2021) demonstrates that when individuals work or learn in a setting that is not in harmony with their nature, they are significantly hindered from engaging in intelligent and effective thinking.

2.6.2.3   Thinking with our relationships

Intelligent thought develops primarily through social interaction (Merchant et al., 2021; Piaget, 1951). The human brain has developed to engage in cognitive processes with others, such as instructing, debating, and sharing narratives (Paul, 2021). The human mind is highly influenced by context, and one particularly influential context is the presence of other individuals (Vygotsky, 1978). Consequently, our thinking is altered and improved when we engage in social thinking, such as group social interaction, compared to when we engage in non-social thinking (Redcay & Warnell, 2018). 'Thinking with our Relationships' illustrates instances of distributed cognition. According to Paul (2021), distributed cognition refers to how our relationships with other individuals extend our thinking. She categorises these interactions into three domains: thinking with experts, peers, and groups (Paul, 2021).

Gaining insights from highly experienced experts in the field you are engaged in is crucial for learning from their knowledge and practical experience. We learn from experts through imitation, which is a

critical component of human achievement (Paul, 2021) and cognitive development (Prinz, 2005). Imitators have the ability to select from a diverse range of solutions rather than being constrained to a single one (Prinz, 2005). As a result, they can identify and select the strategy that is currently the most effective, enabling them to adapt to changing conditions very quickly. Cognitive apprenticeship, characterised by its components of modelling, scaffolding, fading, and coaching, is an effective instrument for adjusting to the demands of knowledge-based tasks (Paul, 2021).

Peer interactions also enhance and strengthen the brain (Doiset et al., 1976). Humans developed larger brains to cope with the complexity of social groups, as theorised by scientists (Paul, 2021). Scientific data confirm that our particular 'social brain' improves our ability to think effectively in social situations, highlighting the significance of social memories, which are stored differently in the brain (Paul, 2021). In educational contexts, the practice of collaborative learning among peers facilitates the sharing of ideas, enhancing the collective comprehension of complex subjects. This phenomenon is referred to as the 'social encoding advantage', which denotes our enhanced ability to retain social information with greater accuracy compared to information acquired in isolation (Paul, 2021). In addition, interaction with peers is an effective means of enhancing understanding of a task by contributing unique ideas; asking questions for clarification, especially for low proficient learners; and engaging in collective arguments that may prevent confirmation bias and help reach an accurate conclusion (Fitria, 2021; Chen, 2020).

Thinking with groups is a response to the constraints of individual cognitive abilities, which become apparent in a society characterised by an excess of information. This prompts a transition towards acknowledging the significance of collective cognition or the collective thinking attained via interaction with groups (Paul, 2021). Within educational contexts, this phenomenon of collective thinking can be observed in group projects, where the coordinated efforts of individuals in small groups result in heightened social unity and collaboration (Sembiring, 2018). For example, shared attention in problem-solving situations in any education setting emphasises the importance of directing cognitive resources collectively towards priority stimuli. It also highlights the need for cohesive team formation to develop effective strategies that would not be reached with solo thinking. The following section discusses writing within the extended mind paradigm.

2.6.3   Writing as Extended Mind

Writing as an extended mind acknowledges the writer as a physical being with inherent biological tendencies, abilities, and limitations, as well as acquired behavioural patterns (Overstreet, 2022). The act of writing is essentially a problem-solving endeavour since the purpose is to progress from one state to another. To achieve this, the writer must process information, which requires perceiving,

recalling, reasoning, and taking action recursively rather than sequentially. At any stage of the writing process, the writers may interact with external resources in order to process information (Overstreet, 2022). The concept of "writing as extended mind" is based on Overstreet's (2022) assertion that cognitive processes extend beyond the brain's boundaries and include the manipulation of external resources and structures. The writer may, for instance, consult a dictionary or a teacher for advice and clarification, or use a writing tool such as a word processor. In addition, they may use a computer or smart device as an external memory system to store their ideas and rough drafts. Chalmers (2008) confirmed that these tools are part of the writer's cognitive processes and function as an extension of their cognitive capabilities.

The concept of writing as an extended mind suggests that cognitive processes extend beyond the limitations of the brain and involve the use of external resources or structures (Overstreet, 2022). McCutchen (2000) asserts that the restricted capacity of the human working memory is, without a doubt, one of the most significant biological limitations a writer encounters. According to Kellogg (2008), working memory capacity is considered to be the main limitation on the development and growth of writing skills. As a result, writers maintain physical control over their surroundings by interacting with and manipulating their environment. This manipulation refers to a deliberate and purposeful action with the goal of integrating various resources to improve cognitive capacities (Overstreet, 2022). These manipulations and integrations of different tools and resources become a part of the writer's strategies to mediate the cognitive loads and facilitate the writing processes. For instance, a student writing a research paper relies on her thoughts and ideas and she actively integrates external resources such as books, digital tools such as Google, and digital documents like PDF files. This process illustrates the extended mind perspective, in which external sources and digital data are integrated seamlessly with internal cognitive processes, resulting in a more comprehensive, thorough, and enhanced writing process. Additionally, these tools are seen as an augmentation of the writer's cognitive process. This example confirms Clark and Chalmers' (1998, p.8) claim: "Cognitive processes ain't (all) in the head!". Utilising this integration strategy, individuals are able to gain a deeper, more comprehensive understanding of the material. The process also illustrates the complex interaction between internal cognitive processes and the application of external information resources.

The cognitive functions are developed through the dynamic process of externalisation, which provides a tangible and controllable environment for the organisation of thoughts and the generation of ideas (Mangen & Velay, 2010). The recognition of writing as not a cognitive activity but an extended mind implies that our thinking or cognition is not confined to the boundaries of our brains. Alternatively, it can expand or disperse into the surrounding environment (Overstreet, 2022). This occurs when writers engage, interact with, and manipulate their surroundings, particularly structures

that hold information pertinent to the cognitive processes they perform (Overstreet, 2022). These structures may consist of communication with another individual, a computer screen, or even a piece of paper. In the context of L2/EFL writing, the extended mind suggests that writers' cognitive processes are distributed across various resources, such as printed materials, digital platforms, and collaborative exchanges with instructors and peers. This viewpoint can assist educators in comprehending and enhancing the writing strategies employed by L2/EFL learners. The following section reviews the literature on writing strategies from the perspective of writing as extended mind.

2.7   Existing Studies

2.7.1   Tools as Cognitive Extensions and Mediations

During L2 writing activities, learners mediate their cognition through interaction with social affordances, such as using online resources and dictionaries and consulting their tutor or peers (Yim & Warschauer, 2017; Zhang & Zou, 2021). The social environment affords learners tools and material artefacts that offer learning opportunities. Research has confirmed that during L2 writing, writers use various technological tools to support, mediate and extend their mental capacities to the surroundings (Gilquin & Laporte, 2021; Overstreet et al., 2023; Naghdipour, 2022; Cancino & Panes, 2021; Huang et al., 2020).

Gilquin and Laporte (2021) investigated how 84 higher intermediate and advanced EFL French students used online writing tools during the course of writing free compositions for 45 minutes. The study aimed to provide a detailed description of their writing behaviours and consultations when using online writing tools, including the effective and less-effective use of writing strategies. The data were obtained from a process corpus of learner writing, observed and analysed directly using video-screen capture technology. According to the analysis of annotated videos, on average, students spent 13% of their time consulting online resources, although there were considerable differences between students. Among the tools used, bilingual dictionaries and concordancers accounted for 71% of the total. In most cases, learners used only a limited number of tools and relied primarily on one type. Searches using one tool accounted for 84% of all lookups, whereas searches using multiple tools accounted for 16%. There were positive effects associated with tool use that led to correct formulations in 63% of the searches conducted. However, several aspects of learners' consultation behaviour were observed, such as their inability to think critically about information obtained from online sources.

In order to gain a better understanding of the technological literacy practices of ESL/EFL writers, Overstreet et al. (2023) investigated the use of technological tools by two Arab undergraduate

students who were writing their research papers. In particular, the study examined the use of research tools, writing tools, and course materials. The researchers used two main methods to collect data: screen captures of all the writing processes and weekly interviews with the participants. Based on the results of the study, the students used two main approaches to writing meditation. The first approach was the brain-bound approach, which focuses primarily on using external resources to support and structure the internal cognitive process, such as writing directly from sources without any mediation tools. The second was the extended approach, which involves using the external environment structure to mediate the writers' cognitive loads, such as using notes to store information and language to allow writers to offload cognitive resources to tools so that there is more space for higher-order thinking.

Similarly, Naghdipour (2022) explored online informal writing practices among EFL Arabic Omani undergraduate students and how these practices were adopted when writing formally. The researcher employed a mixed-method approach, including open-ended surveys and semi-structured interviews. The results demonstrated that the students used a range of mediated ICT informal learning tools in order to practise writing, work on problems related to writing, and socialise with others. As EFL students, they paid more attention to the linguistic aspect of writing. Consequently, they frequently employed tools such as grammar and spelling checkers, online translators, dictionaries, and search engines when writing. The students reported relying largely on technology tools that supported personalised individual learning in order to complete the academic writing requirements, such as Google Search to generate content and Grammarly software to edit it. Despite the benefits of mediated informal learning tools for learning and improving academic writing, the students were aware of the plagiarism risks posed when these tools were misused.

Experimental studies have also examined how specific tools affect the quality of the written text. Cancino and Panes (2021) studied the impact of Google Translate (GT) on L2 writing length, complexity, and accuracy. The participants were EFL high school learners in Chile. The researchers utilised a quasi-experimental design to achieve the aim of the study. The participants were divided into three groups: the experimental group (writing a task without GT), the control group (writing a task without GT instruction), and the other group (writing a task with GT instruction). The results demonstrated that the groups utilising GT, with or without instruction, produced considerably more words with greater syntactic complexity and accuracy than the group that did not use GT. The study showed that incorporating GT and teaching students how to use it correctly can improve L2 writing proficiency, especially among early-stage learners.

Similar to Cancino and Pases (2021), Huang et al. (2020) investigated the effectiveness of using technology tools such as Grammarly in EFL writing classes over the course of a 16-week experiment at

a Chinese university. The participants were 41 students enrolled in an English course. Researchers collected data using students' written essays, a questionnaire, and pre-and post-test essays. Data were collected using a case study design by having students write pre-test essays and then receive feedback from Grammarly, peers, and instructors. Based on paired-sample t-tests, it was determined that the students' writing performance increased significantly during the 16-week intervention period. Pre- and post-test essay scores were used to assess the participants' writing performance, and a questionnaire was utilised to assess their perceptions of Grammarly use. The results showed that students' writing abilities improved significantly following the experimental treatment, which included Grammarly and group collaboration. Also, the results demonstrated that students preferred using Grammarly to receive instant feedback because they could see their errors immediately, rather than waiting for the teacher's feedback.

The studies reviewed above suggest that EFL students utilise various technological tools to mediate their cognitive loads when writing in L2. These tools facilitate the writing process and enable writers to improve their writing skills. Furthermore, the studies demonstrated that EFL writers extended their minds through their relationships (e.g., interaction with peers) and surroundings (e.g., interaction with material artefacts using notes).

Although a number of scholars have attempted to explore the digital writing assistance tools used by L2 learners in natural contexts, the literature tends to ignore the contextual factors and the influence of textual factors on the writers' behaviour and interactions with social tools. Studies on L2 writing strategies have focused on investigating the mediation artefacts in natural environments, implementing screen digital recording to monitor and record participants' use of digital tools (Overstreet et al., 2023; Gilquin & Laporte, 2021). Other researchers have used empirical-led research to examine the influence of particular writing tools on students' writing performance (Cancino & Panes, 2021; Huang et al., 2020). Although the findings of these studies are promising and add to the base of research on L2 digital writing tools, studies in this field have primarily focused on exploring writers' interaction with digital assistance tools. There is a lack of research examining the environmental and textual factors that influence EFL writers and their interaction with social materials and digital tools. Research has demonstrated that individual, social, and material factors (e.g., physical resources and conditions that affect tool usage) can contribute to the variation in technological tool use (Yoon, 2016; Wu, 2020). Overstreet et al. (2023) suggest that this variation may also be attributed to different variations in the writers' education history, region, and position. Thus, the present research responds to a recent call to examine the influence of sociocognitive factors on the use of writing strategies (Hosseinpur & Kazemi, 2022; Overstreet et al., 2023).

Writing is a social act that is influenced by social factors such as the learner's writing experience and the context in which the writer performs the writing. Moreover, the type of writing task influences the writer's cognitive functions of planning, writing, and editing. Writing tasks impose different cognitive loads, which ultimately affect the implementation of writing strategies. Thus, integrating contextual and textual factors and their impact on writers' cognitive meditation and extended mind strategies will provide an understanding of EFL writing strategies from the sociocognitive perspective. The following section presents the sociocognitive approach to SLA by highlighting its main concepts.

2.8   Sociocognitive Approach to SLA

Based on these embodied and extended perspectives, Atkinson (2010) proposed three principles underpinning the sociocognitive approach in SLA. First, the inseparability principle contends that the mind, body, and ecosocial world are integrated functionally in learning and cannot be separated. The second principle is adaptivity, according to which learners use cognition in learning to support them to adapt effectively and sufficiently to the social environment. This principle has some implications for SLA, as Atkinson (2010) described. One is that learning, as the primary aspect of adaptation, means fitting in with the learning environment, guided and mediated by actions and different tools. The third principle is alignment. Atkinson et al. (2007, p.169) defined alignment as "the complex means by which human beings effect coordinated interaction and maintain that interaction in dynamically adaptive ways". "Coordinated interaction" is not restricted to interacting with people only, but often occurs between humans and nonhumans (Atkinson, 2010) and it extends beyond human interaction to include interactions between humans and their surroundings (Nishino & Atkinson, 2015).

Alignment is an essential concept in any learning domain (Atkinson et al., 2007). In classrooms, for example, computers, desks, students and teachers, and their distinct cognitions are all sociocognitive intertwined elements that allow students to align their learning behaviour to the environment in which they exist.

The core argument of a sociocognitive approach is that the mind, body, and world all work together to facilitate second language learning (Atkinson, 2011). This indicates that there is an interaction between humans, their cognition, and the surrounding environment in any learning process. Social interaction is a fundamental element and is the first stage in the learning and development processes (Vygotsky, 1978) (for more information, see Section 2.2.1). One of the values of social interaction is facilitating the learning process and mediating the cognitive load when learning certain skills like writing. Vygotsky (1978) confirms that humans do not directly interact with the external world; instead, people use symbolic artefacts and tools to mediate and regulate activities and interactions with themselves and with others.

Some theorists, such as Atkinson (2002, 2010, 2014) and van Lier (2004), consider language acquisition and language learning as sociocognitive phenomena in which individuals, society, and culture are intertwined elements in the L2 learning process. Atkinson (2002) explained how language acquisition is viewed as a sociocognitive activity involving cognition and environmental factors. Atkinson (2002) stated that humans do not store and retrieve information immediately with great accuracy when speaking. Instead, they produce, understand, and monitor their production, adopting different modes of the language system and tools, such as reading, eye contact, and body language. All of these cognitive and social behaviours happen at the same time (ibid). This is also applicable in the act of writing. Learners may find it difficult to rely on their cognitive abilities to retrieve knowledge and connect what they know with evidence to support their claims. Thus, integrating social and technical tools to coordinate the writing process allow students to distribute cognitive knowledge to the external environment. This means that cognition can be enhanced and developed through interaction with the environment to build knowledge and facilitate writing. In this sense and from the sociocognitive perspective, cognition is reconceptualised as 'adaptive intelligence', having the primary objective of aiding adaption to our social environment (Atkinson, 2014).

The sociocognitive approach is regarded as the optimal approach for research as it provides a comprehensive understanding and sheds light on multiple perspectives, based on the social and cognitive aspects of any research phenomenon (Atkinson, 2002; Cumming, 2016). Moreover, the sociocognitive approach has several implications for learning, as Atkinson (2011) described. First, learning is considered a continuous process of adaption to the environment, which ultimately enhances the learning experience through active participation and engagement. Second, cognition is perceived as extended and distributed to the outer world, frequently through a variety of different adaptive tools designed by humans, for example, computers, textbooks, technological tools, and cell phones, all of which are ecosocial tools designed to support cognition and make sociocognitive activities achievable with their assistance. Finally, learning, teaching, and understanding occur in the physical world publicly in a natural environment rather than being restricted to the cognitive space (Atkinson, 2011). For example, in the language learning classroom, learners work collaboratively to write a text or integrate different tools (e.g., textbooks) to mediate their cognitive load when undertaking a task such as writing.

The sociocognitive approach to L2 writing research can guide researchers in understanding the influence of sociocognitive factors on writers' behaviour. As studies on the use of writing strategies in L2 have increased, researchers have suggested including sociocognitive factors such as L2 writing proficiency, task type, educational experiences, and learning history to understand L2 writing and strategy use (Hyland, 2003b; Maharani et al., 2018; Penuelaz, 2012). Studies have confirmed that writing proficiency level is an important variable connected to strategy use and the quality of writing.

For example, Maharani et al.'s (2018) study showed that proficient writers used metacognitive strategies, whereas less-proficient writers used compensation strategies. Similarly, Sadi and Othman (2012) studied the writing strategies used by EFL Iranian undergraduate students. The results revealed that skilled and unskilled writers were different in their writing strategies. Specifically, skilled writers employed the strategies of brainstorming, repetition, rereading and revision, whereas less-skilled writers employed the strategies of self-talk, self-questioning, and editing.

Task types and learning history are other significant variables associated with writing strategies. For instance, Kang and Pyun (2013) examined the mediated composition strategies of two Korean learners. The findings demonstrated that the learners' written text and their mediating writing strategies resulted from the interplay between sociocognitive factors like learning goals, L2 proficiency, cultural and historical experiences, and motivation.

Despite the numerous implications of the sociocognitive approach for SLA research mentioned above, Larsen-Freeman (2007) notes that the theory has not been applied in many classroom studies. Hence, the definitions and applications of the sociocognitive approach are not sufficiently articulated. However, this approach is most appropriate for the nature of the Saudi context, where the social factors cannot be separated from the learning process (see Section 2.9). For example, past educational experience significantly influences students' writing strategies (see Section 2.9.1). Thus, this research will use the sociocognitive approach to investigate the sociocognitive writing strategies used by EFL students to mediate their cognitive load and scaffold their writing. The following section presents some of the sociocultural and cognitive factors that are suggested to influence composing processes and strategies.

2.9   Sociocognitive Factors and Their Influence on Writing

This section discusses the factors that influence EFL writing strategies. Therefore, it is essential first to introduce the definitions of learning strategies, shed light on particular writing strategies, and clarify the definitions of the writing strategies that the current study investigated.

As the number of language learners increases worldwide, many researchers in the SLA field carry out research to find out how learners find solutions to processing problems, the skills required for language learning, predicted or real communicative problems, and what factors influence their learning. According to McDonough (1995), SLA researchers suggest that knowing the possible learning strategies would help researchers understand language acquisition and individual differences in learning.

Scholars and educators define learning strategies in many ways. For example, Macaro (2006) defined learning strategy as conscious behaviours to achieve certain goals. Oxford (1990) also defined learning strategies as specific actions taken by the learner to facilitate learning, accelerate the learning process, enhance enjoyment, promote autonomy, enhance effectiveness, and enable the learning to be transferred to new contexts. Regarding language learning strategies, Cohen (2011) defined these as the conscious selection and implementation of thoughts and actions by language learners to facilitate the completion of a variety of tasks, from the initial stages of learning to the most advanced levels of performance in the target language.

Researchers stated that strategies involve sociocognitive elements involving cognitive, metacognitive, and social strategies. Cohen (1998) was against interpreting strategies from a sociocultural perspective only; he said: "if the behaviour is so unconscious that the learners are not able to identify any strategies associated with it, then the behaviour would simply be referred to as a process, not a strategy" (p. 11). Ehrman et al. (2003) defined cognitive strategies as the manipulation of language materials in indirect ways. These strategies include reasoning, analysis, association, and drawing conclusions (Oxford, 1990).

In L2 writing research, researchers have discussed and studied the writing strategies of L2 writers. L2 researchers use the term strategy synonymously with writing behaviours (Manchon et al., 2007), writing process strategies (Sasaki, 2004), and techniques and procedures (Khaldieh, 2000). Sasaki (2004) defined writing strategies as the cognitive strategies employed by a writer to accomplish a goal during the complex problem-solving activity of writing.

Manchón et al. (2007) distinguish between a broad and narrow conceptualisation of writing strategies. A broad conceptualisation of writing strategies has two perspectives: learner-internal and sociocognitive. The learner's internal strategies refer to actions used to produce a text. The sociocognitive perspective views writing as actions taken by L2 writers to respond to writing situations and discourse communities. On the other hand, the narrow definition conceptualises writing strategies from a purely cognitive, intra-learner stance informed by cognitive theories of L1 writing and the problem-solving paradigm, which interprets writing strategies as "control mechanisms" used to regulate cognitive activities, or "problem-solving devices" used to make decisions to solve the problem in the writing task (Manchon et al., 2007, p. 235). Therefore, this study will apply the sociocognitive approach to study the writing strategies of EFL writers as it integrates the cognitive mechanisms applied by writers with the sociocultural factors imposed by context.

This research will use the definition of writing strategies by Cohen (2011) as conscious action taken by learners to assist them in writing, in combination with the sociocognitive perspective of writing strategies defined by Manchon et al. (2007). Strategy comprises tools, plans, and actions used

consciously to improve writing. Writers select tools available to them in their sociocultural environment when they encounter a problem during writing. These tools or strategies are selected in response to social factors experienced by individual EFL writers. The following subsections examine the sociocognitive factors that influence EFL writing.

2.9.1   Past Educational Experience

One of the important factors influencing the writing process and strategies is past educational experiences. de Larios and Murphy (2001) point out that past education greatly influences writers' abilities. They argue that among the different contexts that influence writing processes and strategies, such as social and historical contexts, the education context plays a vital role in shaping the writer's mental and social capabilities. They also contend that the education context is the locus where interaction between students and teachers occurs, and the writer's background learning shapes their knowledge. Past educational experience influences students' composition process, planning, and revision strategies, as reported by researchers. Cumming (1989) noted that the educational background influenced the choice of planning strategies. Cumming (1989) also reported that two differentiated planning strategies were used by advanced L2 writers, namely, advanced planner and emergent planner. Cumming found that writers with technical writing backgrounds tended to plan their composition in advance, and writers with literacy backgrounds tended to enhance idea formulation as the text progressed. The influence of writers' previous writing instruction on the organisation of information in their texts has been reported by several researchers (Fidalgo et al., 2008; Sasaki & Hirose, 1996). For example, Sasaki and Hirose (1996) found that skilled EFL Japanese writers paid more attention to the overall structure of the text when engaged in writing and planning than unskilled writers. The researchers found that these differences appeared because of the writers' previous writing experiences, as they reported having free writing in L2 and practising summarising L1 text regularly in school.

El-Mortaji's (2001) results emphasise the importance of past learning experiences in the writing process. The findings demonstrated that the participants' current writing knowledge relied on the knowledge they already possessed from their school education. When the participants wrote, they relied heavily on past education experience regarding the number of words, lines, and paragraphs. For example, one participant in the study thought that two paragraphs would be enough for an essay as he had experienced always getting a pass mark when he wrote only two paragraphs. El-Mortaji (2001) also found that the influence of past learning experience was evident in the participants' reliance on grammatical rules in terms of using tenses, and the restriction of using basic, short sentences to prevent making mistakes, as indicated by their teachers. In addition, the participants

spent much time planning their writing due to their prior teaching instruction, which had emphasised the importance of making a good outline.

When examining the influence of past education history, Altınmakas and Bayyurt (2019) emphasise that inadequate L2 writing instruction in Turkish high schools significantly impacted students' academic success in higher education. Despite the emphasis on communicative and learner-centred teaching methods in the Turkish curriculum, the responsibility for this lay with English language instructors, who often overlooked writing assignments and focused more on teaching grammar. This neglect of writing skills during secondary education leaves students ill-prepared for the rigorous writing demands of college study, resulting in poorly written assignments and academic struggles.

The main conclusion that we can draw from the previous studies above is that past education and learning experiences influence learners' writing processes and strategies significantly. The above discussion shows that some participants use specific writing strategies or organisation due to previous writing instruction. This study will also examine the influence of past education on students' use of sociocognitive mediating writing strategies beside other factors that could influence the writing strategies used, as discussed in the following sections.

2.9.2   Writing Proficiency Level

Research on L2 writing processes and strategies has indicated that writing proficiency level exerts a substantial influence on the use of strategies. Research on writing strategies has investigated the relationship between the writing strategies used and the level of writing proficiency. The research indicates that students with a high level of writing ability employ more writing strategies than those with a low level of writing ability (Victori, 1999; Sasaki, 2002; Kao & Reynolds, 2017). Thus, writing proficiency can explain some variation in the use of writing processes and strategies (Raoofi et al., 2017). Bereiter and Scardamalia's (1987) research showed variation in the writing processes of skilled and unskilled writers in terms of knowledge telling and knowledge transformation. Novice writers apply knowledge telling, a process in which the writer's main aim is to transcribe the content from memory in a proper written form without utilising problem-solving activities. On the other hand, expert writers employ knowledge transformation. In this process, the writer aims to write a text that influences the readers, which is achieved by utilising various sophisticated strategies to create and transform the written content.

Research on writing strategy has investigated the quantitative and qualitative usage of specific writing strategies by proficient and less-proficient counterparts (Lei, 2016; Bai et al., 2014; Sasaki, 2002). Hayes and Flower (1986) identified the difference between skilled and unskilled writers in their use of planning strategy. Hayes and Flower found that expert writers generated and used elaborate mind

maps and ideas more than inexpert writers. Other studies demonstrated that skilled writers tended to spend more time on planning and whole-text revision, whereas less-skilled writers spent less time writing and focusing on word-level revision (Sasaki, 2000; de Larios et al., 2008; Chien, 2012). Although most studies found differences between skilled and unskilled writers in terms of their writing processes and strategies (Lei, 2016; Bai et al., 2014; Sasaki, 2002; de Larios et al., 2008; Chien, 2012), other studies reported different results. For example, Qusay's (2019) research demonstrated that proficiency did not influence the participants' writing strategies. The results disclosed no differences between proficient and less-proficient writers in their use of strategies. Similar results were also found in Arndt's (1987) study.

The present study will examine the students' use of writing strategies in a mediated learning situation, i.e., writing a text using the affordances of computer tools such as Microsoft Word and an online dictionary. Furthermore, this study will explore how students with different proficiencies mediate their cognitive load during writing and how they scaffold their learning using the affordances of sociocultural artefacts. Following this discussion of the factors that influence writing processes and strategies, the following subsection discusses the influence of genre and task type on L2 writing.

2.9.3   Influence of the Genre and Task Type

In addition to the aforementioned factors, the genre of discourse and task type might influence EFL writing. Many writing process studies have focused on argumentative (Raimes, 1987; Cumming, 1989), narrative (Raimes, 1987; Jones & Tetroe, 1987), and expository writing (Zamel, 1983). Cumming (1989) argues that two variables influence L2 writing: writing expertise and L2 proficiency. Cumming referred to writing expertise as the ability to enhance the quality and the content of the writing produced, attention given to the multifaceted features of the writing in the process of decision-making, and problem-solving to produce a piece of writing that effectively fulfils the audience's requirements and the task's objectives. On the other hand, L2 proficiency, according to Cumming, contributes positively to the overall quality of the writing and is influenced the attention participants pay to specific aspects of their writing.

In his research, Cumming asked the participants to write three types of text: an informal letter, an expository argument, and a booklet summary. Cumming's results showed that different writing tasks imposed different cognitive loads on writers and resulted in different composing habits. According to Cumming (1989, p.81), "more cognitively demanding expository argument and summary tasks produced significantly different behaviours from a less cognitively demanding letter task." For instance, formulating ideas is considered a daunting and complex task as it implies knowledge

transformation compared with retrieving information only in the form of knowledge telling (Myles, 2002).

The influence of the discourse on the students' writing was reported in El-Mortaji's (2001) research. El-Mortaji found that her participants demonstrated different writing behaviours in two types of writing they were given to complete: expository and narrative writing. The participants used various writing strategies in a narrative task, such as planning, rehearsing, reading, questioning, assessing, and commenting. In addition, the data from the interview indicated that different writing behaviours and preferences were based on how easy or hard the participants perceived the writing task to be, their knowledge, and the amount of text they believed they could produce. The majority of the participants were comfortable completing a narrative task as they were asked to write a story based on something that had happened to them; in this case, the participants felt that they had adequate knowledge and access to literary theory and the expository essay, which they had studied in prior classes. However, when the participants were asked to compose an article in the expository task, they could not retrieve information as they had no prior knowledge of or familiarity with this genre from the previous classes.

Recent studies have expanded on these seminal works by offering new perspectives on the ways in which task types and genres affect the application of writing strategies. For example, Ten Peze et al.'s study (2021) investigates how students' writing behaviours and strategies are influenced by the type of task they are given, particularly creative and argumentative writing. The results show that there are significant differences in writing behaviours across these task types. Compared to argumentative tasks, which necessitated more structured and strategic writing, creative tasks—like writing fictional or expressive texts—produced work more quickly, with a more consistent flow and fewer revisions. Students also demonstrated more uninterrupted writing cycles and longer texts during creative tasks, indicating a forward-driven process centred on idea generation. However, argumentative tasks required more attention to rhetorical goals, content evaluation, and structuring, as evidenced by the increased number of pauses, revisions, and flow variations. These variations show how task type influences the writing process and strategy deployment, highlighting the distinct demands of each genre on students' linguistic and cognitive resources.

In a similar vein, Bennett et al. (2020) investigated the ways in which different writing genres affect the writing behaviours and processes of middle school pupils with different levels of proficiency. The study examined how well students performed in the two persuasive subgenres of policy recommendation and argumentation, and it found that the demands of each genre influenced the use of writing strategies. In both genres, skilled writers showed improved fluency, preparation, and editing. Argumentation tasks necessitated careful preparation and effective breaks because they

involved logically organising and responding to counterarguments. Tasks involving policy recommendations, which placed a strong emphasis on assessment and rationale, brought attention to the significance of information synthesis and macro-editing. In both genres, less-proficient writers found it difficult to modify their behaviour, exhibiting decreased fluency, shorter text production bursts, and less efficient planning and editing. The findings demonstrate how writing genres influence writing behaviours and amplify the distinctions between students who are proficient and those who are not.

Furthermore, Lee (2019) looked into how L2 writing processes and behaviours are influenced by writing genres, time constraints, and proficiency. The study found that linguistic complexity and fluency were significantly influenced by genre. As writers devoted more cognitive resources to organising and planning arguments, argumentative writing produced more complex language but less fluid writing behaviours, such as shorter P-burst lengths and more pauses. By contrast, narrative writing promoted smoother fluency because it allowed for longer text production bursts and fewer pauses due to its less cognitively taxing storytelling format. Additional evidence from stimulated recall showed that genre-specific demands influenced cognitive functions like translation and planning, with argumentative tasks requiring more work to organise and express ideas. These results highlight how important genre is in influencing writing habits and techniques.

The results of the above studies (Cumming, 1989; El-Mortaji, 2000; Ten Peze et al., 2021; Bennett et al., 2020; Lee, 2019) are important to the current research, as this study will examine the influence of the writing genre on the use of writing strategies. The following section discusses the theoretical framework developed by the researcher and used as a lens to investigate the EFL sociocognitive writing strategies used by undergraduate Saudi medical students.

2.10   Sociocognitive Framework of the Study

The theoretical framework that guides this research is the sociocognitive approach to L2 writing. This incorporates components from the cognitive process theory of writing (Flower & Hayes, 1981), sociocognitive to learning (Atkinson,2002) and sociocognitive to writing (Nishino & Atkinson ,2015),embodied cognition (Wilson, 2002; Clark & Chalmers, 1998), extended mind (Paul, 2021), writing as extended mind (Overstreet, 2022), and sociocultural theory (Vygotsky, 1978), which entails interacting and engaging with the affordances of the environment and the influence of context on the learner. Previous studies of EFL writing (Victori, 1999; Alharthi, 2012; Elshawish, 2014) studied the cognitive writing strategies separately from sociocultural elements, such as the writers' interaction with their environment and material artefacts. This research views writing as a social activity situated

and influenced by a writer's context and mediated by interaction with bodies, surroundings, and relationships.

This study's theoretical framework expands upon Atkinson's (2002) sociocognitive approach, which emphasises how cognitive processes are inextricably linked to their material and social environments. This paradigm frames cognition as distributed and embedded within larger sociocultural and material systems, challenging traditional cognitivist models that see cognition as an isolated, brain-centric process.

The idea of sociocognitive alignment, as proposed by Nishino and Atkinson (2015), is essential to this framework because it highlights the dynamic relationships that exist between writers and their ecosocial surroundings. The way Saudi EFL writers manage and adapt to writing difficulties can be better understood through their engagement in collaborative alignment and the coordination of tools, strategies, and interactions. The framework's emphasis on writing as a situated, interactive activity is supported by this alignment concept.

By incorporating concepts from related theories, the theoretical framework goes beyond Nishino and Atkinson's contributions and offers a comprehensive perspective on EFL writing. Vygotsky's (1978) sociocultural theory highlights how people learn and adapt in their social environments, emphasising the mediating role of social interaction and cultural tools in cognitive development (see Section 2.2). Wilson's (2002) investigation of embodied cognition highlights the material and physical aspects of writing, including the impact of gestures, body posture, and the use of tangible artefacts, demonstrating the connection between the body and writing (see Section 2.6.1). The notion that writing is a distributed and dynamic process is further supported by the extended mind theory (Paul, 2021), which holds that cognition is not limited to the brain but rather encompasses the body, the environment, and social relationships (see Section 2.6.2).

The framework created in this study synthesises these viewpoints to identify three interconnected components that are essential to EFL writing: cognition, writer and the context. Fundamentally, the interaction component of any writing task symbolises the unbreakable interaction between these components. According to the framework, writing is a distributed and mediated activity that is impacted by the writer's body, tools, social interactions, and the larger context in which writing takes place, rather than just being a cognitive task. The ongoing negotiation and alignment between context and cognition is highlighted by this integrated view of writing, which influences how writers approach and overcome difficulties.

This framework's uniqueness is found in its multidisciplinary synthesis of various theoretical viewpoints, which provides a more comprehensive understanding of EFL writing processes. In contrast to more conventional methods, this framework positions writing as a dynamic, distributed,

and contextually grounded activity by combining the sociocognitive perspective, the embodied and material aspects of writing, and the extended mind theory. Additionally, it adapts these theoretical insights to the particular context of Saudi EFL writers, highlighting the ways in which these learners modify their approaches, resources, and interactions to meet particular writing challenges. A more fluid and thorough understanding of writing is presented by emphasising the dynamic and inseparable relationships between the writer, cognition, and context by centring interaction within the framework.

Figure 2 illustrates the main research theoretical framework.

Sociocognitive approach to L2 writing
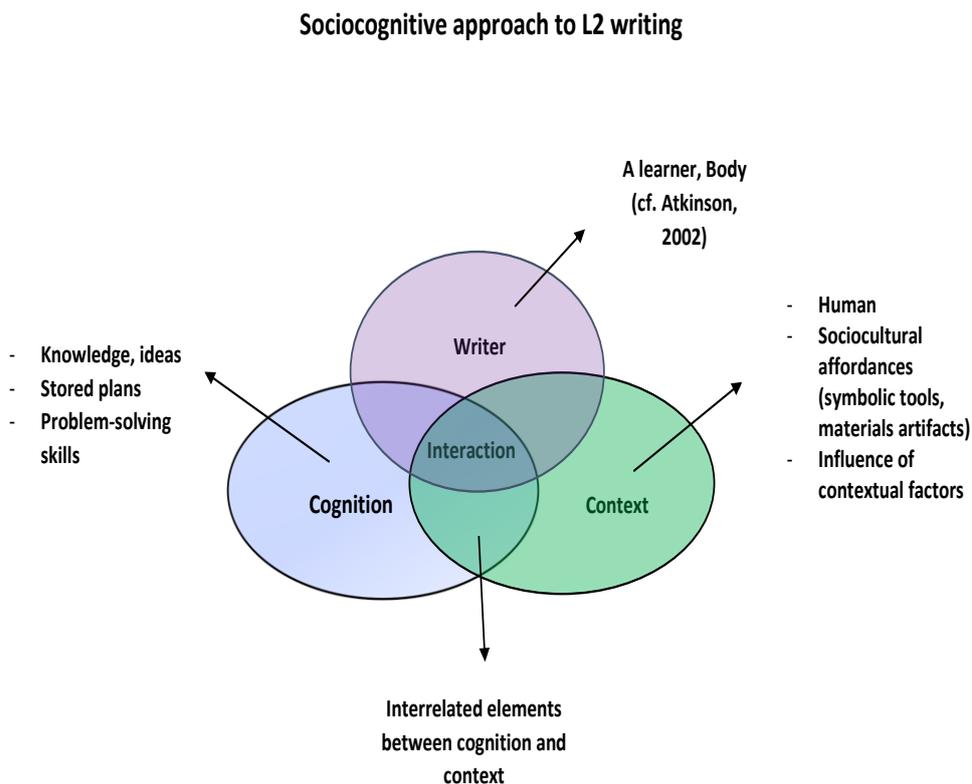
Figure 2   Theoretical Framework for Analysing EFL Writing Strategies

Consistent with the theoretical framework and prior research, the key idea in this research is to reconceptualise L2 writing as a sociocognitive activity that can be achieved and developed through interaction with human and sociocultural affordances to mediate the cognitive load and extended mind when writing. Also, this research examines the influence of the sociocognitive factors of past education experiences (see Section 2.9.1), writing proficiency level (see Section 2.9.2), and genre and task type (see Section 2.9.3) on the use of writing strategies.

The concept of social interaction is essential in this research to explore how proficient and less-proficient writers interact with sociocultural affordances to mediate their cognitive writing processes. It is hoped that this exploration will provide insights into EFL writing strategies and offer explanations

of how students approach writing tasks and how they interact with social artefacts to mediate their cognitive load. As pointed out by Vygotsky (1978), humans are social beings, and their activities are mediated through interaction with material artefacts. Interaction is a fundamental aspect of the sociocognitive approach as it supports language learning (van Lier, 2004). However, interactions can have different forms and are not restricted to interaction with humans; instead, they can comprise different social and mediated types (Atkinson, 2002, 2010). Vygotsky (1978) emphasised the importance of understanding human interaction and activity within their natural and everyday contexts. Observing behaviours in these settings can help us gain a more accurate understanding. However, if these observations are not ecologically valid and are only conducted in controlled environments, it may be difficult to apply the results to real-world scenarios. For instance, using specific prompts and a set time limit in a quiet, supervised classroom while EFL students write essays may lead to findings that do not accurately reflect genuine behaviours, potentially resulting in less trustworthy and practical conclusions.

The sociocognitive approach to teaching writing, in line with Vygotsky (1978), embodies "the inseparability of language, cognition, and context" (Kostouli, 2006, p. 3). Therefore, it is expected that combining sociocultural elements to explore how students interact with sociocultural affordances to mediate their cognitive load during writing, and using sociocognitive factors to study writing strategies will yield rich results to add to the existing knowledge base in L2 writing strategy research. In addition, considering the writers' cognition as influenced, mediated and extended to the surrounding environments will enable L2 writing researchers to explore how ESL/EFL writers enhance their cognition in the act of writing and how they offload their mental capacities and overcome writing difficulties by interacting with their surroundings.

2.11   Summary

This chapter discussed the main theories related to the current study, including sociocultural theory, cognitive theory, embodied cognition, and extended mind to lay out the theoretical framework for the current study, the sociocognitive approach. First, relevant previous studies from sociocultural perspectives and extended mind were reviewed. The main findings of these studies were discussed and compared, and then their strengths and limitations were presented. Second, the chapter also discussed the social factors that influence writing strategies, such as past educational experience, L2 writing proficiency, and genre and task type. Finally, the last section of this chapter was dedicated to discussing the theoretical framework adopted in this study and its contribution to L2 writing. The next chapter presents the methodological approach that was used to objectively and systematically collect and analyse the data.

Chapter 3   Research Methodology

3.1   Introduction

This chapter sets out a detailed explanation of the research design. The chapter starts by presenting the research questions in Section 3.2 and then explains the research paradigm that guides the selection of the research design in Section 3.3. Section 3.4 presents the fundamental principles of the research design and discusses the methodology implemented to answer the research questions. Next, Section 3.5 and its subsections 3.5.1–3.5.4 specify the research instruments and the procedures used to collect the data. Section 3.6 discusses the pilot study report. Section 3.7 describes the main study, including the research setting in Section 3.7.1 and the participants in Section 3.7.2. Section 3.8 and its subsections discuss the writing proficiency test and the procedures for conducting and scoring it. Section 3.9 details the data analysis procedures. The principles of establishing trustworthiness in this research are provided in Section 3.10. Finally, the important aspects of ethical considerations and participants' rights are addressed in Section 3.11.

3.2   Research Questions

The study explores the current sociocognitive writing strategies of proficient and less-proficient Saudi EFL writers and examines the influence of sociocognitive factors on students' use of mediating writing strategies. This research aims to inform pedagogical practices, curriculum designs, and learning strategies for these students, particularly regarding their current writing practices.

The researcher aims to answer the following questions:

1. How do proficient and less-proficient EFL students mediate their writing processes?
2. How do contextual factors influence the use of writing strategies among EFL Saudi writers?
3. How do textual factors influence the use of writing strategies among EFL Saudi writers?

Table 1 provides an overview of the research design, detailing the alignment between the research questions, sampling method, sample size, data collection instruments, and data analysis methods. The study employed a convenience–purposive sampling approach, selecting 16 participants to explore their EFL sociocognitive writing strategies. All 16 participants took part in semi-structured interviews, while a subset of eight participants (4 proficient and 4 less-proficient writers) also engaged in writing strategy logs, reflective diaries, and writing samples to provide deeper insights into

their writing processes. Additionally, another subset of eight participants participated in stimulated recall sessions.

Table 1 Research Summary

Research Questions	Sample size	Data instrument	Data collection
1. How do proficient and less-proficient EFL students mediate their writing processes?	4 proficient writers and 4 less-proficient writers	Writing strategies logs	Writing strategies logs
	4 proficient writers and 4 less-proficient writers	Reflective diaries prompts	Reflective diaries prompts
	4 proficient writers and 4 less-proficient writers	Writing samples	Writing samples
	16 participants	Semi-structured interviews	Audio recordings
	8 participants	Stimulated recalls	
2. How do contextual factors influence the use of writing strategies among EFL Saudi writers?	16 participants	Semi-structured interviews	Audio recordings
3. How do textual factors influence the use of writing strategies among EFL Saudi writers?	16 participants	Semi-structured interviews	Audio recordings
	4 proficient writers and 4 less-proficient writers	Writing strategies logs	Writing strategies logs
	4 proficient writers and 4 less-proficient writers	Reflective diaries prompts	Reflective diaries prompts
	4 proficient writers and 4 less-proficient writers	Writing samples	Writing samples

3.3   Research Paradigm

The philosophical stance of this research is grounded in the interpretive paradigm, which focuses on the experiences of people and the subjective meanings that they place on the world around them (Bryman, 2008). The idea at the centre of interpretivism is that reality is a social construct; therefore, everyone's reality is different, and an individual's reality can only be understood by examining the world from their perspective (Creswell, 2013; Denzin & Lincoln, 2018). Unlike positivist approaches, which seek objective, measurable outcomes (Alharahsheh & Pius,2020), interpretivism allows for a deeper exploration of individual experiences and how participants construct meaning (Denzin et al., 2024), in this case in their writing practices. An interpretive qualitative research paradigm was therefore deemed to be the most suitable for this study on Saudi writers' strategies for writing. Furthermore, with this approach, the researcher is immersed in the study context, placing them in a strong position to comprehend the processes and strategies that students use to mediate their writing activities (Bryman, 2016).

Another reason why the interpretive paradigm is appropriate for this study is that it highlights the fact that individuals' experiences and the subjective meanings they assign to their reality can only be fully understood when examined in their particular context (Lincoln and Guba, 1985). In this study, where the phenomenon under examination is EFL writing strategies, the researcher must delve into the writing experiences of the participants to understand how they navigate and perceive the challenges of writing in a second language, i.e., English. These experiences will naturally differ between participants and their contexts. This focus will also support the identification of the strategies employed by proficient and less-proficient writers to manage their cognitive load and how these strategies differ.

An interpretive paradigm will also allow the researcher to perceive how writing strategies can be affected by textual and contextual factors. The latter can constitute the writer's learning history, their culture, and the educational environment. These factors are significant because knowledge is derived from each person's context, and the use of interpretivism facilitates the investigation of the dynamic relationships between people and their environments (Thomas, 2013). Textual factors constitute features of discourse, linguistic structures, and genres. These are employed by writers and are, in turn, affected by the sociocultural context (Hyland, 2019). Using an interpretive approach, the researcher will be able to gain an understanding of how writers, both proficient and less-proficient, are affected by these factors and how they manage all these influences when creating written text.

Furthermore, since qualitative research is flexible in the methods used to collect data (Gray, 2018), the researcher can use various research tools to enhance understanding of the research phenomenon.

3.4   Research Design

Research design is highly influenced by the epistemological stance and philosophical assumptions adopted by the researcher (Gray, 2018). The nature of this study is to investigate writing strategies from the participants' perspective, and their interactions with sociocultural affordances. Thus, adopting a qualitative interpretative approach will allow the researcher to gain an in-depth understanding of these different aspects of the participants' experiences and beliefs. The exploratory nature of this study is also consistent with the primary objective of qualitative research, which is to gain a comprehensive understanding of phenomena and to develop new insights or theories based on participants' experiences (Gray, 2018; Patton, 2015).

Qualitative inquiry is particularly effective when examining human experiences, behaviours, and socially constructed phenomena, which are context dependent (Creswell & Poth, 2016; Merriam & Tisdell, 2016). This research reconceptualised writing as a sociocognitive activity achieved through interaction with sociocultural affordances and influenced by social context. Qualitative research is a "situated activity that locates the observer in the world. It consists of a set of interpretive material practices that make the world visible" (Denzin & Lincoln, 2000, p. 3) and provides an in-depth, comprehensive understanding of meanings, actions, observable and non-observable phenomena, attitudes and behaviours (Gonzales et al., 2008). In addition, it allows the participants to express themselves and explore issues beneath the surface of their behaviours (Cohen et al., 2018). It also helps to gain an inside view and 'understand a contemporary social phenomenon in depth and within its real-life context' (Yin, 2015, p. 18).

The qualitative approach employs various data collection methods, such as interviews, observation, diary entries, open-response questionnaire items, verbal reports, field notes, and discourse analysis. Each method 'makes the world visible in a different way' (Denzin & Lincoln, 2005, p.4) so a complete, richer picture can be investigated and represented. The data that could be gathered from these methods contributes to providing 'a thick description' (Gray, 2018, p.173). Qualitative methods such as semi-structured interviews, stimulated recalls, and writing texts facilitate the comprehension of EFL learners' writing processes and their utilisation of strategies (Sasaki, 2000).

As understanding the contextual factors was one of the objectives of this research, the use of interviews aided the study and interpretation of the context in which the phenomena occur. The interviews with participants in their natural settings provided rich data about different social factors that contributed to their writing difficulties and influenced their use of writing strategies. This allowed for a more comprehensive and authentic understanding of the phenomenon and highlighted its sociocultural context because the researcher engaged directly with the subjects (Rossman & Rallis, 2003). Qualitative research adopts an "emic perspective" by seeking to "interpret phenomena in

terms of the meanings people attach to them"(Mackey & Gass, 2005, p.163). Developing an emic viewpoint typically involves being 'in the field, face to face with real people' (Rossman & Rallis, 2003, p.9) and using the participants' language and concepts to analyse data and present findings.

In addition, the texts generated from interview scripts, logs, and diaries helped me better understand the students' lived experiences, reported writing practices and strategies, and common writing difficulties. Silva (1993) claimed that employing qualitative methods in L2 writing research facilitates the identification of significant differences between the composition processes and characteristics of written text, thus augmenting the comprehension of L2 writing.

The following section outlines the research instruments and the data collection procedures.

3.5 Data Collection Instruments and Procedures

Evidence can come from different sources in qualitative research, and using a wide variety of data sources is viewed as complementary (Cohen et al., 2018). This study utilised multiple sources to obtain a chain of evidence and triangulate the data, namely, semi-structured interviews, writing strategies logs, diaries, stimulated recall, and writing texts. Each one of the data instruments is described in the following subsections.

3.5.1 Semi-structured Interviews

In applied linguistic research, interviews serve as a tool for researchers to collect information about attitudes, opinions, feelings, and experiences. Gray (2018) suggests that interviews can be a highly effective tool for exploratory research, as they give participants the opportunity to reflect on events and experiences more freely without the pressure of writing or responding to rigidly structured questions.

The interview is one of the most popular research methods and an essential source of information in qualitative research (Mason, 2018). Qualitative research often uses interviews because "researchers can learn what they cannot see and explore alternative explanations of what they do see" (Glesne, 1999, p. 69). Yin (2009) identifies three types of interviews. The first is an 'in-depth interview', where the researcher conducts interviews more than once to gain an in-depth understanding. The second type is 'a focused interview', which requires the researcher to interview for a short time, for example, one hour, to confirm specific facts already identified. The third type is a 'formal survey' interview, which allows the researcher to ask more structured questions. This study used semi-structured, in-depth/focused interviews to learn about EFL writing strategies, English language experiences and writing goals. The semi-structured interview format is preferred because it gives the researcher

flexibility regarding the order of questions and follow-up probes to clear any misunderstandings or go more in-depth if needed (Cohen et al., 2018). In-depth interviews were considered necessary in this study as they collected information about the context in which the participants lived, told narrative stories, and hence gathered background information and details of the experiences that influenced the participants' stories (Wengraf, 2001).

Thus, in writing research, interviews are used widely to learn about writing issues such as rhetorical choices, writing difficulties and attitudes (Hyland, 2016). Researchers such as Casanave (2005) and Hyland (2016) confirm that participants' experiences, stories, and narratives have an essential role in L2 writing research. The nature of the interview allows the participants to elaborate in conversation and share their views, experiences, and stories. Therefore, these narratives of students' writing enable researchers to have a "deep understanding of students' knowledge, decision processes, and affective states that can only be hinted at from non-narrative data" (Casanave, 2005, p. 25).

Interviews are a valuable tool in qualitative research, enabling researchers to gather in-depth information by prompting discussion and clarification (Rose et al., 2020). However, their success depends on factors such as participant engagement and the research context. A key limitation is the potential for response bias and the reliance on self-reported experiences, which may not always reflect actual behaviour (Rose et al., 2020). Participants might also withhold details or present responses that do not fully align with their experiences (Grey, 2018).

To address these challenges, several measures were implemented in this study. Conducting interviews online allowed the participants to select a convenient time and platform, ensuring that they felt comfortable and able to engage openly. Follow-up questions and probing techniques were used to encourage the participants to elaborate on their responses and provide any necessary clarification. Additionally, multiple data collection methods were incorporated to enable triangulation, enhancing data reliability and minimising self-report bias. This approach aligns with Gray's (2018) recommendation to complement interviews with additional methods for more robust findings. Despite these limitations, interviews remain a widely used qualitative research method due to their capacity to capture rich, detailed participant insights.

Preliminary interviews were conducted to collect essential information such as the participants' background information and learning experiences, which later informed the follow-up interviews (Rose et al., 2020). I designed questions in line with the research inquiry (see Appendix A) to elicit information to answer the research questions. The interview questions prompt served as a guide to facilitate the transitions between one area to another and as a checklist to ensure that major themes were covered. The participants' interviews were recorded, transcribed and analysed qualitatively. In addition, the transcripts were analysed immediately in case the early results necessitated changing

the interview questions or interviewing other people. The interviews were conducted online; online interviews are widely accepted, and several researchers have reported their advantages. For example, Rose et al. (2020) state that online interviews can be more effective than face-to-face interviews and might yield the best results. That is because participants can feel comfortable in their local environment without the researcher's presence, increasing both the desire for participation and the rate of honest responses (ibid).

3.5.2   Journals (Diaries and Logs)

In qualitative research, the data collected from documents are essential to confirm information collected from other sources (Creswell & Creswell, 2018). One form of documents used in qualitative research is journals (Rose et al., 2020). Journals are a highly effective approach for analysing experiences, behaviours, and events in their natural setting. It provides valuable insights that cannot be obtained through many other methods (Reis & Gable, 2000). According to Rose et al. (2020), the term journal can refer to diaries and logs, which can be used interchangeably. They further classify the journal into three types. The first type is 'interval contingent journals', requiring the participants to write in their journals at a specific time and day. The second type is 'a signal contingent journal', which requires the participants to write in their journal when they are asked. The third type is 'event-contingent journals', which require the participants to write and reflect in their journals after finishing the required task (Rose et al., 2020, pp. 137-138).

In the current study, mixed types of journals were used. First, the participants were asked to reflect on important information in an event-contingent log. They were asked to record all the sociocognitive writing strategies they employed when writing texts (see Appendix B). Second, they were asked to write structured reflection diaries about the employment of these strategies (see Appendix C). Combining these types of journals (diaries and logs) enriched the understanding of the phenomenon under investigation and corroborated and enhanced the evidence provided by other sources (Yin, 2009).

In writing research, diaries and logs are tools used for introspective data elicitation (Hyland, 2016) that allows the participants to record their thoughts, actions and experiences (Dörnyei, 2007). Previous writing research has used logs, a form of writing completed by the participants, to identify the writing strategies they used or explain how they accomplished a writing task (Lei, 2008; Li, 2007). The log guidelines supported the participants in staying focused on the task and using "metalanguage" to discuss their views and experiences (Hyland, 2003a, p.258). Also, the structured reporting was guided by the researcher's prompts (Hort, 2017). In addition, logs are considered a tool for dialogue between the researcher and the participants (Hart-Davidson, 2007).

Another introspective journal method is diaries. Diaries contain personal entries where participants can reflect on and record in a narrative form all the activities involved in completing a writing task. Since diaries are less structured, they might generate conscious narrative-rich data that cannot be elicited using other forms (Ma & Oxford, 2014; Hyland, 2016). As many researchers have observed, diaries have some drawbacks, such as subjectivity and the use of retrospective data, which might be affected negatively by the memory capacities of the participants (Carson & Longhini, 2002; Oxford et al., 1996). Despite their limitations, diaries might have encouraged the participants to write reflective, honest narrative stories as they may have felt more comfortable writing about their experiences than reporting them verbally.

Writing strategies logs and diaries were utilised to reflect on and record the writing strategies. They helped the researcher to observe the differences in writing strategies between proficient and less-proficient writers and trace the development of writing strategies among the groups. The writing strategies logs and diaries were recorded electronically. Technological advancement has benefited the diary method with continuous implementation in research as it offers flexibility for collecting rich data from participants (Bartlett & Milligan, 2015). Additionally, electronic journals help participants access them from a mobile or computer at any time and to keep them confidential (Rose et al., 2020). As this study explores sociocognitive writing strategies, electronic journals were more flexible in terms of allowing the participants to access the logs and diaries to complete them whenever they were engaging in the writing activity, to log and reflect on the strategies they had employed. Training on keeping a reflective journal was provided to the research participants as this was considered a critical step for the validity of data obtained from journals.

One disadvantage of using a journal is that participants might lose motivation and quit; therefore, the researcher followed up with the participants regularly and encouraged them by explaining the benefits of keeping logs and diaries, such as improving communication skills like writing and recording one's thoughts. When designing the writing strategies logs and diaries' prompts, I considered the research's objectives to enable me to collect rich data that address the research questions. Therefore, I designed the writing strategies logs to capture the writing strategies the participants used when planning, writing and editing and the reasons for using them. The participants completed two logs after they had written two writing tasks. In addition, each participant completed one writing strategy diary entry after finishing the reflective journal writing task. I considered the potential burden on the participants if they were required to complete multiple diaries, which might affect the data quality. Furthermore, acquiring further data via a second diary might not have yielded significantly new insights beyond what was previously recorded in the logs.

The diary was designed to capture the participants' reflections on their writing process, the difficulties they encountered, and the strategies they used to overcome these challenges. To guide their reflections, the students were provided with structured prompts, including questions such as: 'What processes and aspects of writing do you find challenging when you write?' 'What strategies did you use to complete your writing?' This ensured consistency in responses while allowing flexibility in personal expression. The participants completed diary entries privately to foster honest reflections and they submitted them electronically via email to ensure confidentiality and streamline data collection.

3.5.3 Stimulated Recalls

One important source of information is data production, which is when learners report what they learn and perform in L2, also known as the introspective technique (Gass & Mackey, 2017). The term 'introspective' implies two methods for collecting data. The first method is the concurrent think-aloud protocol that happens in real time to uncover mental processes. The second method is retrospective reports/interviews, also called stimulated recall (Dörnyei, 2007). The latter is concerned with giving a verbal report after performing a task (Gass & Mackey, 2017).

The stimulated recall interview was used in the current study because it elicits less disruptive reports than the concurrent think-aloud protocol (Sasaki, 2002; Greene & Higgins, 1994). Using the stimulated recall interview method was more appropriate than the concurrent think-aloud protocol because the latter focuses on reporting the cognitive processes involved in writing, which is not the focus of the current study. In addition, this recall method elicited more detailed information and clarification about the writing strategies the participants employed and why they used them, by showing them the writing texts they had produced. These texts functioned as stimuli, allowing the participants to retrieve information and elaborate on a discussion about them (Dörnyei, 2007). Thus, stimulated recall interviews enable a rich "understanding of the relationship among texts, situational factors, and writer's constructive processes" (Greene & Higgins, 1994, pp.117-118) and help to identify patterns in the participants' writing texts and writing strategies.

Despite the merits of stimulated recall interviews in L2 research, this method also presents shortcomings. One major issue is the time between the task and the stimulated recall interview, which may affect the recall responses. For instance, Mackey and Gass (2005) suggested keeping a short time interval between the occurrence of the event and the retrospective interview. In addition, Bloom (1954) indicated that the accuracy of responses can reach 95% if the interval between the stimulated recalls and the event does not exceed two days. Thus, the stimulated recalls were conducted within two days of completing the group writing tasks in the current study. I designed

questions to probe the participants' opinions about the affordances and obstacles of group writing (see Appendix D). All the stimulated recall interviews were audio-recorded and then transcribed for analysis.

3.5.4 Writing Texts

In this study, the participants' written texts, logs, and diaries were used as document data. As Rose et al. (2020, p.198) state, documents are "influenced and defined by social, cultural and historical factors." Therefore, these texts were ideal for exploring the participants' sociocognitive writing strategies and how they interacted with sociocultural affordances, including people (teachers, friends, and family members), writing tools, and resources.

In writing research, text data are considered the main source of study material (Hyland, 2016). In this study, different text types were used for different purposes. Hyland (2016, p.119) outlined three main purposes for analysing text data; he said writing can be "descriptive (revealing what occurs), analytical (interpreting why it occurs) or critical (questioning the social relations which underlie and are reproduced by what occurs)." In this study, writing strategies logs provided descriptive data. The participants filled out the information on predetermined categories and described only certain elements such as audience, purpose and strategies. Diaries, on the other hand, were gathered for analytical and critical analysis purposes as they revealed information about the writing strategies proficient and less-proficient writers employed, and other writing reflection questions.

The written texts were collected by the researcher when the students had completed their writing. The researcher asked each participant to write two different writing genres. They wrote a reflective journal paragraph (see Appendix E) and an autobiographical paragraph (see Appendix G). After completing each writing task, they filled out the writing strategies log, and they completed their diary after completing the first writing task. All the participants emailed their written texts, writing strategy logs, and diaries to the researcher, and they were sent a follow-up email if they had missed out any information.

The choice of autobiographical writing and reflective journals supports the study's ecological validity by reflecting the participants' real-world learning environments and is consistent with its goal of comprehending students' writing strategies. According to research, these genres are well known for promoting metacognitive awareness, cognitive engagement, and self-expression in EFL writing instruction (Yang, 2013; Chen, 2022). They are useful instruments for analysing writing behaviours because they allow students to express their writing processes in a natural and unhindered way.

The study participants were still developing their general English proficiency because they were enrolled in a preparatory-year English programme. Since data collection occurred during the second semester, when reflective journals were introduced, this writing task offered a familiar and pertinent framework for analysing the students' writing strategies. By emphasising meaning-making over strict linguistic accuracy, reflective writing has been demonstrated to promote self-regulation and strategic awareness, aiding students in gaining fluency and coherence (Amalia et al., 2024). In order to investigate how personal expression affects the use of writing strategies, autobiographical writing was incorporated into this study, even though it was not a formal requirement. This genre is essential to the development of students' language identity because it helps them relate language learning to personal experiences, which improves their capacity for meaningful English expression (Yang, 2013).

By ensuring that the writing tasks represent real academic experiences, the use of these genres also supports ecological validity. Students' writing requirements become more specialised and discipline-specific as they move into English for Medical Purposes (EMP) in the third semester. However, rather than using specialised academic writing, the participants were still using general English at the time of data collection. An authentic representation of their writing strategies that matched their real learning environment was thus made possible by the use of reflective journals and autobiographical writing. While these tasks effectively capture students' general English writing strategies, they may not fully reflect the complexities of EMP writing. To obtain a more comprehensive understanding of writing development in various academic contexts, future studies could examine how students modify their strategies to medical genres, such as case reports or patient histories.

The following section presents the pilot study report.

3.6   Pilot Study

This section outlines the procedures for conducting the pilot study and administering the semi-structured interviews, writing strategies logs, and writing strategies diaries.

The pilot study was conducted in the Autumn Semester of 2022 at a College of Medicine, to test the semi-interview questions, writing strategies logs, and writing strategies diaries. There were two main objectives for the pilot study:

1.   To conduct a preliminary investigation of the research setting to assess the study's feasibility and refine the research questions and the study's design.

2.   To assess the research instruments in terms of their feasibility and capability of gathering relevant data.

The selection of pilot study participants was based on their performance in the final writing exam from the previous semester and the evaluation of their classroom performance by their writing teacher. Since the pilot study aimed to evaluate the reliability of the research instruments, this methodology was appropriate. Knowing the goal of the study, the teacher was asked to use explicit instructions centred on grammar, coherence, organisation, and idea development to identify students with different writing skills. In order to verify the validity of the research instruments, students with intermediate to upper-intermediate writing skills were chosen.

Throughout the selection process, ethical considerations were carefully taken into account. The teacher received training on the ethical significance of remaining impartial, refraining from discussing the writing proficiency level of the students, and making sure the selection procedure was unbiased. Students gave their independent informed consent, and participation was completely voluntary. Students were fully informed that their participation would have no impact on their academic standing to address any potential ethical concerns. To protect students' privacy and prevent any potential discomfort, the teacher's role was restricted to participant identification, and the selection process was kept confidential.

The semi-structured interviews were conducted with one English language teacher and four female students. It was completed online using Microsoft Teams. First, I emailed the teacher and sent all the documents, including the Participant's Information Sheet and consent forms, in English and Arabic. In the email, I thoroughly explained the nature of the study and invited the teacher to attend an interview. I received the acceptance, and we agreed on the date and the time. The main purpose of interviewing the teacher was to understand the types of writing the students did, the writing difficulties they faced, and the writing strategies they students used. This stage was crucial as it gave me an in-depth understanding of the issues related to L2 writing. This helped review and develop the interview questions with the students.

The semi-structured interviews were piloted with students to test the instruments and gather initial data about their learning writing experience, the difficulties they faced when writing, the strategies they used, and their attitudes towards English writing classes. The interview questions were easy to understand and they engaged the participants, encouraging them to elaborate more on their answers. The one-to-one semi-structured interview with the teacher and the students lasted 40 to 50 minutes. Some of the interview questions were repetitive and did not elicit new information, therefore I deleted some and added other questions.

Regarding the writing strategies logs and writing strategies diaries, these two instruments were piloted to examine their feasibility and validity for the required data. The pilot participants completed the logs and diaries after completing their homework and writing for their writing class. In logs and

diaries, they had the opportunity to share thoughts and any other issues they could not remember or think about during the interview. After they had completed the logs and diaries, they emailed them to me. They were asked for their opinion regarding the questions in the logs and diaries and if there were any repetitive or ambiguous questions. All the participants agreed that all the questions were straightforward, and some were mentioned in the interview.

The data collection procedures in the pilot study started by creating a WhatsApp group and building a friendly atmosphere and rapport with the research participants. The WhatsApp group utilised in this study was established purely for practical reasons, like communicating general updates, giving directions, and guaranteeing effective communication throughout the pilot process. Since they had previously communicated in an established academic WhatsApp group, all the participants knew one another.

The participants were told to message me privately for personal matters, like choosing interview times or voicing concerns, in order to protect their privacy and confidentiality. They were reminded of their right to privacy, and there were no discussions about research or sensitive data in the group. This strategy made sure that moral principles were maintained while utilising the group for necessary administrative correspondence.

Then, I emailed the students the consent forms in Arabic (see Appendix K) and English (see Appendix L), along with the Participant's Information Sheet (see Appendix J). They were asked to read the Participant Information Sheet carefully and then to sign the consent form if they agreed to participate. At the beginning of the interview, I explained to the participants that their responses would be treated confidentially and that their names would not be used in the research. As a result, they were engaged and happy to express their opinions and ideas and ask questions. At the end of the interview, I explained to them how to complete the writing strategies logs and diaries. The interview process with the teacher and the students went smoothly.

Conducting a pilot study was helpful as it provided important insights into the research setting, research problems, and sampling. It also led to a review of the interviews, logs, and diary questions. For example, the interview with the teacher revealed that students misused some strategies, such as using Google Translate, to translate sentences and paragraphs. In addition, some participants said that because of the limited class time, they could not use more writing strategies.

Doing a pilot study informed me about the potential obstacles in sample recruitment. At the beginning of the study, six volunteers showed an interest in participating in the pilot study. However, only four out of six completed all the pilot study stages. In addition, students had some quizzes and midterm exams, so scheduling time for interviews was difficult. Because the research participants

were enrolled in medical colleges, including Medicine and Dentistry, Medical Sciences, Public Health, Pharmacology, and Nursing, their time was limited, and they were busy starting from week six or seven of the semester. Therefore, it was necessary to carefully consider the number of paragraphs, the length of the interviews, and the logs and diaries required from the participants. In addition, there could be a delay in them responding to me when they were busy preparing for midterm exams. Therefore, I needed to take into consideration all these circumstances.

I also needed to adjust the number of paragraphs needed in the study. In the main study design, I planned to ask the participants to submit four academic and four non-academic writing pieces. However, based on the pilot study, I believed that two types of writing texts would be adequate for the purposes of this research.

The following section describes the main study setting and participants.

3.7   Main Study

3.7.1   The Research Setting

This section explains the research setting, the participants, and the procedures for teaching and assessing the writing. The main study was conducted in the Spring Semester of 2022 at a university in Saudi Arabia, and the research participants were EFL students enrolled in the preparatory year (PY) at a medical college. All the participants were broadly the same age, education level, and cultural background. Their ages ranged from 18 to 20 and they had completed six years of studying in English.

The students in the PY programme study English language skills, including listening, speaking, reading and writing, to prepare them for future medical college studies. There were several reasons for choosing this research site. Firstly, I am an academic member of the English Language Centre and familiar with the teaching and assessment procedures that helped to shape the research phenomenon and identify the research problems. Secondly, I received a scholarship from the university where I worked, which facilitated all the research procedures, including obtaining permission to access the participants and obtaining research approval from the ELC administrative units. Finally, it was easier to communicate with ELC colleagues to elicit the required information to help plan for the pilot study and main study data collection. The issue of self as "a researcher", "a staff member," "an insider", and "a teacher" is discussed in Section 3.10.1.3.

This research was conducted in the second semester for several reasons. First, the students in the preparatory year are fresh high school graduates who might not have the opportunity to develop their writing strategies or become familiar with the university's learning facilities, such as accessing

electronic materials and library resources. Additionally, attending writing classes in the first semester could have helped the students to develop awareness about academic writing and the skills they would need to meet the course requirements. The current study explores students' sociocognitive writing strategies and how they interact with the sociocultural environment to develop their writing. Thus, the researcher chose the second semester to conduct the study as then the students would be more "representative" as participants, which will be discussed in the following section.

3.7.2 Participants

The participants were recruited using convenience–purposive sampling to ensure they met the research criteria and were easily accessible. Purposive sampling means that "the researcher uses his or her judgement about which respondents to choose and picks only those who best meet the purposes of the study" (Bailey, 2007, p.96). Nevertheless, convenience sampling was also a factor in selecting the participants, as individuals were selected from those who were available and accessible within the study setting. According to Lohr (2021), convenience sampling refers to the selection of participants based on ease of access, which makes recruitment more convenient, but may introduce biases that limit the generalisability of the results. In spite of these limitations, convenience sampling is widely used as a method of participant recruitment because of its efficiency, especially where access to a larger, randomised sample is not feasible (Golzar et al., 2022). In qualitative research, purposive non-probability samples are commonly used because researchers seek to gain insights into specific practices that exist in particular contexts and times (Gray, 2018). Considering the practical constraints of participant availability and university access, convenience– purposive sampling was the most appropriate approach for this study. This approach maximised the interpretation of the research phenomenon while ensuring participation from individuals who met the study's criteria (Onwuegbuzie & Collins, 2007).

In order to select the study samples, I went through different stages, as illustrated in Figure 3. First, the participants did the writing proficiency test to determine their level of writing proficiency so that they could be classified later into two groups: proficient and less-proficient writers. The number of participants who agreed to complete the test was 18. Second, they were invited to a semi-structured interview. Only 16 participants volunteered to participate in the semi-structured interviews, and eight participated in the stimulated recall sessions. Third, the participants were invited to complete the rest of the research procedures, which involved writing two paragraphs and strategy logs and diaries. Because completing all these processes require more time and effort, only ten participants agreed to participate. However, when reviewing their writing proficiency test scores, I found that four could be classified as proficient writers as their mean scores were between 83 and 90, and four were less-proficient writers as their mean scores were between 51 and 61 (see Table 2). I excluded two

participants because they had average scores of 67.67 and 80.67, to make a clear distinction between the two groups of writers (see Table 2).

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┌─────────────────────────┐
│                         │
│  Writing Proficiency Test │
│        N = 18           │
│                         │
└─────────────────────────┘

                    ┌─────────────────────────┐
         ───────▶   │  Semi-structured Interviews │
                    │        N = 16           │
                    │   Stimulated Recalls    │
                    │        N = 8            │
                    └─────────────────────────┘

                              ┌─────────────────────────┐
                   ───────▶   │  Completed all the research │
                              │ procedures (writing texts, writing │
                              │ strategies logs and diaries) │
                              │        N = 8            │
                              │   4 proficient writers  │
                              │ 4 less-proficient writers │
                              └─────────────────────────┘
```
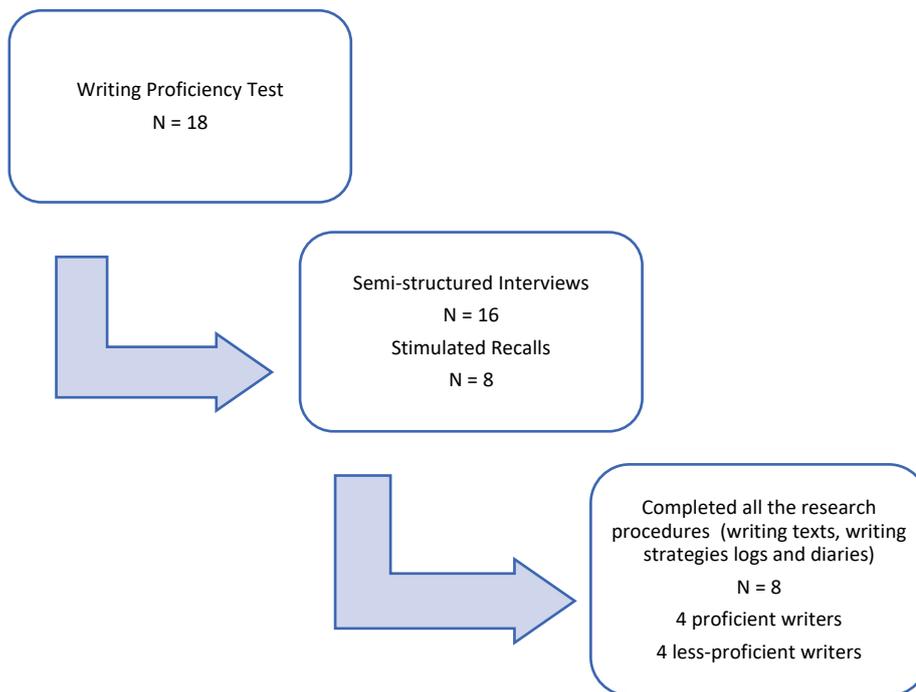
Figure 3   The Study's Sampling Procedures

The results of this study, involving 16 participants, are presented in two distinct chapters to provide a comprehensive overview of the general sociocognitive writing strategies used by Saudi EFL writers. Chapter 4 presents the results of the writing strategies employed by all 16 participants in the study, offering a detailed insight into the writing strategies of Saudi EFL writers. Chapter 5, on the other hand, focuses specifically on the differences in writing strategies between two groups: proficient and less-proficient writers. This chapter provides a detailed analysis of the writing strategies used by eight participants: four proficient writers and four less-proficient writers. The purpose of organising the results in this manner is to provide a broad understanding of the writing strategies employed by Saudi EFL writers and a detailed analysis of how these strategies differ based on the level of writing proficiency.

The following section and subsections present the method and procedures used to implement the writing proficiency test.

3.8   The Writing Proficiency Test

The classification of the participants was mainly based on the results they obtained in the writing proficiency test. This was crucial for this study, as it enabled a detailed analysis of the differences in writing strategies between proficient and less-proficient writers. McNamara (2000) noted that

language proficiency tests are used in research to examine and identify differences between individuals in a particular area, such as academic performance, communication skills, or language acquisition.

It was necessary to categorise the students as proficient or less-proficient writers in order to align with the research aim. They were second-term preparatory-year students who were still learning general English rather than academic writing or English for Specific Purposes (ESP), therefore their writing development was mostly impacted by their general English proficiency as an L2 learner rather than by specialised academic discourse. They also had little exposure to academic or disciplinary writing. Since their ability to produce accurate and meaningful written texts was closely linked to their general English proficiency rather than their advanced academic writing skills, an ESL proficiency test was the most suitable instrument for evaluating their writing abilities.

The students' writing proficiency test was marked manually using Jacob et al.'s (1981) marking criteria (see Appendix I). Their marking scheme consists of five categories, and each is weighted differently: content (30 points), organisation (20 points), vocabulary (20 points), language use (25 points), and mechanics (5 points). The total number of points is 100; each band has a specific criterion, which classifies the level of writing into four groups: very good to excellent (100–83), average to good (83–63), poor to fair (63–53), and very poor (52–34). The rationale for adopting this scoring scheme in the present study is that it covers five criteria encompassing various writing aspects. These components promote a reliable, accurate, and holistic evaluation of writing (Haswell, 2005). Tiwari (2023) stated that the Jacobs ESL Composition Profile is a reliable instrument for assessing the writing abilities of university students. It exhibits high internal consistency, and it is "one of the best-known multi-trait rubrics in ESL" (Lee et al., 2010, p. 394). This analytic scale rubric has been demonstrated to be effective, and it has been extensively employed in similar L2 writing (e.g., Havitefldt, 1986; El-Mortaji, 2001; Alhaysony, 2008; Chaaban, 2010; Elshawish, 2014).

3.8.1   Administering the Writing Proficiency Test

Before administering the writing test, I contacted the two teachers who would do the test with the research participants. I thoroughly explained the test procedures, the purpose of the study, and the value of their participation in my research, specifically in helping to improve the writing curriculum and their writing practices. In addition, the confidentiality of all the research stages and the assurance that the collected data would not influence the students' academic performance and assessments, or be shared data with their teachers, were emphasised. This step was crucial because writing can be overwhelming for EFL students, especially during tests due to the limited time given to perform the writing task and the absence of writing resources and tools, which might hinder their ability to write effectively and demand more cognitive effort.

 All students who volunteered to do the test read the Participants' Information Sheet (see Appendix J), which included detailed explanations of the nature of the study, data collection procedures and their rights, including an assurance of confidentiality and the right to withdraw from the study at any time. All the students' questions were answered. After that, the students signed a consent form, which was written in Arabic (see Appendix K) and in English (see Appendix L).

The genre for the writing paragraph test was argumentative. The rationale for choosing this genre was that it was suitable for eliciting significant differences in the quality of writing and engaging students in complex cognitive skills such as analysing, critical thinking, and reasoning (Hu & Saleem, 2023; Wu, 2021). The participants wrote around 150 words about a controversial topic (Having three semesters in one academic year is helpful. To what extent do you agree or disagree?). This topic was chosen because there was much debate on this subject among teachers and students, so it was expected to provoke many arguments from the students' side. The students were invited to write their opinions and provide relevant examples (see Appendix M for a sample of a participant's writing test). All the participants performed the test under exam conditions. The controlled exam setting ensured that students were classified as proficient or less-proficient writers objectively and reliably, to permit precise comparisons and insights into the ways in which writing proficiency levels influenced the use of strategies in real-life contexts.

3.8.2   Scoring the Writing Proficiency Test

In order to adhere to the ethical considerations of this study, I ensured that the participants' information was kept confidential. Each student was allocated a pseudonym to differentiate between all the participants. Two English language lecturers acted as raters, alongside myself, and they were selected because they had similar qualifications and teaching experience to myself, having taught at the university for over seven years. I ensured that they understood the rubric and marking procedures, and I answered any questions they raised. The first writing sample was marked collaboratively to ensure an understanding of the marking rubric and consistency in applying the scoring criteria. This initial coordination helped clarify any ambiguity and ensured scoring reliability. After this step, the two raters and I marked the writing test independently.

After marking the first three writing samples, the scores were compared to ensure consistency in scoring. Since the differences in total scores were minimal, we proceeded with marking the rest of the tests. After finalising the marking process, the raters shared their scores, which were reviewed, and the mean scores were calculated. Table 2 presents the scores assigned by the researcher and the two raters for each of the 18 participants in the writing proficiency test.

Table 2   Writing Proficiency Test Scores for all Participants

Participants	Score			Mean Score	Level of Proficiency
	Researcher	**Rater 1**	**Rater 2**		
Eiman	85	82	83	83.33	Proficient
Marya	83	87	84	84.67	Proficient
Jana	87	83	85	85	Proficient
Sara	84	87	83	84.67	Proficient
Maha	90	89	92	90.33	Proficient
Nada	85	85	87	85.66	Proficient
Leen	83	83	84	83.33	Proficient
Rahaf	84	86	82	84	Proficient
Jazi	52	56	53	53.67	Less-proficient
Tahani	63	62	64	63	Less-proficient
Alla	63	62	60	61.67	Less-proficient
Mashael	52	54	53	53	Less-proficient
Hala	52	57	54	54.33	Less-proficient
Rima	49	51	54	51.33	Less-proficient
Hiba	58	56	54	56	Less-proficient
Rana	50	53	51	51.33	Less-proficient
Farah	69	66	68	67.67	Discarded
Afnan	82	79	81	80.67	Discarded

3.8.3   Classifying Proficient and Less-proficient Writers

The main reason for conducting the writing test was to identify the participants' level of writing proficiency, which was an important linguistic factor to identify and consider in order to explore its influence on writing strategies. In this study, following Jacobs et al.'s (1981) approach, I made a clear distinction between the proficient and less-proficient groups. I considered students with scores of 83–100 to be proficient and those with scores of 50–62 to be less-proficient. I excluded the average group (63-82) to make a clear distinction and to maximise the differences between these groups by establishing clear boundaries between them. The participants' writing scores ranged from 49 to 90, further justifying the score range for the less-proficient writers. The ethical issue of categorising students as less-proficient writers, which might impact their motivation and self-image, will be discussed in Section 3.11.

The total number of participants who agreed to do the test was 18. However, only ten agreed to complete all the research procedures, including the writing tests, writing strategies logs, and diaries. Two participants were excluded as they obtained average scores (see Table 2), which might impact the classification purposes and affect the results' validity. To guarantee a clear separation between the two main groups—proficient and less-proficient writers—two participants who scored in the middle range (63–83) were eliminated. This choice might have made it more difficult for the study to document the steady improvement in writing skills. The exclusion of mid-range writers may have ignored subtle differences in their writing strategies because writing ability develops along a continuum rather than in clearly defined categories. However, it was essential to keep separate proficiency groups in order to guarantee a targeted analysis and avoid any overlaps that might obscure group differences. Table 3 shows the number of the selected participants, their mean scores, and their level of writing proficiency.

Table 3   Details and Writing Proficiency Test Scores for Participants Who Completed All Research Procedures

Participants	Score			Mean Score	Level of Proficiency
	Researcher	Rater 1	Rater 2		
Sara	84	87	83	84.67	Proficient
Maha	90	89	92	90.33	Proficient
Nada	85	85	87	85.66	Proficient

Leen	83	83	84	83.33	Proficient
Jazi	52	56	53	53.67	Less-proficient
Alla	63	62	60	61.67	Less-proficient
Rima	49	51	54	51.33	Less-proficient
Rana	50	53	51	51.33	Less-proficient

3.9   Data Analysis Procedures and Reflections

In the following sections, I outline my analytical processes and procedures, beginning with preparing, organising, transcribing, and translating the data. Next, I discuss the method of data analysis, including choosing the software and method of analysis. I then explain the six phases of data analysis I undertook, along with my reflections on each phase.

3.9.1   Data Preparation

1.   I transcribed all the audio recordings of the semi-structured interviews and stimulated recalls. The transcription process took time, although I used the software Transkriptor to facilitate the process. While transcribing the interviews, I carefully listened to the audio recording and wrote down any missing words the software could not identify. I also checked the accuracy of the transcribed texts again after I had finished listening and reading the transcribed texts. I did this process for all the audio-recorded interviews. In addition, I saved all the original transcribed files in a folder and kept a folder with copies of the original data, to avoid accidentally changing them. After finishing the transcription process, I shared five random scripts with the participants to validate the findings (see Section 3.10.1.2) and check whether their ideas had changed, or they wanted to contribute more. I received confirmation from the participants that the transcripts accurately reflected their ideas and perspectives.

2.   I started the translation process. I translated the transcripts to English to allow my supervisors, who cannot read Arabic, to provide me with valuable feedback on my coding processes. Not limiting myself to asking Arabic speakers to review my coding data increased the trustworthiness of the data. Besides, my research does not focus on feelings and emotions; if it did, the participants' language would need to be kept the same to convey their exact feelings and meaning. After I had

translated all the transcripts, I double-checked the translations by listening again to the audio recordings and asking the Arabic–English translator to check the accuracy of the translated transcripts by selecting some at random and comparing them with the Arabic transcripts. No differences were found between the two versions of transcripts.

3.9.2 Choosing Data Analysis Software

I used MAXQDA software to analyse my data because it is accessible, easy to use, and supports key features for qualitative analysis. MAXQDA allows immediate interpretations to be added to data segments, patterns to be identified across data, and themes to be organised systematically and efficiently, making it an ideal choice for my research needs (see Appendix N for a sample of the MAXQDA data analysis). Using MAXQDA in the thematic analysis method maximises the flexibility, iteration, and transparency of the qualitative analysis process, as everything is connected (Gizzi & Rädiker, 2021).

3.9.3 Choosing the Method of Analysis

Given the abductive nature of my study, reflexive thematic analysis was the most appropriate analytical approach to utilise. My research was primarily driven by a theoretical framework, but I sought an analytical procedure that could capture inductive, data-driven insights effectively. During the process of reflexive thematic analysis, I achieved this by engaging in deductive coding based on my theoretical perspectives, and in inductive coding to identify unexpected themes within the data (Braun & Clark, 2021). Furthermore, reflexive thematic analysis fitted my interpretive, naturalistic paradigm, which placed a high value on participants' subjective meaning-making and aligned with my epistemological perspective. It offered a systematic and introspective methodology that required me to examine how my preconceptions and positionality may have influenced the analytical process.

3.9.4 The Six Phases of Reflexive Thematic Analysis

3.9.4.1 Familiarisation Process

During this stage, I read and reread the transcribed texts to familiarise myself with the data and develop a deep understanding and knowledge of the dataset. Braun and Clarke (2021) call this 'immersion'. Then, I listened to the audio recordings of the interviews while reading, to keep myself active and critically engaged. Finally, I listened to several paragraphs, read them, and asked questions to make meaning from the data. This was a critical stage as it involved understanding and making connections between the datasets, research questions, and theoretical concepts of my research. While reading, I wrote down my familiarisation notes that covered my ideas about the dataset's

underlying meaning, which helped me initially capture possible codes. At this stage, I was involved in the process of familiarisation through closeness and familiarity (immersion) and distance (critical engagement), as suggested by Braun and Clarke (2021). Critical engagement required me to sit back and critically examine the phenomenon from an outsider's perspective. This incorporated critically questioning assumptions, monitoring bias, and being aware of preconceived notions.

3.9.4.2   Coding

For the coding process, I listened to the interviews and read the data. I also used the notes I had taken during the familiarisation process to facilitate understanding the underlying meaning of the data segment. I found that listening to parts of transcripts before coding helped me engage closely with the data and generate codes that reflected the intended meaning. During my initial coding process, I wrote my explanations and initial interpretations of the data segments in memos attached directly to the coded data. This recorded my emerging ideas during all the stages of data analysis (Hennink et al., 2020). The first reading of the data is crucial as it captures feelings, issues, and impressions (Miles et al., 2014). Writing immediate interpretations helped to activate my analytical sense. It also enabled me to make an immediate connection between the codes and the research questions I was investigating, as well as allowing me to analyse the data critically by linking my earlier observations and interpretations. Braun and Clarke (2021) explain that systematic coding and deep engagement with data are essential for in-depth insights and rigorous analysis.

In this research, the data analysis process followed an abductive approach, which combined both deductive and inductive reasoning. The coding system was primarily theory-driven, as I utilised the theoretical framework and concepts of the research as a lens to guide the initial coding and analysis of the data. I developed codes based on theoretical and conceptual ideas to ensure alignment with the research questions and objectives (see Section 4.2 for examples). However, during the coding process, I also engaged in an inductive coding approach, often referred to as quasi-deductive coding (Jaspal & Cinnirella, 2012). In instances such as 'classroom writing strategies' and 'home writing strategies,' I encountered data that did not fit into predefined codes. These data provided additional insights that could enhance and support my research. I created new codes inductively for these segments, allowing me to explore their relevance to my research questions and objectives during the later stages of analysis.

As an example of the initial coding phase related to RQ1: How do proficient and less-proficient EFL students mediate their writing processes?, the participants' responses were carefully examined to identify key writing mediation strategies. For instance, one participant stated, "I use a program that shows if I am plagiarising or not," which was coded as "Plagiarism Checker." Another participant mentioned, "I edit my paragraph using Grammarly and ask my older sister for her feedback," leading

to the codes "Grammarly" and "Informal Peer Interaction." Similarly, a participant described their idea-generation strategy by saying, "I brainstorm using mind map strategies to generate ideas," which was coded under "Mind Map." These examples illustrate how initial codes were assigned to capture various tools, social interactions, and cognitive strategies that students used during their writing process, providing insight into the different ways proficient and less-proficient writers mediated their writing.

Coding is iterative (Cohen et al., 2018). As the analysis progressed, I refined and improved the codes to better capture the complexity and nuances of the data. I also revised and revisited the codes as new insights emerged. Although refining the codes took time and slowed down the analysis process, it enriched my understanding of the data through critical thinking and continuous engagement, which led to the development of more nuanced interpretations of the data.

3.9.4.3   Generating Initial Themes

During this stage, I carefully read all the codes generated in the previous stage to explore the similarities and connections. I began thinking of each code and its relationship with other codes. I started by grouping codes based on conceptual or idea similarities. All these clustered codes were connected into candidate themes (Braun & Clarke, 2021). A candidate theme is an initial clustering of codes, which is a prospective theme that necessitates additional investigation before being deemed a more established theme (Braun & Clarke, 2021). I generated provisional themes that aligned with the overarching concepts of my theoretical framework. I aimed to ensure that the themes encapsulated the fundamental constructs under investigation and represented the key concepts the analysis aimed to explore.

As part of the process of analysing the coded data, initial themes were generated to identify emerging patterns in how students mediated their writing processes. For instance, the codes "Plagiarism Checker" and "Grammarly" were initially grouped under "Technology Mediation Tools" as they represented external digital resources that students relied on to support their writing. Similarly, the code "Informal Peer Interaction" was categorised under "Social Strategies" to reflect the ways students sought assistance from peers or family members. Additionally, the code "Mind Map" was placed under "Cognitive Planning Strategies," as it aligned with students' efforts to organise their ideas before writing. These initial themes provided a preliminary framework for understanding the different mediation strategies students used in their writing before further refinement and thematic development.

 I continuously refined and revised the candidate themes as I progressed through the analysis. This determined whether each theme captured the fundamental nature of the coded data, corresponded with the theoretical framework and addressed the research questions. MAXQDA helped me to split,

merge, and move codes from one theme to another. In addition, it helped me to rename the themes to ensure they accurately represented the data.

3.9.4.4   Developing and reviewing themes

I undertook a thorough evaluation of the themes identified up to this stage. This required a comprehensive analysis to review the feasibility of the initial grouping and validate the candidate themes (Braun & Clarke, 2021). This was done by confirming that they precisely represented the core of the coded data and corresponded with the deductive coding framework built according to existing theories.

I carefully analysed each theme during this phase to determine its conceptual coherence and significance. I evaluated how well the themes captured and represented the basic concepts, patterns, and ideas found in the data. This ensured that the themes were based on facts and accurately captured the subtleties of the dataset. Data can be displayed in different forms, such as charts, graphs, matrices, and networks (Miles et al., 2014). Good data display can increase the validity of the analysis and facilitate the drawing of conclusions and verification (Miles & Huberman, 1994). In this research, the themes are presented in figures structured hierarchically to explain the interrelationship between the themes and subthemes and provide a snapshot of the themes that answer each research question (e.g., see Figure 4).

As part of the iterative process of theme development, the initial themes were further refined and reviewed to ensure conceptual clarity and consistency. During this process, overlapping or closely related themes were merged, and the final thematic framework was established. For example, the initial theme "Technology Mediation Tools" was broadened and renamed "Sociocultural Interactional Tools and Materials" to encompass both digital and non-digital external resources that support students' writing. Likewise, "Social Strategies" was refined into "Social Interactional Strategies" to better represent various forms of interpersonal support, including peer and teacher feedback. Similarly, "Cognitive Planning Strategies" was expanded into "Cognitive Interactional Tools Strategies" to account for a wider range of metacognitive and cognitive approaches students used in their writing. Through this refinement, three overarching themes were finalised, providing a structured framework for understanding the different ways students mediate their writing processes.

This phase is a crucial checkpoint step in the analysis process (Braun & Clarke, 2021). It ensures that the themes developed are conceptually meaningful, theoretically applicable, and based on empirical data. This rigorous review enhances the credibility and reliability of the results and improves the overall quality of the study findings. During this phase, I shared my initial themes and interpretations with my peers as a process of expert checking (see Section 3.10.1.2). This raised some questions

about the accuracy and relevance of my themes to my research aims. I used the feedback to refine the themes in the following stage.

3.9.4.5   Refining, defining and naming themes

The process of refining, defining, and naming themes was conducted using an abductive method. While refining the analytic argument, I mainly focused on writing theme definitions. These definitions were concise summaries of each theme's scope, boundaries, and central idea. During this process, I thoroughly evaluated each theme to ensure that it aligned with the deductive coding framework and the theoretical framework. As a guideline for writing the definition of each theme, Braun and Clarke (2021, p.155) suggest considering the following: (1) What the theme is about (central organising concept); (2) What the boundary of the theme is; (3) What is unique and specific to each theme; and (4) What each theme contributes to the overall analysis. As part of this process, theme names were selected in order to ensure their appropriate representation of the study and to engage the reader actively. For example, the theme 'Writing Difficulties' developed in the previous phase was refined to include further sub-themes 'Academic Writing Skill Difficulties at Sentence Level' and 'Academic Writing Skill Difficulties at Sentence and Discourse Level'. In addition to improving the analysis, this step facilitated the preparation for the final stage of writing the analysis. It ensured that the themes accurately represented the data and contributed to the overall coherence of the study findings.

I found the processes of reviewing, refining, and naming themes time-consuming as I read literature, consulted previous coding systems in previous studies, closely examined my data, and examined the relevance of the themes' names to my overall research objectives. The processes of coding and refining themes are iterative (Gray, 2022)—I continually revisited and refined codes as the analysis progressed. I also kept refining the themes when writing the data analysis chapter. As I engaged with the writing process and articulated my findings in a narrative form, I developed my analytical sense. I gained more insights that aided me in considering alternative names for the themes to capture the broader aims of the research.

3.9.4.6   Writing Up

The final phase of reflexive thematic analysis involves writing up a final report, which comprised my data analysis and discussion chapters. However, I engaged in the writing process from the second data analysis phase (coding stage). Braun and Clarke (2021) claim that writing is an integral part of the analytical process, and researchers will have engaged in several forms of writing before completing their analytical report. While coding and developing themes, I wrote around 11,000 words, including coding memos, interpretations, and reflections and these were submitted to my supervisors for review. Engaging in writing during the early stage of data analysis allowed me to capture the nuances

of the data, clarify my ideas and thoughts, and gain a comprehensive understanding of the underlying meanings of the data segments.

3.10   Measurement of Qualitative Research Quality

3.10.1   Establishing Trustworthiness

One of the fundamental foundations of qualitative research is establishing validity or trustworthiness. Validity means using reliable measurement tools and checking the extent to which the research tools measure what the researcher intends to measure (Cohen et al., 2018). To establish validity, the findings should reflect what is being investigated. Furthermore, the results and the interpretations of the data should be supported by evidence to be credible. Lincoln and Guba (1985) proposed the principles for validity in qualitative research based on the assumption that there is no absolute knowledge or one truth about the social world, which is consistent with the views of the current study. Therefore, I employed three principles following the same constructs to establish trustworthiness and credibility: (1) triangulation, (2) member checking, and (3) clarification of research bias (Lincoln and Guba, 1985).

3.10.1.1   Triangulation

Using more than one source of data collection is proven to increase the validity and establish the trustworthiness of the research results, as one piece of evidence can cross-check, complement, and validate the other evidence (Glesne, 1999; Cohen et al., 2018; Lincoln & Guba, 1985). This procedure is called triangulation. Denzin (1978) first suggested triangulation as a validation strategy. He offered four types of triangulations, among them data triangulation. This is a method for producing credible findings by synthesising data from multiple and different sources to clarify meaning and interpret the results (Stake, 2000). It entails using various data-gathering tools to obtain a multifaceted understanding of the phenomenon under investigation (Braun & Clarke, 2021). Findings or conclusions are believable and accurate if obtained from multiple sources (Yin, 2014). Collecting different sources can bridge the issues and the shortcomings of using one data source. In addition, triangulation enhances the reliability of the findings (Stavros & Westberg, 2009) and ensures data saturation (Fusch & Ness, 2015). Another type of triangulation is theory triangulation, which means "approaching data with multiple perspectives and hypothesis in mind …Various theoretical points of view could be placed side by side to assess their utility and power" (Denzin, 1978, p.297).

To increase the validity of the data, the researcher was involved in two forms of triangulation: the triangulation of data and theory. Data triangulation entailed collecting the data from the following sources: (a) semi-structured interviews, (b) writing strategy logs, (c) reflective diaries, (d) stimulated

recalls, and (e) writing texts. Using these diverse sources helped to identify patterns and themes in the data set and to accurately obtain multiple viewpoints of the participants' experiences and perspectives. The theory triangulation in this study involved using multiple cognitive and social theories to address the previously identified limitations of implementing one theoretical perspective and it provided a nuanced understanding of EFL writing strategies through consideration of the complex interaction between writer, cognition and context.

3.10.1.2   Member Checking

Member checking is a technique used to establish the trustworthiness of the results in qualitative research (Lincoln & Guba, 1985). Lincoln and Guba (1985) argued that member checking is the most critical method for establishing credibility because the research findings are shared with "stakeholding groups from whom the data are originally collected" (p.314). In the current study, member checking involved sharing the transcriptions of the audio recording data with some of the participants to validate their findings by checking that what they said accurately described what they meant (see Section 3.9.1). From the interpretive theoretical perspective, this method enabled the participants to reconstruct their views by adding new meanings or excluding data that no longer belonged to them (Birt et al., 2016). Furthermore, expert checking was performed by engaging in 'peer scrutiny of the research project' (Shenton, 2004, p. 67). Experts in a similar field were consulted to assess the methodological rigour and trustworthiness of the current research. As part of this process, research objectives, raw data, interpretation, themes, and data analysis procedures were shared with experts and peers.

3.10.1.3   Clarification of the research bias

Researcher bias often occurs in qualitative methods because the researcher is both the data collector and data analyst (Miles & Huberman, 1994). As a result, qualitative researchers may impose their own beliefs and interests on all phases of the research process, thereby dominating the participants' voices (Mason, 2002). However, the researchers could reduce the potential for bias by actively monitoring their subjectivity. This process, called reflexivity, is regarded as an essential measure to establish the trustworthiness of research (Shenton, 2004). The purpose of reflexivity is primarily to examine how the researchers' own experiences might have affected the way they conducted their research (Patnaik, 2013).

Holmes (2020) clarifies that self-reflection, and a reflexive method are crucial prerequisites and continuous processes for the researcher to find, build, criticise, and explain their positionality. Holmes (2020) and Roulston (2010) define reflexivity as researchers' conscious acknowledgement of themselves concerning knowledge production. In this research, I was aware of 'myself' as having

different identities /positions as "a researcher", "an insider", "a staff member", "a teacher", and "a "scholarship beneficiary". These multiple identities and positions might have presented advantages and disadvantages when I was collecting and interpreting the data. For example, familiarity with the research culture, context, and participants might have positively influenced how I interpreted the data by providing culturally and contextually informed interpretations. The disadvantage of having multiple identities is that the researcher might approach the data with biases for specific experiences.

Researchers need to be aware of the differences existing in the social world and to not allow the inner self to obscure reality. Therefore, to ensure the objectivity of the data and reduce the potential bias, I used a reflective journal to write personal reflections, feelings, attitudes and difficulties (see Appendix O). Braun and Clark (2021) argue that the key tool for reflexive thematic analysis is researcher subjectivity, as knowledge formation is inherently subjective and contextual. They also add that subjectivity is "the fuel that drives the engine, and reflexive TA does not happen without it" (Braun & Clark, 2021, p. 12). Subjectivity should be considered a valuable resource for conducting analysis rather than a problem that needs to be managed or eliminated (Gough & Madill, 2012). However, awareness of one's subjectivity and biases are essential to conducting a balanced and thorough analysis that considers alternative perspectives. Lincoln and Guba (1985) claimed that the consciousness of the self is one of the crucial tenets of qualitative inquiry. The rationale of writing reflecting journals is to monitor subjectivity and ensure that all the interpretations throughout the research process are not affected by personal views or bias. Monitoring subjectivity, as noted by Glesne (1999), helps "the researchers increase their awareness of its virtuous capacity" (p. 109).

3.11   Ethics Consideration and Participants' Rights

Prior to data collection, ethical approval was acquired from the University of Southampton in accordance with institutional protocols, such as the Ethics and Research Governance Online (ERGO) system, which guarantees adherence to ethical research principles that prioritise objectivity, honesty, and integrity (Resnik, 2020). This was done in accordance with institutional protocols for research involving human subjects.

As discussed above, I held several positions at the study institution, but I had no previous relationship with the participants that could have created familiarity or bias because I had been away from the university for three years prior to data collection. In order to reduce any perceived pressure to participate, the study adhered to BERA (2018) guidelines, acknowledging the possibility of power dynamics in research. Participants received clear assurances that participation was completely voluntary, that their information would be kept private, and that they could stop at any moment. Additionally, they were told that their names would be anonymised in all reports and publications and

that their answers would not be shared with anyone outside the research team. Protecting participant privacy is a basic ethical duty, as BERA (2018) emphasises, and every effort was made to ensure confidentiality. Additionally, as lecturers were not able to access the research data, participation had no effect on academic performance. These steps guaranteed a morally sound study setting where participants could express themselves without fear of repercussions.

To ensure that no participant felt disadvantaged, the research instruments were the same for both groups, despite the participants being divided into proficient and less-proficient writers. Hennink et al. (2020) acknowledge the significance of ethical engagement and stress the need to protect participant anonymity and highlight the worth of their contributions. As a result, participants received assurances that their participation was valuable and that their perspectives would advance knowledge of EFL writing strategies.

Additionally, BERA (2018) emphasises how crucial transparency is in educational research, especially with regard to participant rights, data handling, and consent. By making sure that participants had complete control over their participation and understood how their data would be used, the study complied with these guidelines.

The study complied with strict ethical research standards and was in line with the BERA (2018) principles by incorporating both procedural ethics (formal ethical approvals, informed consent, and data security) and ethics in practice (power dynamics, anonymity, and voluntary participation). Throughout the study, these steps made sure that participants' rights were respected, their contributions were handled ethically, and they were treated with dignity.

3.12   Summary

This chapter provided a comprehensive description of the research design and methodology used in this study. First, it introduced the research questions and presented the research paradigm best suited to the study. The rationale for choosing a qualitative research design was discussed and justified. Next, the chapter explained the research instruments and procedures for collecting data. Following this, an overview of the pilot study was presented. The main study was then described, including the research setting and participants. The process of implementing and scoring the writing test was described. The chapter also provided a detailed description of and reflection on the data analysis processes. Finally, the ethical considerations related to this study were discussed. The following chapter offers a detailed analysis of the sociocognitive writing strategies utilised by EFL students and the contextual and textual factors influencing their implementation.

Chapter 4   Results

4.1   Introduction

This chapter presents the analysis of four research instruments structured and employed to answer three main research questions. The chapter discusses the findings for each research question, followed by a general summary and conclusion. The themes and subthemes are organised based on their relation to each research question, and they are presented in separate sections. The study's main aim was to investigate the sociocognitive writing strategies used by EFL proficient and less-proficient medical students. In addition, the study sought to: (a) provide an understanding of how EFL writers mediate their cognitive load during the writing; (b) explain the similarities and the differences between the sociocognitive writing strategies employed by proficient and less-proficient writers; and (c) explain the influence of sociocognitive factors on the use of writing strategies by the two groups of writers.

After coding and analysing the data, the following writing strategies were identified based on the participants' responses. These strategies were grouped into three overarching categories: Cognitive, Sociocultural, and Social Interactional Strategies. Table 4 presents each writing strategy, its definition, and examples from the data.

Table 4   Writing Strategies Identified from Data Analysis with Definitions and Examples

Writing Strategy	Definition	Example from Data
Cognitive Planning Strategies	The use of cognitive techniques to plan writing, including brainstorming, outlining, and organising ideas before writing.	Mind maps, outlines, listing key points before writing
Cognitive Writing Strategies	The cognitive processes students engage in while composing their text, such as focusing on coherence, structuring arguments, or managing sentence flow.	Using pen and paper
Cognitive Editing Strategies	The cognitive strategies used during the revision stage, including self-editing, proofreading, and re-evaluating content for accuracy.	Revising sentence structure, checking grammar manually, rewriting unclear parts
Planning Mediated Tools and Materials Strategies	The use of external tools, such as books and online resources, to aid in planning the writing process.	Google Search, Google Scholar, YouTube
Writing Mediated Tools and Materials Strategies	The use of digital or physical resources, such as dictionaries, grammar checkers, or writing software, during the writing process.	Microsoft Word, pen and paper, books
Editing Mediated Tools	The reliance on external resources to review and refine written work, such as	Using Grammarly and a plagiarism checker

	plagiarism checkers, editing software, or consultation with reference materials.	
Formal Social Interaction Strategies	Seeking assistance from teachers or professional writing tutors for guidance and feedback.	Asking a teacher for feedback and consultation
Informal Social Interaction Strategies	Engaging with peers, family members, or friends for support, feedback, or discussion about writing.	Asking a sister for help, sharing writing with a friend, discussing ideas in a study group
Collaborative Writing Strategies	Working with others to co-construct written texts, exchange ideas, and improve writing quality.	Group discussions, joint writing tasks, peer collaboration in drafting

4.2   The Themes of the First Research Question

The sociocognitive writing strategies used by the students fall under three main themes: 'cognitive interactional tools strategies', 'sociocultural interactional tool and materials strategies' and 'social interactional strategies'. Each theme has three parallel sub-themes, as illustrated in Figure 4.

RQ1: How do proficient and less-proficient EFL students mediate their writing processes?

Themes of RQ1			
Cognitive Interactional Tools Strategies	Cognitive Planning Strategies	Cognitive Writing Strategies	Cognitive Editing Strategies
Sociocultural Interactional Tools and Materials	Planning Mediated Tools and Materials	Writing Mediated Tools and Materials	Editing Mediated Tools
Social Interactional Strategies	Formal Social Interaction Strategies	Informal Social Interaction Strategies	Group Writing Strategies

Figure 4: The Themes and the Subthemes of the First Research Question

While RQ1 explores how proficient and less-proficient writers mediate their writing processes, the analysis in Chapter 4 presents the findings based on all 16 participants without distinguishing proficiency levels. This broader approach was necessary to first establish a comprehensive understanding of writing mediation strategies, capturing common trends and variations in how Saudi

EFL students engage with writing tools and strategies. Since writing mediation is a dynamic process shaped by multiple factors beyond proficiency alone, this chapter focuses on the full range of strategies used by all participants, providing a foundation for later proficiency-based analysis.

Writing proficiency, as a key writer-related factor, is examined in greater depth in Chapter 5 where data from the eight participants (four proficient and four less-proficient writers) are analysed separately to explore how proficiency influences writing strategy use in reflective and autobiographical writing tasks.

4.2.1 Cognitive Interactional Tools Writing Strategies

One of the RQ1 aims was to understand how EFL writers mediate their cognitive loads during the process of writing. To achieve this aim, the researcher used a triangulation of research tools to better understand and uncover all the meditated writing strategies deployed by the EFL Saudi students when writing in English. The analysed data from the semi-structured interviews, writing strategies logs, writing strategies diary, written texts in the reflective journal, and autobiographical writing showed that the participants employed various cognitive interactional tools as cognitive strategies when planning, writing, and editing the written texts. This central theme also includes three subthemes: planning mediated cognitive tools, writing mediated cognitive tools, and editing mediated cognitive tools.

4.2.1.1 Cognitive Planning Strategies

In the context of writing strategies, cognitive planning strategies refer to instruments used to organise thoughts, structure content, and enhance the writing processes. The participants reported and used some cognitive tools to mediate the planning process. While 8 out of 16 participants used mind maps, as reported in their logs and diaries, only two participants used outlines when planning their writing, as reported in the interviews. The participants used an outline as a cognitive tool to generate and organise ideas. Some participants used integrated tools when planning, such as reading before outlining. For example, Nada explained how the use of Google helped her when she outlined her writing:

> *I used Google because I wanted to compare my ideas to others and to know that I followed the correct order. I made an outline and wrote some notes on paper because they usually help me to organise my thoughts.*

Nada considered planning (making an outline and searching Google) to be an effortless process in writing because these strategies acted as a roadmap for her writing to explore ideas and organise thoughts before diving deeper into actual writing. Along the same lines, Afana used the outline as a

first process to plan her writing so the reader could understand what the paragraph was about. She said, '*I write the main points or outlines at the beginning so that the reader understands what the paragraph is talking about*'.

Another cognitive planning tool used is a mind map. By using a mind map, students can brainstorm ideas and observe connections. Six out of eight of the participants used mind maps when planning for their autobiographical writing. Since this writing focuses on reporting personal experiences, students may rely on cognitive writing strategies such as brainstorming and mind maps to generate and organise their ideas. For instance, when writing the autobiographical paragraph, Leen found that the mind map was a productive cognitive tool to brainstorm and organise ideas, as she documented in her log. Jazi used the integrated tools technique for more efficient planning. She employed both the mind map tool and the questions and answers she prepared as a planning stage for writing the reflective journal paragraph, as she mentioned in her log.

However, the use of cognitive planning tools was not usually combined with other technological tools. In her autobiographical writing log, Rima documented in the planning process the strategies she employed. She wrote, '*I used mind map, I arranged my thoughts and started choosing the words*'.

The cognitive mediated tools examples provided above showed that the participants used mind maps and outlines as scaffolding tools for their cognitive planning process. The participants' interviews, writing logs, and diaries revealed that using these cognitive tools was sometimes combined with integrating other tools such as Google Search and question and answers. This process, known as *strategic tool integration*, involves using multiple tools simultaneously to manage the cognitive demands of writing and enhance productivity. For instance, some participants used Google Search to find ideas and supporting evidence while organising their thoughts in a mind map. By combining these tools, they were able to reduce the mental effort required for idea generation and planning, making it easier to structure their paragraphs effectively. Since all the research participants were EFL students who wrote in L2, they may have encountered difficulties with composing in English. Hence, to scaffold their writing process, in this case, planning, and to enhance the quality of their writing, they tended to integrate cognitive planning tools such as mind maps with the affordances of other sociocultural tools like reading and using Google Search.

The following subsection presents the second subtheme of the cognitive interactional strategies. It describes the cognitive tools employed by the participants when they wrote.

4.2.1.2   Cognitive Writing Strategies

The use of cognitive writing strategies, such as pens and papers, is essential for writing's cognitive operations. The use of pen and paper can help writers extract ideas, organise thoughts, and engage in

writing, all of which can facilitate cognitive engagement and improve memory retention (Furnari, 2019). During the writing process, the participants used cognitive writing tools and various cognitive writing strategies to facilitate the writing and produce more engaging written content.

Using pen and paper was a preferred writing strategy for some participants. When they wrote, they used the outline or mind map completed in the planning stage and started writing the text. Only five participants found using pen and paper as cognitive writing tools advantageous as this allowed them to focus on writing their ideas down freely, without continuously editing and revising while writing. For instance, Alla said,

> *I began to gather the points that I wanted to write about and drew a mind map. I began to arrange the text in terms of the sequence of ideas until I reached what I learned from the book. I wrote the text on a paper and then handed the paper over to the teacher so that she could correct it and comment on it if any error was found.*

Similarly, Rima also found pen and paper useful in organising her thoughts before structuring her writing. She described how writing by hand allowed her to visually organise her ideas, making it easier to refine her work. She said:

> *When I use my notebook, I start by writing key points in different sections. It helps me see what I want to say before I actually write the full paragraph. I can then connect ideas more clearly and decide which ones to keep.*

Other participants were involved in strategic tool integration by writing on paper first and then using other digital writing tools to type their texts. Both Nada and Leen described their writing strategies, which involved writing on paper and using Microsoft Word, as recorded in their writing strategies logs.

As can be observed, a few participants relied on using pen and paper techniques to write down their thoughts. Some participants used pen and paper as cognitive tools to write and then utilised the affordances of other writing software such as Microsoft Word. These participants relied on their cognitive resources to initiate their writing texts. Then, they engaged in mediating tools to support and scaffold their mental processes.

The following subsection represents the third subtheme of the cognitive interactional strategies. It describes the cognitive tools the participants employed to edit their writing texts.

4.2.1.3   Cognitive Editing Strategies

Cognitive editing strategies refer to the use of human feedback to improve the editing process. This strategy utilises the knowledge and expertise of others, such as teachers, peers, friends, and family members, to enhance the consistency and the overall quality of the written work. In the current study, the participants engaged in the editing process when writing their texts. For EFL writing, the editing process is an important writing stage to ensure the intended message is set out clearly and the written content is free from mistakes. However, the participants varied in their employment of the editing strategies.

The data analysis revealed that the participants did not solely rely on themselves or other people, such as friends or teachers, to proofread and edit their writing. While 13 out of 16 reported using Grammarly in the interviews, logs, and diaries, six participants reported using integrated strategies, which entailed communication with human and digital tools. To improve the quality of their written texts, these participants sought editing from their teacher, family members, and friends combined with the use of the automated editing software Grammarly. For example, Leen reported in her autobiographical writing log that she revised the text by herself and used Grammarly.

Other instances of using integrated editing strategies involved interaction with family members and the editing tool. In her autobiographical writing log, Nada documented her editing strategies: '*I used Grammarly to correct the grammar mistakes and to improve my writing. I asked my mother for her feedback to make sure that my ideas were good'.* Moreover, Jazi reported in her reflective journal log the editing strategies she employed: '*After writing the first draft, I read it again and revise it for mistakes. After writing the second draft, I use Grammarly, and then I have my sister read it for me'.*

The findings above describe the importance of digital editing tools for EFL writers. The participants consulted the automated editing tools to help them communicate effectively, and they were less reliant on human feedback and corrections. Naghdipour's (2022) study describes similar findings.

The following section and subsections discuss the second theme and subthemes used to answer the first research question.

4.2.2   Sociocultural Interactional Tools and Material Strategies

The data analysis revealed that the participants interacted with social tools and materials as part of their writing strategies to learn, develop, and complete their writing tasks. They used specific tools and materials in the planning, writing, and editing processes. The following subsections present the findings related to each identified theme.

4.2.2.1   Planning Mediated Tools and Materials

This section discusses the planning technological tools and materials used by EFL writers. As mentioned in the previous sections, the use of mediating tools during the planning process was combined with the use of cognitive planning tools such as mind maps and outlines. Planning mediating tools and materials refer to any digital research, learning tools and resources (e.g., books) used to enhance and facilitate the planning process.

The participants deployed three main tools to assist and support them during the planning stage. The analysis of the data indicates that they used Google Search, Google Scholar, and YouTube. The primary purposes of using these tools in the planning stage were to plan the writing content by searching for and gathering information, and to prepare how to write by observing the sentence structures and writing styles of other writers.

Based on data gathered from the interviews, for the writing strategies logs and diaries, the majority (12 out of 16) of the participants used the planning meditated tool, Google Search, to find information, prepare, and learn to write academically. Google is a search engine that allows users to search for information easily and quickly. To date, Google has attracted the attention of language learners and practitioners due to its easy-to-use interface and its comprehensive database of language usage in a variety of domains, including blogs and academic journals (Han & Shin, 2017).

EFL writers interacted with Google Search to mediate the planning processes. The participants mainly used Google Search as an assistance tool to quickly search for information about the writing topic. For example, Nada noted in her diary that Google Search was one of the tools she used when planning her writing. Additionally, in her interview, Maha said, '*I read more and search Google until I understand it (writing topic) better and have more ideas, but I do not rely on books now; I found Google generates faster results*'. However, participants also used Google Search with specific search strategies to narrow down results and to reach the required information. For instance, Afnan said:

> *I use Google. I write the topic, and if I cannot find the information, I specify the topic in a more specific way. For example, if I did not find the information in general, I will search for it in greater detail until I find all the information I need from various sources.*

In addition to planning, the participants used Google Search and other search tools to assist in preparing for the transcription process and learning how to write. For example, Leen said:

> *If I researched a certain topic, I would write the name of this topic, and on a specific website called connected papers, it shows me the research of other people who talked about this topic. So, I can read their research and see how they organised the information, how they*

wrote it, their writing style, how it differs, etc. So, I can get an idea of how each one wrote

their own style in the end, but they all presented the same information with their own touch,

for example.

Another mediating planning tool used by the participants is Google Scholar. Although the majority of the participants actively utilised Google Search in the planning phase, only six participants mentioned in the interviews that they used specialised research tools for scholarly content. Google Scholar offers researchers, students, and academics a more targeted and academic-focused search engine where they may find papers, books, articles, and other information. The participants showed a good awareness of using reliable sources when searching for medical topics. As EFL medical students, they are aware of the importance of reading field-specific papers that are published in reputable journals. Hala justified her use of Google Scholar; she said, '*Google Scholar, in particular, which contains accurate scientific research, is very important and helps me to come up with a good and accurate research paper*'. In addition, Rima said:

> *I feel that when I start writing, I should be fully aware of the responsibility of what I am*
> *writing about. I should write scientifically and be aware of what I am writing. My writing*
> *should be clear, sequential, logical, and accurate [...] I use Google Scholar; in addition, and in*
> *a more precise way, I go to more than one source and see if the information is repeated here*
> *and here and here, it means that it is correct information, so it is impossible for it to be*
> *repeated in more than one source and for it to be wrong.*

The use of emerging Information and Communication Technology (ICT) multimedia technology, such as YouTube, has resulted in an improvement in receptive and productive language skills among learners (Alobaid, 2021; Alvarez-Marinelli et al., 2016). The analysis of the interviews and writing strategies logs indicates that the participants used YouTube as a supportive language and planning assistance tool. In terms of language support, three participants reported in their writing strategies logs that they used YouTube to understand the content of the movie that they wrote about when writing their reflective journal paragraph. Watching a movie trailer on YouTube may have helped the students to acquire relevant vocabulary and phrases, which in turn assisted them when they wrote their reflections about the movie. In terms of planning assistance tools, a few (4 out of 16) of the participants reported in the interviews that they used YouTube to prepare them for how to transcribe their planned ideas into written texts and learn specific aspects of writing mechanisms or processes. For example, Mashael said, '*I start trying to write on my own, and the teacher corrects it for me, but there are things I do not know how to write, so I look on YouTube for how to write them*'. Similarly, Afnan said:

If I am not sure about the structure of a sentence, I ask the teacher or someone who knows, like a family member or friend. And if I cannot find anyone, I go to YouTube, which is a great resource. But often, I forget, like, what goes with what, YouTube helps a lot.

As mentioned earlier, some of the participants employed strategic integration during the writing process. According to the participants' writing strategies logs, YouTube was always used with Google Search or interaction with teachers/friends and students. As a result, students relied on the benefits and the affordances of the technological tools to assist them with the planning process. Cognitive functions such as organising thoughts, searching for information, and understanding the writing topic may prove challenging for EFL writers. Thus, EFL writers use tools to facilitate the planning process and offload and scaffold their cognition functions.

In summary, this subtheme outlined and described how EFL undergraduate medical students interacted with the affordances of sociocultural tools and materials to plan their L2 writing. The majority of the participants employed strategic integration tools when planning their writing. The participants used Google Search in conjunction with other tools or strategies. The data indicated that technological tools were used in the planning stage with two primary purposes: to plan the writing content by searching for information and to prepare for the writing stage by learning vocabulary, writing styles, and sentence constructions.

The following subsection presents the second subtheme of the sociocultural interactional tools and material strategies. It describes the writing mediating tools and materials the participants used to write their texts.

4.2.2.2   Writing Mediated Tools and Materials

Writing-mediated tools and materials involve various resources and tools that assist writing by facilitating the creation, organisation, and improvement of written content. The tools encompass digital word processors, material resources, and traditional writing methods. They aid in multiple phases of the writing process, including drafting and writing the final product. The participants in this study mainly used Microsoft Word software to produce texts. Microsoft Word has some affordances for its users, such as flagging errors in spelling and grammar. It is also used to expand vocabulary by finding synonyms for words. In addition, it offers translation tools to translate from English to the mother tongue and vice versa. According to the data from interviews, logs and diaries, the majority of the participants (13 out of 16) utilised Microsoft Word as a primary tool for writing their texts, and they interacted with other mediating materials and tools to assist and scaffold them during their writing.

The data analysis shows that L2 writing was mediated through interactions with Microsoft Word and materials such as pen and paper, books, and book dictionaries. The analysis of the writing strategies logs indicates that only four participants used a pen and paper drafting strategy. Another mediating material used was books. Leen and Alla reported in their logs that they read books while composing to facilitate the cognitive functions of working memory, such as recalling and manipulating information. For example, Nada said, '*When writing, I read books. Reading helps through sharing ideas, learning new words and punctuation marks, and how the writers choose appropriate topics and structure the introduction and conclusion, especially if I am writing a formal, academic paragraph*'. In addition, just one student reported using a book dictionary when she needed to search for vocabulary.

Regarding the writing mediation tool strategies, the data from the interviews, logs, and diaries revealed that Google Translate was the most used tool by students during the writing process. With its many useful features, Google Translate assists EFL students in learning new vocabulary, checking pronunciation, correcting spelling, and providing translation services. Google Translate was used by EFL students to search for vocabulary and find synonyms. The results of the study indicated, as in Handayani et al.'s (2022) study, that the use of Google Translate as a writing assistance tool had a positive effect on students' writing skills as it was used as a tool to facilitate the learning of vocabulary and spelling. In their diary, Jazi, Alla, Rana, and Sara reported using Google Translate as a writing tool to facilitate the writing process. In addition, Rima said, '*I enter the word in Arabic on Google Translate, and if it gives me a synonym different from the one I want, I try to write it in English, and it shows me words close to the word I wrote'.* Some participants greatly benefit from Google Translate for learning and checking spelling. Hala said,

> *Sometimes, I can pronounce the word correctly, but I make mistakes in the spelling, such as the letter "I" and similar letters. So, I turn on the microphone and say the word, and it writes it correctly for me.*

Another writing mediation tool used by the participants was paraphrasing tools. Paraphrasing is a fundamental academic skill that involves re-expressing an author's ideas without directly copying their words or sentence structures (Na et al., 2017). It requires higher-order thinking, as well as strong reading and writing skills. In this study, EFL writers mediated their cognitive load during reading and writing by utilising various tools to facilitate paraphrasing. Two participants, Eiman and Leen, reported in the interviews that they used QuillBot, the affordable paraphrasing tool, to paraphrase sentences. In addition, Nada mentioned in her writing strategies log and diary her use of QuillBot in the editing stage. QuillBot is an advanced artificial intelligence (AI) writing application tool designed to help writers with paraphrasing and rewriting (Class, 2020). For instance, Eiman said, '*I used a*

program called QuillBot. It does paraphrase. For example, if you copy something from an article or anything and paste it into this program, it will paraphrase it so that it is written in your own words'.

From these examples, it can be concluded that EFL students interacted with materials and tools when writing texts. Writing is a cognitively complex activity requiring the processing of information, the transcribing of ideas, drafting, and rewriting. Thus, EFL writers engage in alternative strategic integration. This entails using different strategies to achieve the writer's composition goals and to compensate for any writing difficulties they face. The participants integrated the affordances of different materials and tools. Leen said:

> *I arranged the ideas that I wanted to talk about; then I started writing by myself. I searched for difficult words using some sites such as Google; for example, if I wanted to use the word 'influential', I used to write "ways to use the word influential in a sentence in English". I also used the university English book because I make sure of some rules when writing; for example, if I want to talk about something that happened in the past, I use verbs in the past tense, and so on.*

Along the same lines, Eiman discussed the affordances of writing assistance tools. She said:

> *All the tools make the writing process easier for me. And I have also become more organised, meaning my goals, my words, and all these ideas are organised in front of me so that when I work from the draft to the final draft, I will be free from errors because I have organised all my ideas. These programs, such as Word Document, Grammarly and Google Translate, make me feel organised, so it is impossible for me to write without them.*

The data discussed above confirmed and evidenced that sociocultural tools and materials afford EFL writers assistance during the writing process. These mediating artefacts support and scaffold them, enabling them to overcome difficulties, mediate cognitive loads, and develop academic writing. The following subsection presents the editing mediating tools used by EFL students.

4.2.2.3   Editing Mediated Tools

Editing-mediated tools are digital resources that help writers refine and improve their written work. These tools offer sophisticated features to check grammar, punctuation, clarity, and style. They also provide real-time suggestions and corrections to enhance the quality of the final product.

During the editing stage, the participants interacted with technological tools and other people. Editing refers to reviewing and revising the written text to ensure its clarity and correctness, so that it is free from grammar, spelling, punctuation, and style mistakes.

The analysis revealed that Grammarly was the most used software in the editing phase. Other editing tools used were Reverso.Net and plagiarism checkers. Grammarly is a digital writing tool that assists in the identification of duplicate content, grammar, lexical, mechanics, and language style errors. As a writing editing tool, it offers real-time time feedback by highlighting errors and inappropriate language usage in the text. It also provides suggestions and explanations for improving the written document. Most of the participants (13 out of 16) reported in the interviews and documented in their logs and diaries their use of Grammarly software. For example, Alla noted in her diary that, '*I use Google Translate and Grammarly for checking the grammar and finding synonyms*'. Similarly, Rima stated in her diary that, '*I used "Microsoft Word" to write my paragraph and " Grammarly" to check my grammar and spelling*'.

As a language learning and writing assistance tool, Grammarly provides affordances and support for students. It enhances students' cognitive and metacognitive functions by drawing their attention to errors. It can be considered an effective writing resource for students, mainly if they are actively engaged in the writing process (Koltovskaia, 2020). Students greatly benefit from using Grammarly. For instance, Leen said:

> *I personally benefited from Grammarly. For example, I used to write the verb in the present tense while the sentence was in the past tense, so I did not realise it. But when I saw the correction, I did not just correct it; I also tried to understand why it was corrected that way. Later, I might make the same mistake, and then I would remember the correction and correct it myself.*

Similarly, Hala confirmed that using Grammarly helped her to overcome writing difficulties. She said:

> *I face difficulties with grammar and these things. So, after I write something, I always use a program called Grammarly. It corrects my grammar mistakes, like if I forget to put a comma or other things that I forgot to add so that the text is correct. It also gives me a brief description of why I used this feature.*

While all participants used Grammarly, it was primarily employed in conjunction with the practice of seeking feedback and guidance from teachers, family members, and friends, rather than being utilised in isolation (see Section 4.2.1.3). The participants are likely aware of its limitations in achieving nuanced and contextually accurate feedback (Barrot, 2022). Considering the inherent limitations of automated feedback like Grammarly, the participants also sought guidance and validation from teachers, family members, and friends to ensure the written texts' accuracy and appropriateness.

Another tool used during the editing process was a plagiarism checker. Checking the plagiarism percentage is the last stage in the editing process. Nada reported in her log that she used QuillBot as an editing strategy. Additionally, Hala utilised a plagiarism checker tool to detect similarity and prevent plagiarism. She said:

> *I used a website to check the percentage of plagiarism that we had done. It was helpful, to be honest. I found out that there was a sentence that was written the same way on another website, which I had not visited or opened, but when I changed its grammar, it did not match the sentence that we found on the other website.*

To summarise, the subtheme explored above provides an understanding of the mediating editing strategies employed by EFL writers. It offers insights into how EFL writers interact with the affordances of tools to mediate and facilitate the editing process. It was found that Grammarly was predominantly used, combined with seeking feedback from other people. The following section and subsections discuss the third theme and subthemes used to answer the first research question.

4.2.3   Social Interactional Strategies

The analysis of the data revealed that participants engaged in social interaction as part of their writing strategies to learn, develop, and complete their writing tasks. Social interaction implies formally interacting with the teacher or informally with peers, friends, or family. It also entails interaction with group writing members. The following subsections present the findings of each theme.

4.2.3.1   Formal Social Interaction Strategies

Formal social interaction refers to face-to-face or online communication between students and teachers. Formal interaction with the teacher was frequently noted in the participants' writing strategies logs, diaries, and interviews. Interactions with the teacher fell under three main categories: guidance-oriented, feedback-oriented, and learning-to-write interactions.

Participants interacted with their teacher to guide them before writing. Obtaining clear guidance and asking questions for clarification were important strategies for EFL students. Before engaging in the planning process, some students had queries about the writing topic. Thus, they communicated with the class teacher to facilitate the writing process and obtain more guidance before they began to write. Many participants (11 out of 16) documented in their writing strategies logs and diaries and reported in the interviews that they communicated with their teacher to ask questions or consult for instructions. For instance, Leen noted in her writing strategies logs that '*The first thing I asked the doctor was about the required points in writing, such as the key sentence and the plot of the story...*'.

Furthermore, in her writing strategy logs, Nada recorded the strategy of *'asking the teacher if there is guidance I need to follow'*.

The participants also interacted with their teachers to seek feedback. Some participants reported that they communicated with their teacher to proofread their texts. This feedback is necessary for EFL writers to receive an overall assessment of their writing and highlight any areas for improvement. Feedback can be a powerful tool for advancing students' learning (Black & Wiliam, 2009). Through teacher feedback, students can make accurate academic judgements and recognise academic performance gaps (To, 2022). As noted in their documents, the participants appreciated and valued their teacher's feedback. For example, Leen noted in her diary, *'After I finished my writing, I asked the teacher to evaluate the writing and give me feedback and things I needed to amend'*. In addition, Nada mentioned in her diary, *'I asked for the teacher's feedback after writing the first draft'*.

Another purpose for interaction with the teacher was to learn writing. The participants communicated with the teacher to seek advice on writing in English. For EFL students, learning to write can be challenging and requires frequent guidance and advice. The participants were aware of their need to consult and seek help from experienced people or their teachers. For example, Nada said, *'I ask someone if she specialises in a specific field, I can ask a person about their field. For example, if it is about medicine, I will go to a doctor, for example, of course'*. Similarly, Hala said:

> *First of all, I ask someone who has knowledge in writing like my teacher, to give me a reference or general tips about how to write and how to start. For example, now, if I want to write scientific writing, I need an outline and other things like that. These are things that I would not know if I did not ask my teacher. So, I believe communicating with the teacher and asking questions is the most important thing.*

From these examples, we can see that the participants interacted formally with their teachers for guidance, feedback, and learning how to write. Additionally, it was observed that the participants' interactions occurred both before writing (guidance) and after writing (feedback). Students also interacted with their teachers for advice and tips on how to write. As mentioned before, although the students employed various editing tools to assist them in editing, they also sought feedback from their teachers. This indicates that students did not totally trust technological tools or automated feedback, therefore they consulted their teacher as a final step in the writing process. Marya said:

> *Honestly, firstly, there is no program that I can say is reliable; I cannot trust it at all. I mean, this is, firstly and lastly, artificial intelligence, and you want to make a point that it may not understand and therefore may misinterpret it.*

In general, the formal interaction between a student and a teacher plays a vital role in the students' learning and development as a writer. The participants appreciated communication with knowledgeable and experienced professionals in their field, such as medicine or writing, as a valuable means of receiving consultation and feedback. The following subsection presents the second type of social interaction writing strategy: the informal interaction strategy deployed by the participants.

4.2.3.2   Informal Social Interaction Strategies

Informal social interaction refers to communication between students and peers, friends, and family members. The participants interacted with their friends and family members to proofread and learn how to write. The analysis of the writing strategies logs indicates that participants deployed the informal social interaction strategies mainly in the editing process and in conjunction with other writing strategies.

Many participants (11 out of 16) interacted with their friends and family members, such as their mother or sister, to proofread their writing, according to the data from interviews, logs, and diaries. When writing, Alla stated in her diary that *'I asked one of my family members who has writing experience to review my writing'*. Participants also used other editing tools such as Grammarly. In her writing strategy logs, Leen noted that '*In the end, I used Grammarly to check my writing. I also sent my writing to a group of my friends and asked them to proofread it and if it needed to be modified or not'.* Other participants engaged in self-editing and interacted with editing tools and with family members for proofreading. Jazi said, '*After writing the first draft, I read it again and revise it for mistakes. After writing the second draft, I use Grammarly, and then I have my sister read it for me'.*

Other students interacted formally with their teacher and informally with friends and used Grammarly in editing. Based on the theoretical perspective of distributed cognition (Solomon, 1993), writing is described as a joint endeavour between humans and nonhumans, internal and external (Overstreet & Vaccino-Salvadore, 2023). This was evident in the data showing writing as an extended mind (Overstreet, 2022), in which participants engaged with various writing strategies of social interactions and sociocultural tools to help mediate the cognitive loads and assist the internal mental process. For instance, Alla noted in her writing strategy logs that:

> *I needed feedback from the teacher, and she helped me correct the capitals. I started editing, I used programs such as Grammarly, and I also needed help from my mother so that errors could be corrected, if any.*

> Jazi also mentioned in her writing strategy logs that *'I edit my paragraph using Grammarly and I ask my older sister for her feedback'.*

The analysis of the interview data revealed that the participants interacted informally to learn and develop their academic writing. For example, Rahaf said, '*Honestly, the easiest thing for me was to ask someone close to me. Because they can clarify the idea for me, and I understand why it happened, and then I feel like I prefer this more than websites. So, I do not really feel like I need websites*'. In addition, Eman said:

> *I also have a friend who is not really my friend but my friend's mom, but we are close. She knows how to write in English very well. Sometimes, I go to her, especially if I have a presentation or something. She gives me questions to start with, and every day, I work with the girls to be the best in this. So, she is also one of the things I go back to if I write something.*

It is evident from the above examples that social interaction with friends would be more beneficial for developing academic writing as writers can coordinate in a natural social setting where they can interact freely and efficiently in a relaxed environment. Participants confirmed that social interaction with friends provided them with a reliable source for learning whenever they needed assistance. The study of Lopez-Pellisa et al. (2020) found that students respond more reflectively and constructively when peer feedback is included in collaborative writing as opposed to unidirectional corrections from the teacher. They discuss the content they are working with, and as a result, their writing is significantly improved. This suggests that informal interaction with others, such as peers and friends, can lead to effective learning and facilitate the receptiveness of knowledge.

In general, informal social interaction writing strategies allowed writers to mediate cognitive loads during the editing process and learn and develop academic writing. The following section presents the findings obtained from stimulated recalls related to group writing as a social mediating writing strategy.

4.2.3.3   Group Writing Strategies

Group writing interaction strategies refer to any interactions between students in collaborative writing activities, either online or in the classroom. While collaborative writing was not explicitly assigned as part of this study, it emerged during the semi-structured interviews, where the participants described working in groups as a common practice in the classroom. They perceived group writing as a scaffolding activity and a mediation strategy that facilitated their writing process. To investigate this further, stimulated recall interviews were conducted with eight participants following their participation in a classroom-based group writing session.

Based on the stimulated recall interview data, all the participants expressed appreciation for working in groups during the writing process tasks. Several contributions were cited, including the construction of knowledge, developing and practising writing, and promoting social relationships.

Collaborative writing involves contributions from each group member at all stages of the writing process. One notable benefit of writing in groups is that knowledge can be co-constructed and internalised through social interaction between group members (Thorne & Hellermann, 2015; Wertsch, 1979). Group writing facilitates the writing task by pooling language resources collaboratively, which enables the co-construction of L2 knowledge through scaffolded interactions (Swain & Lapkin, 1998). Maha mentioned that '*group writing helped me a lot, honestly. It gave me an idea about the topic, and we trained together, and when I wrote alone, I felt more practised'.* In addition, group writing facilitated the construction and generation of ideas, especially in the planning stage when group members used tools such as mind maps and tables to facilitate the writing process (see Figure 5 and Figure 6). This finding is supported by similar results from studies by Aldossary (2021) and Chen and Yu (2019), which both found that participants had positive attitudes towards collaborative writing and believed that it enhanced their learning and engagement with writing tasks.
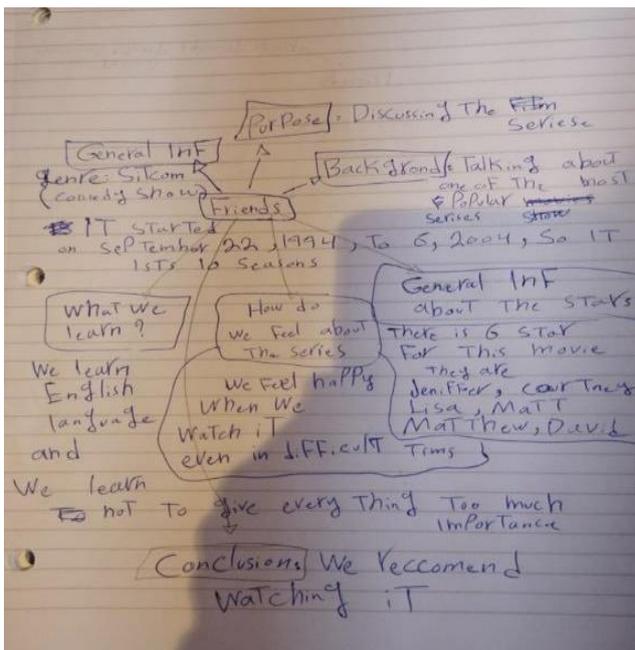
Figure 5   Group Writing Interaction during the Planning Stage

Paragraph	Function	Text
Introduction	Background	Watching movies is a good way to spend time.
	Purpose	In this paper, I want to discuss one of my favourite movies: cinderella...
	General information about the movie	The movie is too old. It was produced in 1950.
	General information about the plot of the movie	Cinderella is the princess of the story. Her mother in law hates her, so she didn't allow her to attend the prince party. The animals and an imaginary witch are her best friends, they helped her to escape, but she should come back home by 12 AM. She had the dream dance with the prence. Accidentally she dropped her heel. Then the price found her and they got married.
Main paragraph	How do you feel about the movie?	I fell in love with this movie, It's Touch my feelings and made me cry a lot but I was happy in the end, it had an interesting story.
	Explain why	For example, Cinderella was going through a lot of problems and she was dealing with them politely, especially with her stepmother, she was a very patient and brave girl, and in the end, she became a princess with magic heels and married a handsome prince and that made me very happy.
	What do we learn from it?	I loved the movie because it's included a very important lesson, that No matter how long you wait, you will get what you deserve. And shows the importance of patience.
	Conclusion	I recommend watching this movie

Figure 6   Group Writing Interaction during the Planning Stage

In addition, group writing mediates cognitive loads during writing by distributing the tasks between group members. For instance, Rima said:

> *Well, working in a group was really helpful for me, especially when it came to writing. My group and I started by brainstorming how we were going to write the paper. We discussed every detail and thought about it point by point. I participated in these discussions, and it really helped me in writing my own research. I was able to use some of the things we discussed in my individual writing.*

The above statement highlights the benefits of interactions among group members for mutual support, which impacts them positively when they write individually.

Furthermore, group writing is a scaffolding strategy for developing writing. The analysis of the stimulated recall interviews shows that group writing was a source of improvements in academic writing. Rana said, '*In terms of writing, I learned how to organise my ideas from the beginning, like the introduction, then the main paragraph, then the conclusion, and where to put the appropriate information about the topic*'. In addition, the participants found that group writing was helpful, especially when they were involved in peer feedback by providing suggestions and correcting each other's mistakes for better writing. Leen said:

> *Well, we were able to learn from each other's mistakes. We all wrote and gave our work to each other, and then we learned from each other's errors. Nobody pays attention to their own mistakes, so this helped me to learn from my mistakes as well as from others.*

Group writing also can broaden the understanding of learning writing by sharing knowledge and experiences of different aspects of writing. For instance, Maha said, *'My friend did not know how to connect sentences, so we helped her with that. Also, there were some words that I did not know, and my friends helped me with that'*. The group writing process fosters student collaboration and allows them to share ideas, plan, and learn writing techniques together. As a result, students can apply what they gain from group writing when they write individually. Rima said:

> *Group writing is really important because if any of us had a small piece of information that could be helpful in the writing, it would benefit the whole group. It was really useful for me. I learned from the group how to write, how to correct, and how to use commas and conjunctions effectively in my own writing.*

Interaction between group members fosters communication skills, an important skill for undergraduate students for successful learning. The experience of working in a group and becoming familiar with the members can increase the students' confidence to share ideas, approach peers, and build a network, thus making them more socially adept learners (Chen & Yu, 2019). Nada said,' *I think group writing is really important, especially during the semester. It is nice, and it can be more important socially than academically in terms of communication between the girls'.*

Although all the participants reported in the stimulated recall data positive contributions to writing in groups, four participants also reported some disadvantages of writing in groups. Although collaboration can lead to rich insights and approaches, it can also introduce inconsistencies in the finished product due to the differing perspectives and styles. For example, EFL proficient writers can employ unique rhetorical techniques and use different syntactic structures from those less proficient in writing, resulting in differences that may lead to group disagreements. For instance, Rahaf said:

> *the way of writing differs from person to person. If she prefers to start a certain way, I do not prefer to start that way. Even if it is one topic, the way of writing differs from person to person. Even her choice of information, she might think it is important, but I do not think it is important. It makes a difference, you know? I feel like the topic varies.*

In addition, the participants consistently reported non-cooperative group members who lacked commitment to the writing process. This finding is supported by Kim and McDonough (2008) and Tan et al. (2010), who found that putting students in groups does not imply that they will collaborate when they write. Even though group interaction has been recognised as having many benefits in academic writing, participants often encountered individuals who lacked enthusiasm and commitment to collaborative writing. According to the participants, these indifferent attitudes can disrupt productive discourse and negatively affect the group's progress. For example, Eiman said:

I did not feel any cooperation, and the topic was difficult for me because I was the one writing, and at the same time I was the one searching, and I was the one choosing the character, which means honestly, I did not like it. Even the other girls were saying, "you chose this character", so you have to bear the responsibility of writing about her and searching for her.

Moreover, Leen said:

I felt like some girls were not interested in writing. One would be on her phone, and the other would write but not really care about the topic. It felt like we weren't all benefiting, and the writing was not being taken seriously. For me, I would prefer group work, but at that moment, I did not feel like I was benefiting from it.

A further challenge prominently identified is the occurrence of disagreements among group members regarding topic ideas. The participants described instances during the collaborative writing where differing opinions led to confusion and wasted time. Even though such disagreements are natural aspects of collaborative writing, they may pose a potential obstacle to the collaboration's success and affect the final product's quality. Rahaf said:

I feel like, with a group, my thoughts may get scattered. I do not think I will be able to focus on creativity because the group may start arguing about a certain idea, and time may be wasted on arguments, while I can be more creative with my idea and excel in it without asking anyone and without someone expressing their opinion about my idea, etc.

One of the participants reported their preference to write their ideas individually and then work with a group. For example, Nada said, '*It is good to practice individually and then as a group, and we can write about the same topic, and each person writes, and then after a while, we meet as a group*'. Additionally, Jana said, '*I like to organise my thoughts alone, and then maybe we can discuss it later. However, if everyone just says something, it might get confusing if we write together*'.

According to the examples above, participants strongly acknowledged and emphasised the importance of group writing as a prominent strategy. The participants reported that writing in groups was more advantageous for learning and developing their academic writing skills. Nevertheless, some participants indicated that writing in groups had some disadvantages due to disagreements regarding the topic, the various writing styles, the differences in personal viewpoints, and the non-cooperation of some group members. These challenges highlight the teacher's crucial role in implementing certain strategies, such as dividing the writing tasks equally between group members and monitoring their progress to foster collaboration among

EFL writers, raise their sense of responsibility, and enhance the quality of collaborative writing experiences.

The current section presented the findings related to RQ1 by reporting the findings obtained from the semi-structured interviews, stimulated recalls, and the writing strategies logs and diaries. The following section presents the findings related to RQ2 through the analysis of students' semi-structured interviews to uncover the contextual factors that influenced the writing strategies used.

4.3   The Themes of the Second Research Question

This section addresses the findings concerning RQ2, reporting the contextual factors that influenced the EFL writers' use of writing strategies, including interaction with people and resources. The data revealed three contextual factors influencing students' writing strategies: education history, social goals, and social environment. The themes and subthemes are illustrated in Figure 7.

RQ2. How do contextual factors influence the use of writing strategies among EFL Saudi writers?

Figure 7   The Themes and Subthemes of the Second Research Question

4.3.1   Education History

One important contextual factor affecting the participants' choices of writing strategies was their educational background. Their prior educational experiences influenced how they approached academic assignments, how they perceived writing, and the strategies they used to deal with writing at the university level. Students' exposure to various teaching methods, feedback procedures, and writing expectations influenced their current writing habits because writing instruction differs among

educational contexts. Specifically, their secondary school English course experiences shaped their approach to writing in an EMI setting. Knowing this history provides insight into helps how their prior education influenced their ability and application of strategies at the university level.

The semi-structured interview data analysis revealed that the participants' experiences of learning writing were linked to and had influenced their writing proficiency and strategies. All the participants reported that they could classify themselves as being at pre-intermediate or intermediate levels. Their judgement was based on their previous learning writing experience and what they had gained from secondary school English writing classes.

Most participants (13 out of 16) described writing classes at secondary school as not beneficial for learning writing skills. L2 writing researchers have noted that ESL/EFL writing is the most complex and challenging task for EFL writers (Al-Khairy, 2013; Al Shammari, 2018; Sabti et al., 2019; Seitova, 2016). EFL writers must activate cognitive processes to retrieve, process, and transcribe information from the mother tongue to English. The students must adhere to norms of English writing, mechanisms, and styles. Therefore, EFL students need to have a good foundation in academic writing before they enrol in university, especially for those studying in the EMI context, where effective communication in English is necessary. In light of this, the interview data indicate that the participants were dissatisfied with how they learned to write at secondary school due to the level of written English they were expected to achieve at medical college. For example, Rima said:

> *To be honest, the writing classes at secondary school weren't delightful. The teachers were not strict or made a big deal out of it. On the contrary, they would try to make us learn how to write, but it never felt like they were putting in the effort to make it enjoyable. As for my current level of writing, I do not think it is very good because I feel like we did not get a good foundation in secondary school. I believe that in secondary school, they should have focused more on teaching us the basics, and that would have made it easier for us to learn in college.*

Rima clarified that the writing classes in secondary school were not helpful or enjoyable. She explained that the teachers did not consider writing the primary skill for students to learn and did not make an effort to teach it. As a result, students did not learn the basics of writing, making them suffer and making it difficult for them to cope with the demands of academic writing at university.

The extracts above show that the previous experience of learning writing at secondary school seemed to influence students' writing ability and strategies. Rima indicated that her current writing level resulted from insufficient writing instruction at secondary school. Additionally, Jazi said,

Maybe the only thing I knew was that sentences should start with capital letters and when to use a full stop. I did not know how to structure paragraphs. I mean, I knew some very basic things. In university, I learned more advanced things than in secondary school.

Similarly, Leen mentioned that the writing classes were not good, and the teacher gave little time to teaching writing and did not focus on it. Leen believed that this is why she joined the university with poor writing skills.

The writing tasks that students engaged in during their secondary school years influenced their writing abilities as they transitioned into university, highlighting the significance of learning writing experiences on their proficiency in academic writing. The participants confirmed that they wrote descriptive paragraphs in secondary school, such as about a favourite character or a famous person. The teacher first discussed the paragraph with the students and identified the most essential features of the paragraph, such as sentence structures and grammatical aspects. Then, the students had to write a paragraph that resembled the model paragraph given by the teacher. Thus, students believed that this was a major reason for not mastering the writing skill as they only copied the paragraphs provided by the teacher, which were generally focused on one type of writing.

The teaching of writing at secondary school in the Saudi context focuses primarily on grammar, vocabulary, and sentence structure. Developing composition skills, creating content, and revising are less emphasised in the classroom (Alkodimi & Al-Ahdal, 2021). For the writing assessment, the students memorised some paragraphs and wrote them in the final exam. There were not enough opportunities for creative writing or exposure to various genres. Nada said, '*We memorised passages to write them later in the final exam, that is it. That's what writing was*'. In addition, Sara said:

Well, in the government general schools, for example, writing was not really taught as a subject, and the focus was more on memorising for the final exam. So, when we got to university, everything was in English, and it became difficult for us.

At secondary school, learning writing was limited to writing paragraphs for the final exam. The students did not focus on writing as a separate skill but as an integrated skill that was given little time or effort. For example, Rahaf said,

In secondary school, we were given several essays to write, and we had to memorise the structure and write them in the exam. So, I do not think I practised writing before university because it was just memorisation of the structure.

Additionally, Marya said, '*Honestly, the writing classes were like they did not exist. There was no specific path or curriculum given like "you write this and that."*'

In secondary schools, the product approach to teaching writing is followed by focusing on the final product of writing and the syntactical features of the text, such as grammar and punctuation (Pincas, 1982). For example, the students were required to memorise the placement of punctuation marks without explaining why and when they used them. Students' academic writing level was influenced by this problem when they entered university. They had not been previously introduced to the process and the stages of writing. In the current research, most students reported in the interviews that they faced difficulties in spelling, punctuation marks, sentence structure, the use of appropriate vocabulary, and verb tenses. As a result, they used sociocognitive writing strategies to improve their writing, such as reading, attending courses, and using sociocultural tools like Grammarly as an assistant writing tool. Maha said:

> I did not benefit much from my secondary school classes. But I developed my English language skills by watching TV series and listening to music. However, I need to work more on my writing skills, especially in academic writing, which I may need in university. For writing, I did not think about it, and it was not required of me to write academic papers before. But now, I might need to attend such courses.

Education history, including past writing instruction and limited writing genres, generally affected students' writing strategies. The examples show that the student's current writing abilities were influenced by previous poor writing instruction in secondary school, which resulted in poor writing outcomes and writing abilities that did not meet the requirements of academic writing in higher education. Hence, the participants used strategies, including interactions with people and tools, to improve their academic writing, overcome writing difficulties, and mediate cognitive loads during writing.

The following section represents the analysis of the second theme, social goals, from the data gathered in the semi-structured interviews.

4.3.2 Social Goals

Students' social goals, both academic and professional, are shaped by the broader social context in which they study and work. In an EMI setting, the demand for strong writing skills extends beyond academic success to professional communication in medical fields. The need to develop effective writing strategies is influenced by institutional expectations and future career requirements,

motivating students to refine their writing practices. The following section presents the findings related to the theme of academic goals.

4.3.2.1   Academic Goals

Academic achievements and passing courses are academic goals that most undergraduate students strive to attain. Regarding academic writing, all the EFL students had clear objectives for their writing course and learning outcomes. Consequently, they made an effort to meet these objectives, achieve the outcomes, and acquire the knowledge and skills necessary for academic success. The students demonstrated their ability to rise to a higher academic writing level by implementing specific strategies to fulfil their educational needs.

The analysis of the interviews revealed that the primary purpose for developing and improving academic writing was to achieve educational goals. At the medical college, all courses are taught in English. As part of their academic requirements, students must possess good writing skills to complete their assignments, respond to exam questions, and fulfil other academic requirements. For example, Nada explained why she needed to write in English; she said:

> *Honestly because now I am in university, most of the subjects are in English. Sometimes, when I have assignments, I summarise the lectures in English because the lectures are in English. We also have activities in English.*

Similarly, Leen said, '*I will need to learn how to write in academic writing, exams, and assignments. These are all important things for writing. They are considered half of my success in my journey'*.

The participants had a strong desire to improve their academic writing. Writing academically is essential for medical students to succeed in their studies. Medical students are required to write essays, reports, and research papers as part of their curriculum. It has been demonstrated that improved writing abilities correlate positively with improved academic performance (Tsingos-Lucas et al., 2017). Good academic writing can cultivate several skills and qualities, such as clarity, organisation, critical thinking, and research skills, which contribute significantly to academic success. Jazi said,

> *I need it (academic writing), especially since I am in a field that relies primarily on English. Especially in the future, if I do any research or want to read information, I will have a lot of difficulty if I do not master writing correctly.*

The participants also pointed out that writing is a fundamental skill essential for high academic performance and efficient communication. Rana said:

To develop myself, and besides, we are medical students, and everything ahead will be in English. The person needs to set himself now and keep up with himself. We are only in the first year; there are still some years ahead of us, and we will delve deeper into the English language.

Additionally, Farah said, '*Maybe for future research that I might do, I want to be proficient in writing, not face any difficulties, and be confident when I submit a research paper or anything that I can benefit from in the university*'.

According to the examples above, students in the medical field had a good understanding of the importance of academic writing. Due to their awareness, they had adopted writing strategies to achieve the desired academic writing level, overcome writing difficulties, and improve academic writing skills such as paraphrasing and reading research papers. Students used specific sociocognitive writing strategies to respond to their social-academic context requirements. As part of these strategies, as mentioned in section 4.2.2., students interacted with supportive and assisting writing tools, such as Grammarly (for checking grammar and writing mechanics), QuillBot (for paraphrasing), Google Translate (for learning vocabulary and synonyms), and YouTube (for learning grammar and writing).

The following subsection presents the analysis related to the professional goals theme to shed light on the interplay between writing strategies use and professional goals.

4.3.2.2   Professional Goals

Another motivation for improving academic writing was related to the students' future professional careers. Medical college graduates usually transition into various healthcare careers once they graduate from medical school. These careers can include medical practice, academic roles, or consulting in the healthcare field. In all roles in the medical field, competence in English writing is an overarching requirement, regardless of the chosen path, and mastering English writing is imperative for success in both professional and academic settings (Barroga & Mitoma, 2019; Surya et al., 2020; Quirk, 2006). Developing academic writing skills can contribute to advancing medical knowledge, increase work efficiency, and facilitate the provision of high-quality healthcare (Patterson, 2001).

The analysis of the interview data revealed that the participants had a strong desire and motivation to improve their academic writing skills for the purposes of their future medical jobs. The participants reported that they needed to master academic writing to write professional emails, medical reports, and medical documents, as well as writing scholarly articles and publishing them in medical and international journals. Afnan said:

In the future, I will pursue a career in medicine, and I have to learn how to write research papers and how to publish them. I have heard about these things, so I have to develop myself from now on.

In addition, Nada described academic writing as an essential skill to learn. She said:

It is a very important task for my future path, in writing emails, in university, after graduation, insha'Allah, in applying for jobs, and in many other important things, especially writing for academic purposes.

The participants desired to be proficient writers so that they could communicate effectively and accurately during their professional careers. For example, Rahaf said:

In the future, I will need it a lot, and if I do not know how to write or how to use words correctly, as a doctor in the future, people might look down on me.

In general, medical students' academic writing practices are influenced by the requirements of their professional careers. In the current study, the participants employed specific writing strategies and spent time developing their academic writing skills in order to succeed in their future professions and fulfil their professional obligations. As is evident from the findings of this study, contextual factors, in this case professional goals, influence students' writing behaviour and strategies. It was noted, for example, that the participants reported using advanced strategies such as reading research papers in reliable journals to observe professional writers' styles and gain a better understanding of the subject matter.

The following section presents the findings related to the third theme of contextual factors that influence the use of writing strategies.

4.3.3 Social Environment

The analysis of the interview data indicated that the social environment, the setting in which the students write influences the use of specific writing strategies. The participants reported that the physical environment had a significant impact on their employment of writing strategies. This theme was further divided into two subthemes following the data analysis to distinguish clearly between the two social places that the participants discussed, as well as the influences they had on the choice and effectiveness of writing strategies.

4.3.3.1   Classroom Writing Strategies

From a sociocognitive perspective, the classroom is not just a physical space for instruction but a social environment where students actively engage in learning through interaction. Classroom writing strategies develop through teacher guidance, peer collaboration, and structured learning activities, all of which contribute to students' writing development. These interactions highlight the social nature of learning and align with the sociocognitive approach, which emphasises the connection between individual learning and social engagement. Therefore, classroom writing strategies are inherently social, as they emerge from students' participation within the classroom setting.

Several participants indicated that they preferred to write in the classroom and completed their writing tasks there. There are certain environmental factors and dynamics that are specific to the classroom: the social atmosphere is created by the companionship of peers, the presence of instructors, and the structured nature of the curriculum. This context emphasises collaborative learning and constructive feedback from classmates, as well as expert guidance from teachers, as crucial components. For instance, Jazi said, '*I prefer writing in class because if I need anything, I can go to the teacher directly. Sometimes, when I am at home, I get distracted'.* Additionally, Sara said, *'In class, I can ask my friend or even the instructor'*.

Writing in class seems to support and scaffold students' mental functions during the writing process by allowing them to interact with their teacher and peers. In the classroom, the participants relied heavily on interaction with others (teacher and peers) when writing. For instance, Sara said, '*In terms of writing in class, I feel that it is beneficial because you can ask your classmates who are around you and familiar with the subject'*. The participants appreciated and valued the assistance and the scaffolding they received from more experienced individuals like their teachers. For instance, Eiman said, '*the doctor is the first source for consulting and asking questions'*. Rima compared getting help from the teacher to receiving help from any social programs. She said:

> If you compare, for example, taking knowledge from the doctor or the programs, you will definitely take knowledge from the doctor, as she will understand and have a better background in the subject. So, she will explain it better than the programs.

Additionally, the participants used other writing strategies, such as searching on Google and using Grammarly. However, they reported that due to the limited class time, they did not interact with sociocultural tools as often as they would have liked and relied more heavily on human assistance. Hala said, '*We were allowed to use tools like Grammarly, the Internet, and Google Scholar in class, and we used them naturally, but the time pressure was sometimes too much, so we could not use them effectively'*.

According to the examples above, participants used social interaction with their teacher and peers as their primary writing strategy when writing in the classroom. The sociocultural tools were not effectively utilised in the classroom due to time constraints or insufficient instruction. To ensure the effective use of the social and writing tools, teachers should provide students with sufficient guidance on how to use them and provide adequate practice time.

The following subsection presents the findings related to the second social space where writing took place, the social environment, and the factors that influenced the employment of writing strategies.

4.3.3.2   Home Writing Strategies

The home environment serves as a social space that influences students' writing strategies through access to external support and resources. While writing at home may seem like an independent activity, it is shaped by interactions with family members, engagement with digital tools, and established personal routines. These external influences mediate the writing process, providing guidance, feedback, or assistance when needed. Although home-based writing differs from classroom-based activities, the ways in which the students navigated their writing tasks reflected broader social interactions that shaped their approach to writing.

Home writing strategies refer to the specific approaches and methods writers adopt to write while situated within their own living spaces, whether in their home office or another private area. Twelve out of 16 participants reported that the social setting of home positively influenced their writing. Home is often associated with a sense of comfort and familiarity. This type of environment is often conducive to concentration and efficiency, as individuals usually face fewer distractions, follow their routines, and are free to choose their writing environment.

According to the semi-structured interview data analysis, the social environment strongly influences and shapes the writer's behaviour and the ways in which they use writing strategies. The participants reported that certain environmental factors influenced their use of writing strategies when writing at home, the most significant being time. The participants liked writing at home because it gave them more time to organise their thoughts and revise their writing thoroughly. For example, Maria said, '*At home, you can review it (writing) once or twice or three times. No one tells you to start at a certain time or to stop thinking and start writing*'. Additionally, Leen said:

> *Personally, I feel better writing at home than in class. I might ask the professor to look at my questions and explain where I made a mistake. But at home, I feel better and can write better than in class because I have time and am not in a hurry. I can also use more sources and tools at home that are not available in class. I have time, and I arrange sentences as I*

want. But, for example, in college, the writing lecture is already two hours, so you have to stick to a certain time. I do not know; I feel better at home.

The participants also indicated that home writing can provide more opportunities to learn and use writing strategies effectively. At home, they can interact with family members and use various writing tools to meet their needs and support them. Since EFL writers need more time to complete each writing process, including planning, writing and editing, writing at home with no time and space constraints was beneficial. Nada said, '*Searching for information at home is better; I search on my own time, so the information is more organised, to be honest, than at the university*'. Besides, Sara said, '*At home, there is more comfort and clarity of mind, and you can use many devices and search anywhere. You can also ask relatives or family members who have more experience in academic writing. So, both have their benefits*'.

Furthermore, writing at home can offer a more conducive environment for concentrated focus, another contextual factor influencing students' writing behaviour and strategies. In the following quotation, Sara discussed the necessity of writing in a quiet place and how this affected the quality of her writing. She said:

> *When I start writing, I like to be in a quiet place so I can gather my thoughts and try to express them as much as possible. I usually prefer to write in a calm place, like at home or outside the university, because I feel like writing in the university or classroom disrupts my thoughts. So, I might need a calm place, and I might need help with applications like I mentioned earlier. This is a reason that helps me write better because I write in a different atmosphere.*

Another student emphasised this point and stated that writing at home can be a productive way to generate more ideas, become more focused, and compose clearly. Farah said:

> *I prefer to write at home because it is quieter, and I can think more clearly. At home, I can concentrate better, and I can write longer ideas and organise them more clearly than when I am in class because I cannot concentrate enough.*

It can be observed that the social environment significantly influenced the students' writing behaviour and strategies. The participants found that they could write more effectively in a quiet place where they could concentrate. Additionally, they reported that they could produce better writing pieces at home since they had more time to interact with people (friends and family) and resources and employ more effective writing strategies. As mentioned in the previous section, limited class time hindered students from using writing strategies such as writing tools to scaffold their writing (see Section 4.3.3.1). Thus, when writing at home, students had access to more resources to

help them produce better writing pieces. Consequently, writing at home was more beneficial for students than writing in class.

The following section presents the findings related to RQ3 through the analysis of interviews, writing strategies logs, and students' written products to study the influence of linguistic proficiency and writing genres on the use of writing strategies.

4.4   The Themes of the Third Research Question

This section presents the findings related to RQ3 by reporting the influence of textual factors on the use of writing strategies. While the primary aim of this research is to examine how textual factors influence writing strategies, it is essential to first consider the role of writer-related factors, such as English language proficiency. These factors provide critical contextual insights that shape the students' engagement with textual factors. Subsequently, this section outlines the influence of writing genres, including reflective journal writing and autobiographical writing, on the employment of writing strategies, as obtained from the data from the semi-structured interviews, writing strategy logs, and students' written products. The themes and subthemes are illustrated in Figure 8.

RQ3- How do textual factors influence the use of writing strategies among EFL Saudi writers?
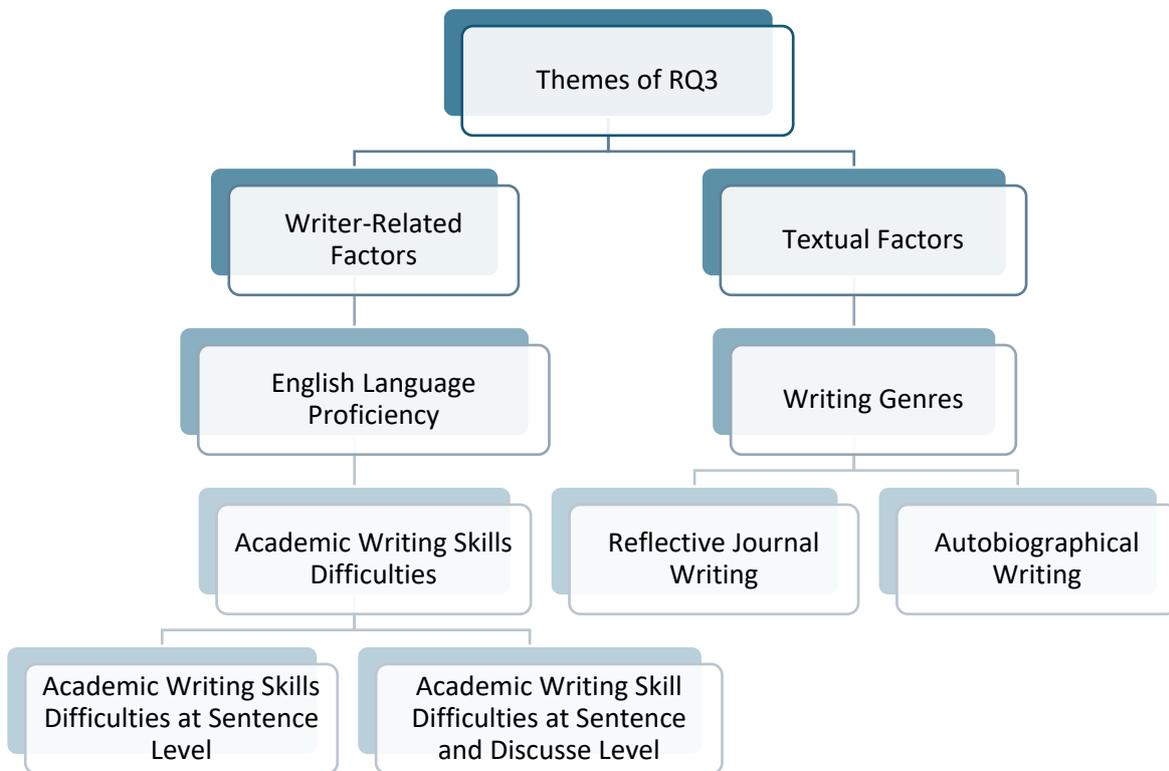
Figure 8   The Themes and Subthemes of the Third Research Question

4.4.1   Writer-Related Factors

4.4.1.1   English Language Proficiency

The aim of this study was to explore the sociocognitive writing strategies employed by EFL writers. Therefore, it was imperative for the researcher to identify the writing difficulties the students faced when writing in L2 to understand the writing strategies they employed to mediate their cognitive loads, overcome writing difficulties, and improve their academic writing. According to the students' responses, they had difficulty with grammar, vocabulary, organising ideas, paraphrasing skills, use of academic vocabulary, coherence, and writing mechanisms (sentence structure, spelling, and punctuation).

A preliminary investigation was conducted to determine whether the students considered writing a difficult task before identifying the challenges they faced when writing. Writing was considered more difficult than other language skills among all the students interviewed. Writing proficiently in English requires various cognitive skills, one of which working memory can be particularly challenging for English learners, as it plays a critical role in planning, organising, and linguistically encoding ideas in a second language can be particularly challenging for English learners (Peng et al., 2022). All of the participants classified themselves as either pre-intermediate or intermediate, and two as advanced, in terms of mastering academic writing. The classifications of their writing proficiency level were based on the challenges they faced when writing. Most of the students gave the lack of practice writing and time spent learning academic writing as reasons for their writing difficulties. Without adequate practice, it was difficult for them to develop their writing skills and monitor their progress. Additionally, time commitments and time spent teaching writing can significantly impact students' writing performance (Alharbi, 2019). According to Rahaf, the duration of the writing class was not sufficient, as it only provided the basics of writing. She said:

> *The time in class only provides the basics. I see writing as something that requires training,*
> *courses, and extra hours of practice to develop. In class, they only give you the basics, and*
> *you have to start developing them on your own. You are supposed to take these basics and*
> *practise them at home until you become proficient.*

The participants had a good understanding of the good features of academic writing and had a sound theoretical understanding of the standards of academic writing. When asked about writing academically, they were able to explain clearly and adequately what should be included and excluded in academic texts. Nevertheless, all of the participants stated that their understanding was not reflected in their writing since they were not given the opportunity to practise all the standards of academic writing. As a result, they admitted to having difficulties

applying these theoretical concepts to their writing. In the following quotation, Afnan showed her understanding of the characteristics of a good paragraph:

> *A good paragraph is one in which the information is given clearly and explicitly, without any unnecessary ideas or opinions of the person. I learned these things recently that it should not be my personal opinion but rather based on real information and scientific research. It should be concise and brief and should convey the information quickly without making you confused or distracted.*

However, Hala reported that a lack of practice in the learned theoretical concept of academic writing was the primary reason for not mastering the skill. She said, '*I feel like we learned about academic writing skills in the previous semester, but we were only taking it theoretically without any practical application. I do not like theoretical things if there is no application'*.

All of the participants mentioned that their current writing proficiency level was pre-intermediate (A2 level, elementary), intermediate (B1 level) or upper-intermediate (B2 level) (The Common European Framework of Reference for Languages (CEFR)). According to the British Council, students who achieve the A2 level are capable of writing simple, short texts, notes, and messages. The text can be a message, a short paragraph, a profile, a form, or an email. Students who achieve B1 level can write simple, well-connected texts on familiar subjects. Students who attain the B2 level are able to express themselves clearly and concisely on a wide range of topics. Acording to the writing proficiency test the participants completed in this study, their writing proficiency levels fell between B1 and B2.

Students' self-assessments of their writing proficiency may not be accurate and can be influenced by a number of factors. According to Blue (1994), learners who are less proficient in a language tend to overestimate their abilities, and those who are more proficient tend to underestimate their proficiency. Blue discussed the factors that contribute to inaccurate self-assessments. One of these factors is the comparison students make between themselves and others. In the present study, a number of students who were classified as proficient writers were found to underestimate their writing abilities. In their view, they were above the level of beginner, or intermediate. This tendency of underestimation was due to students' comparisons of their writing with that produced by professional writers and also an overemphasis on their writing deficiencies. For example, Rahaf, a proficient writer, said:

> *I judged based on my ability to speak and understand to some extent, but I feel like I struggle a bit with writing, and I do not think I can express myself well in English. I feel like I need more practice to have synonyms and better expressions, but I do not practice enough, so I think I am at an intermediate level.*

On the other hand, less-proficient writers did not overestimate their writing proficiency, with most reporting that they were intermediate writers. This realistic assessment may have been because the students were interviewed by the researcher of the current study, and they were aware that the researcher had no control over their grades or their writing assessment. Therefore, their assessment of their writing proficiency was realistic.

The following subsection represents the analysis of the semi-structured interviews to shed light on the difficulties and problems encountered by Saudi EFL writers.

4.4.1.2   Difficulties with academic writing skills

English language proficiency was identified as an issue related to language and writing skills, which affected participants' writing ability. The writing challenges concerned both sentence-level skills (spelling, vocabulary, and grammar) and discourse-level skills (idea organisation and paraphrasing). The most important concerns were related to spelling words correctly, followed by the appropriate use of vocabulary and then the correct use of grammar, including sentence structure, verb tense, and punctuation marks. Other writing skills difficulties, such as organising ideas, writing conventions, and paraphrasing skills, were found to be less concerning for undergraduate medical writers.

4.4.1.2.1   Difficulties with Academic Writing at Sentence Level

According to the participants, spelling was the most challenging aspect at the sentence level. The majority of students (14 out of 16) were concerned about their ability to spell English words correctly. Spelling in English can be challenging, as pronunciations are not always accurate indicators of spelling (Albesher, 2018). Despite its complexity, English spelling remains a challenge even for native speakers (Holmes & Carruthers, 1998; Muhassin et al., 2020). It has been noted by Althobaiti and Elyas (2019) that spelling is one of the most challenging English sub-skills for second-language learners. There are a number of factors that contribute to Saudi EFL writers' spelling difficulties: the negative influence of the educational system; the fact that the syllabus ignores the importance of spelling rules and techniques; and the interference between English and Arabic when learners refer to their mother tongue when writing in English (Altamimi & Ab Rashid, 2019). In the current research, some reasons for spelling challenges were reported by the participants. For example, Rana said, '*Spelling mistakes are a common problem, such as forgetting or adding a letter, which is a major issue*'. In addition, Marya said, '*The spelling is difficult, especially if the spelling is different from how the word is pronounced*'.

Another writing challenge many students faced was related to the difficulties of lexical use. More specifically, 14 of the participants reported that they lacked vocabulary when writing academic texts as these types of texts required the use of academic vocabulary to fulfil the requirements

of academic writing. Lin and Morrison (2021) argue that acquiring a disciplinary lexicon is a major challenge for undergraduates who have just entered university, particularly those from non-EMI secondary school contexts. When these students begin their academic studies, they may find themselves overwhelmed by "a deluge of unfamiliar vocabulary" (Evans & Morrison, 2018, p.1024). In contrast, technical vocabulary is perceived more as "universal" in English (Casanave & Hubbard, 1992, p.43). In the current research, the participants reported that academic vocabulary limitations were hindering their abilities to compose. For example, Jazi said:

> *It could be the terminologies, that I do not know enough about the topic. It is also a challenge in writing. I may not have come across it, so I do not know it, and of course, I will not be able to write it.*

Furthermore, another participant indicated that the lack of a precise word for expressing a meaning is challenging. Some of the participants stated that we had Arabic words, but they did not know their equivalents in English. Rima said, '*Sometimes there are words in Arabic that I do not know the meaning of in English*'. Leen also shared similar challenges; she said, '*I do not mind writing in English, but because I do not have a lot of vocabulary, it may be a bit difficult. I am not very proficient in English like Arabic*'. The use of academic-specific discipline vocabulary is essential for medical students. Therefore, they expressed concern that they lacked sufficient vocabulary repertoire to express themselves clearly. In spite of this, as Zhan (2013) argued, most students do not find the disciplinary lexicon an obstacle to their studies once they have been exposed to sufficient topics related to their discipline.

The correct use of grammar and punctuation was also cited as a surface-level challenge by the participants. According to Hinkel (2023), studies by Ferris (2011) and others have shown that "misused words and lexical redundancy are among the most egregious shortfalls, on par with errors in verb tense and subject and verb agreement" (p. 128). In the current study, 14 out of the 16 participants mentioned in their interview responses problems with sentence structure. For example, Leen said that she faced challenges in '*The arrangement of the sentence, for example, the subject, verb, and object*'. Rima also mentioned that she had difficulty in '*how to construct a sentence correctly*'. Additionally, some participants reported that they encountered difficulty using tenses in sentences that were consistent with the timeframe described. Leen said, '*Verb tense is a big problem, whether it is in the past, future or present. I feel like this is a big issue*'. Similarly, Rana said, '*The tense of the same sentence, it could be in any tense. I might forget to put it; how can I say it? Like, for example, in present simple, past simple, and so on*'. Furthermore, Eiman mentioned that when writing, she faced challenges regarding grammar, particularly when using the passive voice.

The use of punctuation marks, such as commas, question marks, and full stops, presented a challenge for students, as reported in the interviews. Rima said, '*I need to know when to use commas, periods, quotation marks, and other punctuation marks*'. Rana also reported having difficulty determining when and how punctuation should be used. She said, '*Punctuation marks like commas and periods. Sometimes I do not know where to put them*'.

4.4.1.2.2   Academic Writing Skill Difficulties at Sentence and Discourse Level

The participants also reported some writing challenges at the global level. The top concerns were their ability to organise ideas in written sentences and to use paraphrasing skills appropriately. Generally, language problems at the global level are considered to be discourse-level errors, which include the organisation of the text, the development of ideas, and an understanding of the needs of the audience (Lin & Morrison, 2021).

According to the participants, organising ideas in writing was a challenging task. Ten of the participants noted that sometimes they had ideas, but they found it difficult to transcribe them into well-written sentences. For example, Rima said, '*When our teacher gave us a writing assignment, I faced some difficulties with writing useful and nice sentences, as I had ideas in Arabic, but I did not know how to write them correctly in English*'. In terms of paragraph organisation difficulties, Emain said, '*Sometimes, when I research a lot and have a lot of sources, I get overwhelmed and cannot put my ideas together*'. Maha also shared her perspective on difficulties with organising ideas. She said, '*I do not know how to organise my thoughts; I do not know where to start or what to include. I do not know what is required so I just write and I am not sure if I am addressing what is required*'.

Some academic writing conventions require skills at both the sentence level and discourse level, such as paraphrasing skills. For example, paraphrasing on a surface level involves exploring the finer points of language, such as word choice, sentence structure, and stylistic considerations. In this process, sentences and phrases are revised while maintaining the underlying structure and essence of the original material. Paraphrasing at the global level entails a considerably deeper level of restructuring and reorganisation than simply swapping words and phrases (Shi et al., 2018). Nada stated that paraphrasing skills required cognitive efforts in terms of changing words by using synonyms. She said:

> *If it is research, then I stop a lot when I change; for example, sometimes my ideas are the same as the research, so I have to change so that my words are not similar and there is no plagiarism. So, I have to change a lot, but I stop to make my research completely different.*

Additionally, Hala noted that students lacked a background in paraphrasing. She said, '*I feel that it is often difficult for me to rephrase something. It is like when I read something, I want to write it exactly as it is, and this is wrong. We do not have enough background in this*'. The quotation echoed and

confirmed the arguments raised by participants in this study regarding a lack of practice of theoretical concepts of academic writing, which they believed was a major factor in their writing difficulties (see Section 4.4.1) and ultimately leads to poor writing production.

As can be observed, most of the writing skills challenges reported by the participants were related to sentence-level difficulties (see Figure 9). The participants were undergraduate students who were just getting started with academic writing at the university, and they had received minimal academic writing instruction before joining the university. As a result, most participants struggled to master basic writing skills, such as spelling, grammar, verb tense, and punctuation. Skills related to the global level, including the ability to organise ideas and paraphrase, were not given very much attention.

Writing difficulties

26% (28)

74% (81)

■ Writing Difficulties at Sentence and Discourse
■ Writing Difficulties at Sentence Level
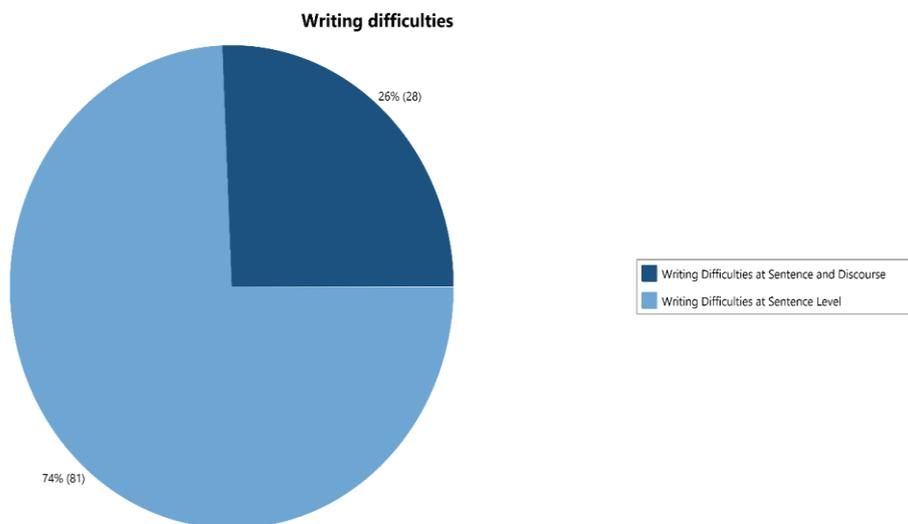
Figure 9   Academic Writing Difficulties Reported by Participants

The use of writing strategies was influenced by and linked to language and writing proficiency. The data indicated that most of the participants interacted with writing assistance tools to learn and scaffold their writing skills pertaining to the sentence level, including Grammarly software, Google Translate, and other writing applications (see Section 4.2.2). In contrast, few participants employed strategies to learn and overcome difficulties related to global issues. For example, the use of the QuillBot paraphrasing tool was mentioned only by three students. This indicates that students place a greater emphasis on learning localised aspects of writing than on addressing larger, global issues. Thus, this revealed that EFL students were aware of the need to improve their fundamental writing skills. The students understood the importance of developing strong writing skills before moving on to more advanced writing skills. Moreover, they recognised the importance of regular practice and dedication in order to achieve their objectives. In this way, they engaged in various writing strategies to enhance their academic writing skills and to mediate their cognitive load through interaction with people and technology.

The next section presents the analysis of the influence of the writing genres on the employment of writing strategies, based on the writing strategies logs and diaries.

4.4.2   Writing Genre

In the 1980s, John Swales introduced the concept of genre to L2 writing and English for specific purposes through his research (Swales, 1981). According to Swales (1990, p.45), genres are distinct "classes of communicative events" serving particular cultural purposes. Other definitions define the genre as "abstract, socially recognised ways of using language" (Hyland, 2007, p. 149) or as a "staged, goal-oriented social process" (Martin, 2009, p. 13). Consequently, genres are shaped by and function within discourse communities, as they emerge from shared communicative practices and social interactions among members (Swales, 1990). Genres are distinct in their communicative purpose, structure, and linguistic features, which are influenced by the discourse community that produces and interprets them. This aligns with the relationship between text and context (Wingate, 2012) and the ways in which genre expectations are established within particular academic or professional settings (Hyland, 2007).

The terms 'genre' and 'text type' have often been employed interchangeably by scholars (Eggins & Martin, 1997; Lee, 2001; Martin & Rose, 2008), a practice that has contributed to the confusion around the concept of genre. However, there are researchers like Biber (1988) who establish a distinct differentiation between genre and text type. According to Biber (1988), the concept of genre can be seen as a means of categorisation that is determined by external factors, including the intended audience, purpose, and activity type. However, the text type is determined by internal linguistic criteria, such as the presence of lexical or grammatical features that appear frequently in the text.

The purpose of this study was to examine the influence of writing genres and the cognitive demands of each type of writing text on the use of writing strategies. This study uses the terms 'genre' and 'text type' interchangeably when referring to students' writing to report the writing strategies used in two types of writing: reflective journals and autobiographies.

The following subsection presents the analysis of the reflective journal writing strategy logs completed by eight participants when they wrote a reflective journal paragraph.

4.4.2.1   Reflective Journal Writing

The participants were required to write a reflective journal paragraph as part of the writing course requirements in the second semester of the academic year. The students had to write a personal reflection in the form of the record of an experience that was of interest to each individual student

(e.g., a novel, movie, or song). The students were expected to be able to write about an experience and explain their personal reflections or interpretations (Guidelines for teaching writing, ELC).

Based on the findings of this study, writing a reflective journal may pose cognitive challenges to EFL undergraduate students. This activity places a variety of demands on students, including evaluating ideas and experiences, writing strategies and processes, and reviewing language use and grammar. As a result, the process of writing reflective journals can be cognitively demanding when they are written as coursework assessments, especially if the students have never written this type of text before. Thus, students employed certain writing strategies to reduce the cognitive load and facilitate the writing process.

4.4.2.1.1   Planning Strategies

The analysis of the reflective journal writing strategy logs indicated that students used writing mediating strategies when planning, writing, and editing their paragraphs. They deployed a variety of strategies during the planning stage in order to prepare for the writing phase. Five out of eight participants used Google Search in order to research the topic they chose to write about. Another tool used for mediating the planning process was YouTube. According to their logs, Sara and Maha used YouTube to help them understand and summarise a movie. Furthermore, one participant stated that she read a book and searched social media for other people's opinions regarding the book she was reviewing in order to identify the most important parts of the book. For example, in her planning writing logs, Alla wrote:

> I read the book and tried to focus on the most important points in it that might motivate me to read it. I also searched for the opinions of other people on social media who had read the same book so that I could identify the most important points in it.

The participants also used brainstorming tools, such as mind maps, and questions and answers. Furthermore, they discussed their ideas with their teachers and peers. For instance, Leen wrote in her logs, '*The first thing I asked the doctor was about the required points in writing, (such as the key sentence and the plot of the story). Then I used the Google program to search for the topic and collect my thoughts'*.

4.4.2.1.2   Writing Strategies

In the writing process, the participants used strategies to support their mental processes, including searching for vocabulary, constructing knowledge, generating new ideas, and learning new aspects of writing. According to the analysis of the participants' writing logs, they used tools to reduce their cognitive load and scaffold their writing processes.

All the participants used Microsoft Word to produce their writing texts. However, two participants stated that they used Notability and Microsoft Word when writing. Sara and Leen used Google Translate and Google Search to search for new words and look up difficult vocabulary. Additionally, students interacted with their teachers and peers for clarification and guidance.

Participants engaged in integrated strategies when writing. According to Leen's writing strategies log, she employed the following strategies to complete her reflective journal writing:

> *I arranged the ideas that I wanted to talk about. Then, I started writing by myself. I searched for difficult words using some sites such as Google; for example, if I wanted to use the word [influential], I used to write (ways to use the word influential in a sentence in English). I also used the university English book to make sure of some rules when writing. For example, if I want to talk about something that happened in the past, I use verbs in the past tense, and so on.*

Furthermore, the participants combined physical and digital writing techniques to capture ideas and concepts. They used pen and paper first, then transferred to a computer. As a result, they were able to explore and generate ideas in a variety of ways. In her logs, Leen indicated that she used the following strategies for writing: creating a mind map and outline, taking notes on paper, and using Microsoft Word. A similar pattern of combining and integrating writing methods and strategies was also reported by Nada. She wrote:

> *I began to gather the points that I wanted to write about and drew a concept map. I began to arrange the text in terms of the sequence of ideas until I reached what I learned from the book. I wrote the text on a paper and then handed the paper over to the teacher so that she could correct it and comment on it if any error was found. Finally, I wrote it using Microsoft Word.*

4.4.2.1.3   Editing Strategies

The students used strategies to enhance, facilitate, and support the editing process. Editing entails reviewing and refining a written text to improve clarity, consistency, correctness, and overall quality. These cognitive processes can be demanding for EFL students. Thus, students employed mediating strategies to facilitate the editing process.

The analysis of the writing strategy logs revealed that the majority of the participants (seven out of eight) relied on tools for editing their texts. Grammarly was reported to be used by almost all of the participants in order to correct grammatical, spelling, and vocabulary mistakes. However, the participants also reported that they edited their writing using their own judgement. They used their

knowledge of the English language and their own writing skills to identify errors and make corrections. In addition, they interacted with the class teacher and peers for additional assistance and feedback. In her log, Jazi stated '*After writing the first draft, I read it again and revised for mistakes. After writing the second draft, I had someone read it'*.

According to the previous discussion, editing can be a challenging task for EFL students due to challenges relating to spelling, grammar, vocabulary, idea organisation, and paraphrasing (see Section 4.4.1.1). As a result, six of the participants used integrated editing strategies for assistance during the editing process. In her writing logs, Nada edited her reflective journal paragraph using the following strategies: using Grammarly to correct her writing, paraphrasing some sentences using QuillBot, and seeking feedback from others. Additionally, Maha had similar editing strategies that involved integration techniques by interacting with tools and people. She described her editing strategies as follows: '*Go through it with my teacher and correct the mistakes, using "Grammarly" app for grammar mistakes, reading it more than once to make sure it is right'*.

As noted in the reflective journal writing strategy logs, the participants cited several benefits, advantages, and affordances of using writing strategies, including interacting with tools and people. For instance, Nada offered insights into her experience with writing strategies when writing her reflective journal paragraph, stating:

> *(I) I use Google because it is so important to be sure about the information I have and also to have new ideas; (2) I make mind maps, outlines, and notes since they help me to organise my thoughts and to know what is missing in the writing; (3) the program I use to correct and paraphrase my words is essential to make good academic writing and to improve it. I ask for feedback from the teacher to make sure that everything is perfect and that I follow the guidelines.*

Additionally, Leen explained some of the benefits she obtained from employing the writing strategies. She wrote:

> *The first thing I searched about was the writing topic because I could not talk about anything unless I fully understood the subject. I used Grammarly because I have a little weakness in some grammar. I used the university English language book because it is full of vocabulary and grammar rules that help me write.*

Furthermore, Alla outlined some advantages and affordances of using writing strategies. She wrote:

> *Drawing a concept map helps to organise and link ideas, and also asking questions helps to think during writing. Having the doctor correct the paper helped me discover and learn from*

my mistakes. The Grammarly program also helped me find another alternative for some words and correct the capitals and also quickly correct errors, which saves time and leads to less stress. Seeking help from a family member who has writing experience helps in avoiding mistakes.

This subtheme examines the influence of writing genre and the influence of task cognitive demands on the writing strategies used by EFL undergraduate students when writing reflective journal paragraphs. The analysis revealed that the students used a larger, more varied range of planning strategies compared with writing and editing strategies. For example, the students used cognitive tools such as mind maps, questions and answers, social tools, and materials such as Google Search, YouTube videos, books, social media, and peer communication. Furthermore, the students communicated with their teachers during the planning stage in order to understand the structure of the reflective journal paragraph. Consequently, it seems that the process of writing this type of text was cognitively demanding in terms of planning. To write this type of text, the students needed to have an understanding of both the social notion and the structure of reflective journals. In order to fulfil the task requirements, they utilised various planning strategies, including brainstorming ideas, planning their writing, and understanding the text's schematic structure, as well as employing strategies for writing and editing their texts in accordance with the writing task requirements and assessment criteria.

Additionally, the students primarily used writing strategies as a means of scaffolding and for assistance throughout the processes of planning, writing, and editing, as noted in their writing logs. Furthermore, their comments indicated that these strategies assisted in mediating cognitive loads and developing their abilities to write academically.

The following subsection presents the analysis of the autobiography writing strategy logs completed by eight participants. It reveals the influence of writing this type of text on the writing strategies used, and the cognitive demand associated with it.

4.4.2.2   Autobiographical Writing

Autobiographical narratives, personal diaries, and letters have been popular since the 18th century (Jolly, 2013). The term "life writing" has gained widespread usage since 1990 to encompass various genres, including biography, autobiography, memoir, diary, letters, and other forms of life narratives (Howes, 2020). An autobiographical narrative or personal essay is a piece of writing that is based on the author's life and focuses on a particular event or time period. The primary goal of this type of writing is to reflect on the event's significance and meaning.

The following subsections present an analysis of the writing strategies and cognitive challenges that students demonstrated in composing personal paragraphs about their goals and reasons for studying in medical college. The analysis aimed to reveal the influence of autobiographical writing on the strategies used when students plan, write and edit their paragraphs.

4.4.2.2.1 Planning Strategies

The planning process for autobiographical writing may involve different strategies from those used for academic writing or any other type of text, as it involves recalling and reflecting on personal memories. For example, students might use brainstorming and idea webs to explore important life events in a nonlinear manner. Based on the results of the data analysis, the students used cognitive tools and strategies for planning their autobiographical paragraphs. Six out of eight participants relied on unstructured and nonlinear techniques such as mind maps for generating ideas. As a result of this nonlinear approach, there was a preference for the development of spontaneous ideas rather than the imposition of a narrative structure at the beginning of the planning process. However, one participant noted in her log that she used Google Search with a mind map to help her plan the introductory sentences. Additionally, two of the participants stated in their writing strategies logs that they did not use any planning strategies. This is in contrast to reflective journal writing, where the participants employed various strategies when planning. This indicates that EFL writers do not face cognitive challenges when writing an autobiography that focuses on their reflections and life experiences.

Based on the students' logs, the process of recalling information and emotions, as well as planning their personal writing, was less cognitively demanding. Apart from one participant, none of the participants engaged in any social interaction strategies to mediate their cognitive load. The majority used direct self-access cognitive tools such as mind maps to assist them in brainstorming, organising their thoughts, and linking various ideas and concepts. This indicates that they did not require social tools when planning to write their reflections and experiences. During the process of writing this type of text, the students were required to retrieve information from their memory and use cognitive tools to generate and organise ideas in order to transfer them into narrative writing.

4.4.2.2.2 Writing Strategies

The participants used some writing strategies to compose an autobiographical paragraph. According to the data analysis, all the participants used Microsoft Word to write their paragraphs. Microsoft Word affords its users with features to assist their writing. For example, it flags errors pertaining to spelling, grammar, and punctuation. In addition, two participants used social tools when writing— Sara and Maha utilised Google Translate to translate unfamiliar words and phrases.

Moreover, two participants used the traditional method of writing with pen and paper to generate ideas before typing their text using Microsoft Word. Writing on paper might be a preferred method for some students when writing personal essays because it allows them to concentrate on presenting ideas and avoid distractions when typing using Microsoft Word, such as highlighting mistakes or difficulty using the keyboard, which may adversely affect the flow of ideas.

Furthermore, one participant stated in her log '*I used the non-academic writing method because it explains the feeling in a comfortable way*'. This suggests that autobiographical writing was perceived as more intuitive and natural (a 'comfortable way,' as described by the participant), as it allowed the students to express personal experiences without the constraints of academic conventions. They could focus on the content rather than on the accuracy of the writing when planning, unlike in structured academic writing, where they had to engage in organisation, argumentation, and critical engagement. In comparison to reflective journal writing, students reported using fewer writing strategies. Interaction with social tools, such as Google Translate, was intended to support students' language and compensate for language deficiencies, such as vocabulary limitations.

4.4.2.2.3   Editing Strategies

Similarly, fewer editing strategies were employed than in reflective journal writing. In their personal writing about the reasons for choosing to study at medical college, the students employed some editing strategies to ensure that their writing conveyed the intended meaning.

Six out of eight participants used Grammarly software to edit their writing, while only one relied on her iPad's autocorrection. Two participants also communicated with family members, such as their mother and sister, to proofread their texts besides using Grammarly. One participant reported in her log that she used Grammarly and Google Translate when editing her paragraph. Google Translate was used in editing to check the meaning of words and sentences.

The analysis shows that editing a personal autobiographical paragraph was a less cognitively demanding process than editing a reflective journal paragraph. The rhetorical purposes and audience can influence the writing strategies used. For the participants, writing self-reflection paragraphs to communicate their thoughts, reasons, goals and motivation for choosing to pursue their undergraduate study in the medical field seemed to be a less challenging activity in terms of accessing linguistics and language sources. When the students engaged in writing about personal experiences, they had the opportunity to utilise their pre-existing knowledge of vocabulary and language abilities. Consequently, they were relying on their cognitive functions and had control over operating their language and its written conventions. Therefore, they used Grammarly to narrowly edit grammar and spelling mistakes to clarify their ideas rather than editing and reworking their

ideas. In addition, the audience of the autobiographical paragraph was the researcher. Thus, the students might not have paid much attention to editing because they were sure their writing would not be assessed. When writing reflective journals for their teacher, they employed more mediating editing strategies such as interaction with tools (Grammarly, QuillBot) and interaction with people (teacher, peers) (see Section 4.4.2.1.3).

The participants reported in their autobiographical writing logs some reasons for employing writing strategies when planning, writing, and editing. As mentioned above, the students employed fewer strategies when writing this type of text. For example, Jazi wrote in her log, '*I used these simple strategies because I write about myself and my experience*'. Similarly, Alla explained in her log, '*I used these strategies because I write about myself. The paragraph is easy and not complicated for me. I asked my sister to check if there were any mistakes*'. In addition, Nada reported the affordances of using mediating writing strategies in her log. She wrote:

> *I used Google because I wanted to compare my ideas to others and to know that I followed the correct order. I made an outline and wrote some notes on paper because they usually help me to organize my thoughts and to know what is missing in the writing. I used Grammarly to correct the grammar mistakes and to improve my writing. I asked my mother for her feedback to make sure that my ideas were good.*

In summary, this subtheme identified the influence of writing autobiographical paragraphs and the cognitive demand associated with this type of text on the writing strategies used by undergraduate medical students. The data analysis indicated that the students found writing about personal experiences less cognitively demanding, therefore they used fewer cognitive strategies and interacted less with social tools, as reported in their logs. The cognitive burden may be associated with remembering specific details, selecting relevant events, and ensuring the writing is coherent. In addition, most of the students wrote long paragraphs compared to their reflective journal writing. They were able to write details and examples to support their ideas.

The writing strategies used for writing this type of text had the purpose of supporting the mental functions of remembering, generating ideas, and organising thoughts. According to the students' logs, they relied on cognitive tools in writing, such as mind maps and pen and paper. Other tools like Grammarly (used by the majority of the participants), Google Translate (used by one participant to check spelling) and Google Search (used by one participant to search for introductory sentences) were used primarily for surface-level editing.

4.5   Summary of the Results

This study explores the sociocognitive writing strategies that EFL writers employ in response to the first research question. It reveals various strategies categorised into three major themes: cognitive interactional tools and material strategies, sociocultural interactional tools and material strategies, and social interactional strategies. Several key findings emerged through the qualitative analysis of interviews, stimulated recalls, writing strategies logs and diaries, and writing texts. Firstly, EFL writers used a range of cognitive tools for planning and writing their texts, such as mind maps, reading books, outlines, and pen and paper to plan and write their texts. Additionally, all the participants interacted with sociocultural tools and materials, including writing assistance tools and technological tools and resources when planning, writing, and editing. The students interacted with books, Google Search, Google Scholar, Google Translate, YouTube, Microsoft Word, Grammarly, and QuillBot. Moreover, EFL writers engaged in social strategies. The results revealed that all the participants communicated formally with teachers and informally with peers, friends, and family members. The interactions between the students and others happened mainly in the planning and editing stages for consultation and proofreading. In addition, the students cited some positive outcomes from group writing activities, such as constructing knowledge, developing and practising writing, and promoting social relationships.

Secondly, EFL writers were involved in strategic integration strategies to facilitate the writing process and mediate the cognitive loads. For example, in the editing stage, the study found that they mainly combined the use of Grammarly for automated editing with communication with others for proofreading. The data supported the notion of distributed cognition in that the writing was characterised as an interactive process involving both interaction with humans and nonhumans (e.g., tools), both internally and externally (Overstreet & Vaccino-Salvadore, 2023).

The results for the second research question, examining the influence of contextual factors on EFL writers' use of writing strategies, revealed important insights into the complex relationship between context and writing strategies. Some significant findings were identified through the qualitative analysis of the semi-structured interviews. Firstly, the study found that the past education history, particularly the writing instruction and learning writing experience, shaped the writing strategies employed by EFL writers. This influence was manifested in the EFL students' current writing proficiency levels and amount of practice. Most students voiced dissatisfaction with the pedagogical approach to writing instruction employed during their secondary school study, being particularly disapproving of the curriculum content and assessment methods employed in the writing classes. Consequently, when they joined university, they used writing strategies to meet the expectations of the writing curriculum in the medical college and improve their academic writing.

Another important finding has revealed the strong influence of academic and professional goals on writing strategies. All the students demonstrated a strong desire to enhance their academic writing, recognising the importance of fluent written communication in all medical subjects. This determination led them to adopt specific strategies to achieve their goals and attain the required writing proficiency level. The students' motivation to improve their academic writing was also driven by their future medical careers, where they will be required to write professional emails, medical reports, and medical documents in English.

Furthermore, the analysis revealed that the social environment, the setting where the students wrote, also influenced specific writing strategies. The writing strategies employed in the classroom and at home were observed to be different. For example, the primary writing strategy of most of the participants was social interaction with their teacher and peers when writing in the classroom. However, when writing at home, the students interacted with several tools, materials, family, and friends. Due to time constraints, the students indicated that they could use effective writing strategies and produce better texts at home than when writing in class.

Based on the third research question, the results revealed that writer-related factors such as language and writing proficiency and textual factors significantly influenced the use of writing strategies. According to the study, more students reported difficulties relating to sentence level (74%) than to paragraph level (26%). Due to insufficient writing instruction at secondary school, the students had not mastered the basic writing skills when they joined university. Thus, they placed an emphasis on learning and improving their localised writing skills. To overcome these writing difficulties, EFL writers used a variety of strategies, including sociocultural strategies, such as Grammarly, Google Translate, and YouTube, as well as social strategies.

In terms of textual factors, the results indicated that task complexity and types of text played a crucial role in influencing the writing strategies used by EFL writers. The study found that writing reflective journals required significant cognitive effort in planning. The students employed various strategies to reduce the cognitive load during the planning process. However, writing autobiographies was less demanding in terms of accessing linguistics and language sources. The results showed that the participants used fewer cognitive strategies and interacted less with social tools on the autobiographical writing task. Most students used min-maps and pen and paper to brainstorm ideas to remember specific details, select relevant events, and ensure the writing was coherent.

The next chapter exclusively examines the influence of two key variables, writing proficiency level and writing genres (reflective journals and autobiographies), building upon the analysis of writing strategies logs and writing texts written by proficient and less-proficient writers.

Chapter 5   Results of the Writing Strategies Employed by Proficient and Less-Proficient Writers

5.1   Introduction

This chapter presents the findings related to the influence of two main variables, writing proficiency level and two types of writing genres, on the writing strategies used by EFL students. The chapter analyses the writing strategies of proficient and less-proficient writers when writing reflective journals and autobiographical paragraphs.

The students had to complete and submit a reflective journal paragraph for their writing course requirements in their curriculum. Following the research aim, the researcher used this writing task completed during the second semester as part of the research data. In addition, the participants were asked to write a personal paragraph explaining their reasons for enrolling in the medical college. Understanding students' cognitive and social manipulations of tools, materials, and relationships while performing two different tasks was essential to understanding the influence of task complexity and task type on the use of the writing strategies. The two types of tasks differed in the complexity, cognitive demands, and strategies required to complete them. Task complexity refers to the degree of difficulty involved when completing a task. This difficulty is influenced by the amount and variety of information and sources learners need to handle (Ellis, 2003). The construct of task complexity is defined in this research, as proposed by Robinson (2001), as cognitive loads imposed on L2 learners' memory and attention sources when accomplishing cognitive tasks such as writing.

Writing reflective journal and autobiographical (personal) paragraphs can impose different cognitive demands on writers. In a reflective journal, the writer should reflect on specific events and experiences, such as writing a review of a movie or book. This type of writing requires metacognitive skills and the ability to express opinions, feelings, and emotions. In this type of writing, cognitive demands may arise from analysing and evaluating information and formulating coherent responses. Similarly, autobiographical writing requires a clear and concise presentation of thoughts in a logical and coherent manner. Cognitive loads may arise from recalling details, selecting events to include, and maintaining narrative coherence. EFL writers use strategies to mediate the cognitive loads associated with each type of writing to facilitate the writing process. A cognitive task's complexity is one of the most important variables in L2 writing research that has not been extensively studied, particularly in the EFL context (Teng & Ying, 2023). Thus, it was essential to investigate the influence of the textual factor on the writing strategies used when writing two different types of texts. This

research has successfully addressed the question of the influence of cognitive demands on reflective journal and autobiographical writing in the EFL context.

5.2   Writing Proficiency Level

To identify and measure the participants' writing proficiency, the researcher asked them to write an argumentative paragraph. This genre was chosen because it required students to articulate a clear stance and support it with reasoning and evidence, making it a suitable measure of writing proficiency (for more details on the rationale behind selecting this genre and the topic, see Section 3.8.1). While the full marking procedure and classification process are detailed in the methodology chapter (see Sections 3.8.2 and 3.8.3), this section provides a brief overview of this process to contextualise how proficiency levels were determined and their relevance to the findings. The participants' paragraphs were marked on the criteria proposed by Jacob et al. (1981), which assess writing proficiency across five key components: content, organisation, vocabulary, language use, and mechanics. These criteria provided a structured framework for evaluating the participants' writing performance.

The total number of participants who agreed to take the test was 18. Only 10 participants agreed to complete all the research processes. Two participants were not included as their scores fell within the mid-range, which could have affected the ability to distinguish clear differences between the two proficiency groups. Consequently, eight participants were selected and classified into two groups: four proficient and four less-proficient writers.

The writing proficiency level is a key writer-related factor in this study. Despite the small sample size, classifying participants as proficient and less-proficient writers provided insights into how participants with different proficiency levels mediate their cognitive loads, facilitate their writing processes, and interact with their surroundings through interactions with others and artefacts to extend their minds during the writing act. This classification also helped identify nuanced variations in mediation strategies and patterns across proficiency groups. The table below shows the participants' information, the test scores they obtained, and their proficiency level.

Table 5   Scores on the Writing Proficiency Test

Participants	Score			Mean Score	Level of Proficiency
	Researcher	Rater 1	Rater 2		
Sara	84	87	83	84.67	Proficient
Maha	90	89	92	90.33	Proficient
Nada	85	85	87	85.66	Proficient
Leen	83	83	84	83.33	Proficient
Jazi	52	56	53	53.67	Less-proficient
Alla	63	62	60	61.67	Less-proficient
Rima	49	51	54	51.33	Less-proficient
Rana	50	53	51	51.33	Less-proficient

The following sections present a detailed analysis of the participants' writing strategies when composing the two types of texts.

5.3   The Writing Strategies for Reflective Journal Paragraphs

The writing genre was another textual variable examined in the current study to assess the influence of the type of writing on the students' writing strategies. As mentioned earlier, the participants wrote a personal reflection paragraph about a movie or a book as a part of the writing course curriculum. They were asked to log all the sociocognitive writing strategies they employed when they planned, wrote, and edited their paragraph. The researcher answered all the questions raised by the participants regarding the writing strategies log to remove any ambiguity and ensure the clarity of the processes and validity of the analysis. The following subsections present the analysis of the writing strategies of proficient and less-proficient writers when they wrote a reflective journal paragraph.

5.3.1   Analysis of Planning Strategies

5.3.1.1   Proficient Writers

Analysing the writing strategies logs revealed that proficient writers used various cognitive and social tools when planning their writing. To prepare for her writing, Leen mentioned in her log, '*The first thing I asked the doctor was about the required points in writing, such as the key sentence and the plot of the story ... Then I used the Google program to search for the topic and collect my thoughts*'. In addition, Maha used a variety of sociocultural affordances tools and social strategies. She used technological mediation strategies such as searching online and watching the movie. In addition, she communicated with her class teacher. Nada also used integrated strategies as she stated in her log '*Search on Google about the same idea, ask the teacher if there are guidelines I have to follow. Google also to have new ideas*'. Similarly, Leen mentioned in her logs, '*The first thing I searched about was the writing topic because I could not talk about anything unless I fully understood the subject*'. However, Sara only interacted with YouTube to plan her writing. She watched a YouTube video about the movie in preparation for writing a summary and reflection.

5.3.1.2   Less-Proficient Writers

The less-proficient writers employed mediating tools and materials in the planning stage. The analysis of the logs indicated that three out of four less-proficient writers used cognitive tools and materials in combination with social tools, except for one less-proficient writer who only used social tools. Jazi used the cognitive strategies of questions and answers and a mind map integrated with the Google Search tool to search for information. Similarly, Rana used social and informal interaction strategies to work on her plan with her study group and formally interact with her teacher. Additionally, she used the Google Search tool to search for information. To be familiar with the book she was reviewing, Alla read the book by focusing on the important parts. She also got an overview of people's opinions about the book by searching social media so she could identify the most important parts. While three less-proficient writers employed integrated strategies (tools and people), Rima mediated her planning by interacting with social tools only, such as Google Search and YouTube. Table 6 summarises the planning strategies employed by proficient and less-proficient writers, as reported in their logs.

Table 6   The Planning Strategies Employed by Proficient and Less-Proficient Writers When Writing Reflective Journal Paragraphs

Proficient Writers	Planning Strategies	Less-Proficient Writers	Planning Strategies
Leen	• Communicate with her teacher. • Google Search	Jazi	• Questions and answers • Mind map • Google Search
Sara	• YouTube	Rima	• Google Search • YouTube
Maha	• Search online • YouTube • Communicate with her teacher	Rana	• Work with study group • Ask her teacher • Google Search
Nada	• Google Search • Communicate with her teacher.	Alla	• Read the book • Search on social media

Table 6 shows that three proficient writers employed integrated strategic techniques when planning their reflective journal paragraphs. The data suggest that the type of writing text influences proficient writers' planning strategies. The nature of this type of text required careful planning by gathering information about the topic. Consequently, they relied on two main sociocultural tools, Google Search and YouTube, to collect information and support their cognitive planning functions. In addition, they communicated with their teacher to ask questions pertaining to the planning stage. One notable finding was that proficient writers did not use cognitive planning tools like mind maps and outlines. This indicates that proficient writers used the affordances of technological tools to prepare for their reflective paragraphs. As proficient writers, they mediated their cognitive loads in planning by following effective strategies for searching for information about the writing topic. Their English language abilities might have facilitated their planning strategies. As EFL medical students, they might have had adequate language abilities to understand when reading and listening to digital English content. Thus, they used technological tools to offload their cognitive function (Overstreet, 2022).

Similar to proficient writers, less-proficient writers interacted with social tools when planning. However, less-proficient writers also employed some cognitive tools. The genre of writing influenced their planning strategies. Their implementation of integrated strategies suggests that planning for the

reflective journal paragraph was a cognitively demanding task for less-proficient writers. The utilisation of cognitive tools such as questions and answers, mind maps, and reading books supported the writers' cognition and acted as mediation to free up some space in working memory for the internalisation of new information obtained from other social tools such as social media, Google Search, and communication with others. For less-proficient writers, integrated planning strategies mediated cognitive load through the use of cognitive tools to structure and organise cognitive thoughts, and interaction with social tools to extend their cognitive functions. These cognitive and social tools foster an understanding of the writing topic and facilitate the generation of ideas (Hung, 2021).

To sum up, comparing the planning strategies of the two groups showed that proficient writers employed social tools and mediation strategies. In contrast, less-proficient writers were involved in integrated planning strategies, as summarised in Table 5. The textual factors, including writing genre and level of proficiency, were interrelated with the students' planning strategies.

5.3.2 Analysis of Writing Strategies

5.3.2.1 Proficient Writers

During the writing stage, the proficient writers deployed some mediating writing strategies. For example, Leen employed both cognitive and material mediation strategies. First, she wrote her ideas. Then, she used tools and mediating strategies such as Google Search to search for how to use difficult words in a sentence, and Microsoft Word. She also used material mediation strategies, such as the English coursebook, to learn some grammar aspects, such as tenses. Sara reported using Google Translate to assist her when writing and Microsoft Word to type her paragraphs. In addition, as a proficient writer, Maha employed writing mediating tools and materials. In her log, Maha reported her writing strategies. She wrote '*Using (Notability - Pages - Word) for writing, Writing the main ideas first, dividing it into sections (Introduction-Main-Conclusion), writing separate sentences and connecting them*'. Similarly, Nada used mind maps and outlines to organise and use her ideas in writing. She also wrote notes on paper and then used Microsoft Word to type her paragraph.

5.3.2.2 Less-Proficient Writers

The data analysis demonstrated that all the less-proficient writers used tools such as Microsoft Word as a main cognitive mediation tool for writing. However, two less-proficient writers deployed other cognitive strategies to facilitate the writing process. For example, Rima extended her mind through a relationship. She was involved in collective thinking and writing through group interaction. This coordinated effort resulted in unity in unifying ideas and conclusions (Sembiring, 2018). Additionally,

Alla used a cognitive mediating tool by writing all her ideas first in sequence. Table 7 summarises the writing strategies employed by proficient and less-proficient writers, as reported in their logs.

Table 7   The Writing Strategies Employed by Proficient and Less-Proficient Writers When Writing Reflective Journal Paragraphs

Proficient Writers	Writing strategies	Number of words	Less-Proficient Writers	Writing strategies	Number of words
Leen	• Arrange her thoughts • Google Search • Course Book • Microsoft Word	130	Jazi	• Microsoft Word	171
Sara	• Google Translate • Microsoft Word	163	Rima	• Write in a group • Microsoft Word	159
Maha	• Writing main ideas • Divide the paragraph • Writing separate sentences and connecting them • Using writing tools such as Notability, Pages, and Microsoft Word	133	Rana	• Notability • Microsoft Word	131
Nada	• Mind map and outlines • Notes • Microsoft Word	155	Alla	• Write all ideas in sequence. • Microsoft Word	138

Table 7 shows that three out of four proficient writers used tools and materials integration strategies when writing reflective journal paragraphs. As proficient writers, most of them did not rely solely on technological tools when writing. They integrated some cognitive writing strategies, such as writing

the main ideas first and mind maps, to support their cognitive abilities for generating and organising thoughts. For example, Maha reported in her log, '*I divided my writing into sections so I could organise my thoughts*'. After the participants interacted with cognitive tools, they supported their cognition and extended their minds through interactions with the affordances of tools such as Google Search, Google Translate, and Microsoft Word.

Similarly, less-proficient writers, like their proficient counterparts, relied on tools like Microsoft Word or Notability for their writing. However, the analysis of their logs revealed differences from proficient writers. Only two participants were engaged in other social and cognitive strategies when writing. For instance, Rima described her writing strategies: '*Write with my group and learn a lot, write the background and the main paragraph using Microsoft Word*'. As mentioned in her logs, Alla was involved in cognitive strategies, as discussed in Section 4.4.2.1.2. She used some cognitive strategies, including gathering all the ideas she wanted to discuss, arranging them in sequences, writing on paper, and typing the paragraph using Microsoft Word. However, most less-proficient writers (3) did not integrate cognitive and material strategies when writing. This resulted in texts that were slightly shorter than those written by proficient writers (see Table 6 and samples of reflective journal paragraphs of a proficient and a less-proficient writer in Appendixes E and F). The absence of a planning strategy influenced the quality and depth of the students' written texts. A possible interpretation could be that writing a reflective journal might be cognitively demanding for most less-proficient writers as they need to evaluate ideas and write personal reflections. Thus, reading books or using cognitive tools such as writing notes while writing might be less effective for them. These materials and tools might double the cognitive loads as less-proficient writers have to engage in the mental processes of remembering, understanding, and organising. Therefore, they relied mainly on information gathered in the planning stage and used tools to produce their texts.

As observed above, proficient and less-proficient writers used writing tools as their main writing strategies. However, the data analysis revealed that proficient writers integrated more cognitive and material strategies than less-proficient writers when writing reflective paragraphs. The study indicated that both groups of writers interacted with external resources, either cognitive tools, materials, or technological tools, to process information. In this regard, writing is viewed as an extended activity through the manipulation of external resources and structures (Overstreet, 2022). Writers use tools as part of their cognitive processes during writing and these function as extensions of their cognitive abilities (Chalmers, 2008).

5.3.3   Analysis of Editing Strategies

5.3.3.1   Proficient Writers

Proficient writers used some editing mediating strategies when editing their reflective journals. Three proficient writers used integrated editing strategies to obtain assistance from tools and other people. However, only one participant used an editing tool. In her log, Leen stated '*I used Grammarly to check my writing. I also sent my writing to a group of my friends and asked them to proofread it and if it needed to be modified or not'*. Similarly, Maha communicated with her teacher to proofread her paragraph. She also used Grammarly to correct mistakes and she reread her paragraph more than once. Nada used Grammarly to edit her paragraph and asked someone for feedback. In addition, she used the paraphrasing tool QuillBot to find alternative meanings. Although three proficient writers utilised integrated strategic techniques, Sara relied only on Grammarly as a supportive editing tool. Grammarly is a writing assistance tool that produces real-time feedback by providing suggestions for improvement and correcting syntactical and grammatical errors.

5.3.3.2   Less-Proficient Writers

During the editing stage, the less-proficient writers used integrated editing strategies. Two out of four less-proficient writers extended their minds through interaction with other people and writing assistance tools. Jazi used her knowledge of the English language and writing skills to edit her paragraph. In her log, she stated, '*After writing the first draft, I read it again and revised for mistakes. After writing the second draft, I had someone read it'.* Rima and Alla relied on using Grammarly, as well as asking for feedback from others. However, Rana interacted only with Grammarly to edit her paragraph. Table 8 summarises the editing strategies employed by proficient and less-proficient writers as reported in their logs.

Table 8   The Editing Strategies Employed by Proficient and Less-Proficient Writers When Writing
         Reflective Journal Paragraphs

Proficient Writers	Editing Strategies	Less-Proficient Writers	Editing Strategies
Leen	• Grammarly • Communicate with her friends	Jazi	• Reread it • Ask a sister
Maha	• Communicate with her teacher • Grammarly	Rima	• Grammarly • Ask a friend
Sara	• Grammarly	Rana	• Grammarly
Nada	• Grammarly • QuillBot • Ask for feedback	Alla	• Communicate with her teacher • Grammarly • Communicate with her mother

The analysis of the reflective journal writing strategies logs revealed that both proficient and less-proficient writers adopted similar editing strategies. Most participants (6) employed integrated editing strategies, while Sara and Rana did not. As shown in Table 8, the Grammarly writing assistance tool was used used by all writers to edit their paragraphs. However, Nada (a proficient writer) used QuillBot in her editing process to check for plagiarism. Both groups of writers employed social communication strategies with the teachers, family members, and friends for feedback.

As writing this text was a course requirement, all the participants felt it was necessary to utilise an integrated editing strategy of utilising tools and seeking human feedback to increase the quality and effectiveness of the written content. Writers successfully integrated the advantages of technology to provide automated suggestions and corrections, along with the nuance and expertise that can only be provided by human feedback.

The data confirmed that although proficient and less-proficient writers used similar editing strategies, their internalisation of combined editing approaches (Grammarly and human feedback) differed. The differences stemmed from the differences in their writing proficiency level. For example, Alla (less-

proficient writer) mentioned in her log the reasons for combining tools and human feedback, she wrote:

> *The Grammarly program helped me find another alternative for some words and correct capitals and also quickly correct errors, which contributes to saving time and less stress, seeking help from a family member who has writing experience helps in avoiding mistakes.*

On the other hand, Nada (proficient writer) had different reasons for using Grammarly and human interaction. She reported in her log,

> *The programs I use for correcting and paraphrasing my words are essential to make good academic writing and to improve it. I ask for feedback from the teacher to make sure that everything is perfect, and I follow the guidelines.*

Proficient writers used Grammarly for broader revisions and sentence structures, while less-proficient writers primarily used it for sentence-level corrections. Similar findings in Lie's (2016) research confirmed that although proficient and less-proficient writers tend to use similar writing strategies, they differ significantly in their internalisation of the resources.

In summary, the above sections highlight the main mediating writing strategies that proficient and less-proficient writers employed when writing their reflective journal paragraph (see Figure 10). The writing strategies were coded by c olour: planning strategies (blue), writing strategies (green), and editing strategies (orange). Both groups used the writing strategies that appeared in the middle of the map. The writing strategies on the left side were used only by proficient writers, and on the right side, they were used only by less-proficient writers. The frequencies of the codes that appeared in each document were also included.

Comparison of Reflective Journal Writing Strategies
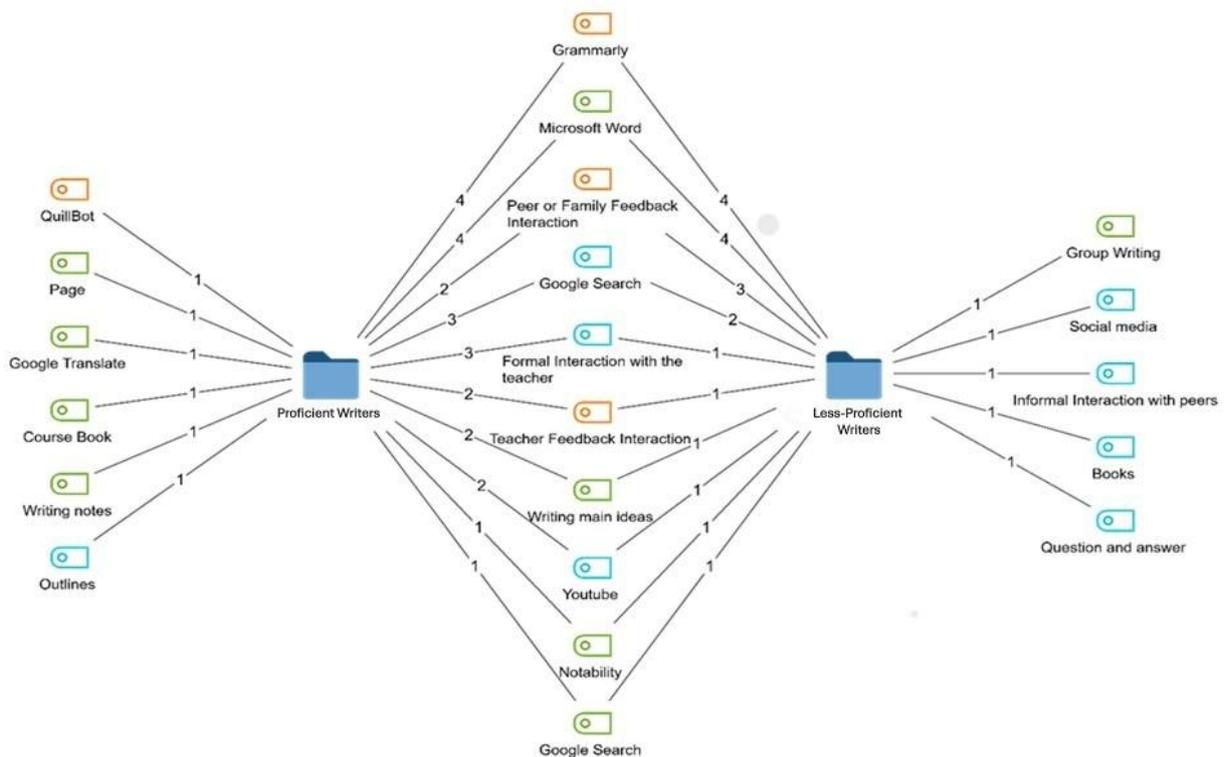
Figure 10   Differences in Reflective Journal Writing Strategies Used by Proficient and Less-proficient Writers

The analysis revealed that writing genre and writing proficiency level were important variables influencing the writing strategies deployed by the two groups of writers. Writing reflective journals imposed cognitive loads on writers as they needed to be familiar with their social purposes and structure. Thus, EFL writers planned carefully and used more planning mediating strategies than writing and editing strategies (see Section 4.4.2.1.3). Although writers had similar editing strategies, their internalisation of tools was found to be differently influenced by their level of writing proficiency. The analysis of the editing strategies revealed that all writers used Grammarly for different reasons and purposes.

5.4   The Writing Strategies for Autobiographical Paragraphs

Autobiographical writing was another text type the participants completed in this study. They were asked to write about their personal reasons for choosing to study at medical college and their future goals within this field. They were required to consider their experiences, motivations for studying medicine, and desires and plans. The researcher chose this topic because the students were in their first year in medical college, so it was hoped that it would stimulate them to share their experiences and be motivated to write. The participants wrote their paragraphs and recorded all the

sociocognitive strategies used to complete their writing in the writing strategies logs. The following subsections present the analysis of the writing strategies of proficient and less-proficient writers when they wrote an autobiographical paragraph.

5.4.1   Analysis of Planning Strategies

5.4.1.1   Proficient writers

Analysing the writing strategies logs revealed that proficient writers used only two planning tools for their autobiographical writing. To plan her writing, Maha mentioned in her log that she used a '*mind map to organise the main ideas and sub-ideas*'. Similarly, Leen reported in her log that she used '*Brainstorming using mind map strategies to generate ideas*'. While Maha and Leen deployed a cognitive tool only for the planning stage, Nada interacted with mind maps and Google Search to plan her writing. She reported in her log, '*I used Google because I wanted to compare my ideas to others and to know that I followed the correct order*'. However, Sara did not follow any planning strategies, as reported in her log.

5.4.1.2   Less-Proficient Writers

Three less-proficient writers used the cognitive tool mind mapping to plan their writing. In their logs, Jazi, Alla, and Rima reported using mind maps to brainstorm ideas and organise their thoughts. However, Rana noted '*No planning strategy*' in her log. Table 9 summarises the planning strategies employed by proficient and less-proficient writers as reported in their logs.

Table 9   The Planning Strategies Employed by Proficient and Less-Proficient Writers When Writing Autobiographical Paragraphs

Proficient Writers	Planning Strategies	Less-Proficient Writers	Planning Strategies
Leen	• Mind map	Jazi	• Mind map
Maha	• Mind map	Rima	• Mind map
Sara	• No planning strategy	Rana	• No planning strategy
Nada	• Mind map • Google Search	Alla	• Mind map

Table 9 shows that most writers (6) used the mind map strategy. Two participants reported no planning strategy, and one used Google Search combined with a mind map in the planning stage. The writing genre influenced the students' planning strategies. Since this type of text focuses on reporting personal experiences, students relied on cognitive strategies such as brainstorming using a mind map to generate and organise their ideas. A mind map is a self-directed access cognitive tool that assists the writer's cognitive abilities. The data analysis revealed that the participants who used the mind map strategy wrote longer, more detailed paragraphs.

However, Sara and Rana did not follow any planning strategy. Possible interpretations of this could be that the participants might consider the writing topic personal and familiar, making them feel that the topic did not require planning. They assumed that they could write freely and express their ideas without following a specific writing plan. In addition, as this piece of writing was not assessed as part of their academic study, this may have led students to deviate from their typical planning strategies when completing it.

The absence of a planning strategy appeared to influence the length and the level of detail in the students' written texts. As a proficient writer, Sara wrote a short paragraph (132 words) compared with other proficient writers who wrote long and detailed paragraphs (see Table 9). Similarly, Rana (a less-proficient writer) did not mention many details about her experience of choosing to study in the medical field. She wrote a short paragraph (67 words). Although Alla (a less-proficient writer) used a mind map when planning her writing, she produced a short paragraph (65 words) compared with the two other less-proficient writers: Jazi (234 words) and Rima (103 words). This suggests that the writing proficiency level and emotional connection with the personal writing topic influence the production of autobiographical writing.

In summary, most proficient and less-proficient writers employed similar planning strategies, such as using a mind map, as shown in Table 8. However, their writing productions differed due to their proficiency levels (see samples of autobiographical paragraphs of a proficient and a less-proficient writer in Appendixes G and H). In addition, proficient writers' proper use of the planning strategy (Mu, 2005) and emotional connection to the writing topic might be other factors that influenced the students' writing products.

5.4.2   Analysis of Writing Strategies

5.4.2.1   Proficient Writers

The analysis of the writing strategies logs demonstrated that all the proficient writers employed integrated strategic techniques when writing autobiographical paragraphs. The data analysis showed

that Leen, Maha, and Sara employed Google Translate and Microsoft Word to write their paragraphs. However, Leen and Nada integrated the cognitive strategies of writing their drafts on paper and then typing their text using Microsoft Word.

5.4.2.2   Less-Proficient Writers

Two less-proficient writers interacted with Microsoft Word software during the writing stage to support and facilitate the writing process. For example, Jazi mentioned the writing strategies in her log. She wrote, '*Use ideas in the mind-map and write the paragraph in Word*'. However, two participants integrated strategic tools. For instance, Rana interacted with tools such as Microsoft Word and digital note-taking Notability to support and scaffold her during the writing stage. Similarly, Rima reported in her logs '*I used the non-academic writing method because it explains the feelings in a comfortable way, I used Microsoft Word*'. Table 10 summarises the writing strategies employed by proficient and less-proficient writers as reported in their logs.

Table 10   The Writing Strategies Employed by Proficient and Less-Proficient Writers When Writing Autobiographical Paragraphs

Proficient Writers	Writing Strategies	Number of words	Less-Proficient Writers	Writing Strategies	Number of words
Leen	• Writing on paper • Google Translate • Microsoft Word	203	Jazi	• Microsoft Word	234
Maha	• Google Translate • Microsoft Word	379	Rima	• Writing on paper • Microsoft Word	103
Sara	• Google Translate • Microsoft Word	123	Rana	• Notability • Microsoft Word	67

Proficient Writers	Writing Strategies	Number of words	Less-Proficient Writers	Writing Strategies	Number of words
Nada	• Writing on paper • Microsoft Word	256	Alla	• Microsoft Word	65

The table outlines various aspects of the writing strategies used by proficient and less-proficient writers. The analysis revealed that all the proficient writers used Microsoft Word as a main writing assisting tool. However, one participant employed a combination of cognitive tools: writing on paper first and then a writing tool (see Section 4.4.2.2.2).

Three proficient writers interacted with the social tool Google Translate to search for synonyms, find a word, or translate it into English. Their use of this tool helped them clarify ideas and make vocabulary choices during writing. For example, Maha used Google Translate and Microsoft Word while composing a paragraph about her experience studying medicine. In her writing, she included ideas and examples drawn from both her academic coursework and her reflections:

> *For example, in the psychology course, we learned about different types of psychological disorders and how to take care of psychiatric patients, and how to care for your own psychological health… To illustrate, when you choose to work as a healthcare provider you devote your time and efforts to help people to alleviate their pain and suffering so they can get better and make them able to regain their normal life.*

The analysis of the less-proficient writers' paragraphs showed that they wrote shorter texts than the proficient writers. The study revealed that less-proficient writers mediated their writing by relying on Microsoft Word. Although it can provide its users with assistance during writing, such as flagging errors about spelling and some grammatical errors, it has limitations in assisting writers with sentence construction, generating ideas, and searching for appropriate vocabulary. Thus, using mediating writing strategies might help less-proficient writers to mediate cognitive load, compensate for language deficiency, and improve their academic writing.

To sum up, the findings revealed that both groups of writers interacted with the writing assistance tool Microsoft Word. Proficient writers also interacted with social tools, such as Google Translate, which influenced the production of their written texts. Proficient writers thus employed writing strategies to help achieve their writing goals. Internalisation and effective implementation of writing

strategies are the distinguishing factors between proficient and less-proficient writers (Beare, 2000; Mu, 2005).

5.4.3   Analysis of Editing Strategies

5.4.3.1   Proficient Writers

The data analysis revealed that three proficient writers interacted with a writing digital assistance tool during editing. Leen, Sara, and Nada used Grammarly to help them edit their paragraphs. However, Leen used Google Translation in combination with Grammarly. One notable finding was that Maha did not follow any editing strategies. She only relied on autocorrection on her iPad.

5.4.3.2   Less-Proficient Writers

The results show that three less-proficient writers interacted with the automated feedback tool, Grammarly, during the editing stage, according to their writing strategies log. However, Jazi employed an integrated editing strategy. She reported in her log *'I edit my paragraph using Grammarly and I ask my older sister for her feedback'.* To edit her paragraph, Alla relied only on communication with her sister to get feedback on her writing. Unlike the other less-proficient writers, she did not interact with any tool during the editing stage. Table 11 summarises the editing strategies employed by proficient and less-proficient writers as reported in their logs.

Table 11   The Editing Strategies Employed by Proficient and Less-Proficient Writers When Writing Autobiographical Paragraphs

Proficient Writers	Editing Strategies	Less-proficient Writers	Editing Strategies
Leen	• Google Translate • Grammarly	Jazi	• Grammarly • Communication with her sister
Maha	• Auto correction in iPad	Rima	• Grammarly
Sara	• Grammarly	Rana	• Grammarly
Nada	• Grammarly	Alla	• Communicate with her sister

As illustrated in Table 11, the analysis revealed that the majority of proficient and less-proficient writers mediated cognitive loads during the editing stage by interacting with assistance tools to facilitate the editing process. Writers find that Grammarly is a convenient tool to obtain immediate feedback instead of waiting for other people's feedback (Koltovskaia, 2020). Thus, the students relied on Grammarly to correct their paragraphs in all aspects, including spelling, sentence structure, and vocabulary choice. It is worth mentioning that some participants stated in the interviews that they considered Grammarly to be an assistance tool, not only to edit their paragraphs but also to learn from the explanations and suggestions provided by Grammarly and avoid repeating these mistakes when writing similar texts (see Section 4.2.2.3).

The use of Grammarly was combined with seeking feedback from people or using other tools. The proficient writer, Leen, used Google Translate in the editing process. She might have used it to check the meaning and spelling and translate sentences. Her paragraph reflected the effective employment of editing strategies. She was able to include complex information and incorporate examples, which added depth to her expression of her personal narrative experience. In addition, using Grammarly and seeking feedback from her sister allowed the less-proficient writer, Jazi, to write a good, detailed paragraph with variations in language and expressions. The integrated editing strategies used by proficient and less-proficient writers enhanced the clarity of their written products.

Although most writers interacted with tools to facilitate the editing process, two participants did not interact with any tools. For example, the proficient writer Maha relied on the autocorrection offered on her iPad to correct any mistakes. In addition, Alla only communicated with her sister to proofread her paragraph. An explanation of this could be that editing was considered an important stage for the writers. The purpose of writing influenced the writing strategies employed by them. Since this paragraph was not assessed and was written for the researcher, these two writers might have felt that it was unnecessary to make an effort to edit their paragraphs. Compared with the reflective journal paragraphs, the participants used various editing strategies for two reasons: the genre of writing posed some challenges for writers, and the writing texts were assessed by the teacher.

The writing proficiency level was not an important factor influencing the editing strategies employed by the writers when writing autobiographical paragraphs. Most proficient and less-proficient writers mediated the editing process by using Grammarly. However, the genre of writing was a main factor that influenced the editing strategies used by both groups of writers. Since this type of writing imposed fewer challenges and was not assessed, unlike the reflective journal writing, the students were more concerned with correcting surface-level errors to ensure the clarity of the intended meaning.

The above sections highlight the main mediating writing strategies that proficient and less-proficient writers employed when writing autobiographical paragraphs (see Figure 11). The writing strategies were coded by colour: planning strategies (blue), writing strategies (green), and editing strategies (orange). The writing strategies that appear in the middle of the map were used by both groups of writers. The writing strategies on the left side were used only by proficient writers, and on the right side, they were used only by less-proficient writers. The frequencies of the codes that appeared in each document are also included.

Comparison of Autobiographical Writing Strategies
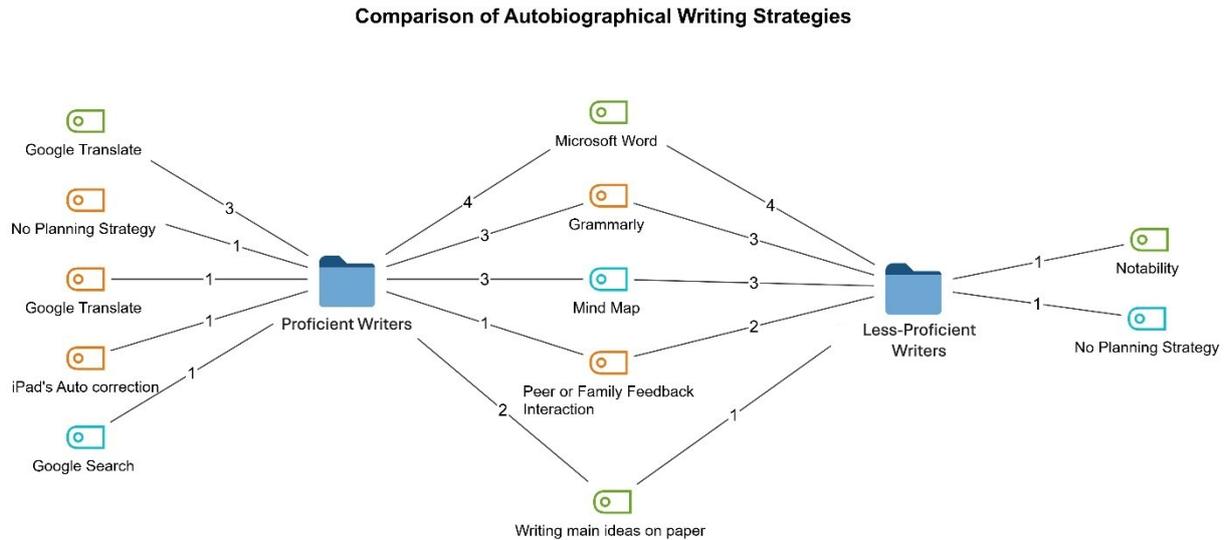
Figure 11   Difference in Autobiographical Writing Strategies Used by Proficient and Less-proficient Writers

5.5   Summary of the Results

The analysis of the participants' writing strategies logs demonstrated that writing genre and writing proficiency level influenced the writing strategies employed by the two groups of writers. Writing reflective journals and autobiographical writing imposed specific cognitive loads on writers associated with each type of text. Thus, most EFL writers used mediating writing strategies when writing reflective journals and autobiographical paragraphs. Since writing a personal reflection about an event, a book, or a movie requires familiarity with the topic, the current study's writers planned carefully by employing more mediating planning strategies than when writing and editing a reflective journal entry. At the same time, writing about personal experiences requires recalling information and organising ideas. Thus, most writers in this research tended to use cognitive planning and mediating tools such as mind maps to generate ideas and find connections.

The findings confirmed that writers' cognition is not limited to the mind only but is influenced and shaped by social factors (Vygotsky, 1978), such as past learning experiences, the writing genre, and

the level of writing proficiency. In addition, cognition is embodied and influenced by certain contextual factors (Lave, 1988). For example, writers used various writing strategies when writing reflective journal paragraphs, as opposed to autobiographical paragraphs. The variation in the writing strategies used stemmed from differences in writing proficiency, the purpose of writing, and the type of texts. The study found that contextual and textual factors influenced writing strategies. For instance, as reported by the participants in the interviews, the absence of formal and proper writing instruction in secondary school influenced the undergraduate students' writing strategies. In the current study, all the participants sought assistance from tools and resources such as Grammarly and Google Translate to learn spelling, synonyms, sentence structures, and other writing aspects.

The purpose behind a writing task significantly impacted the students' writing strategies. The reflective journal paragraph was written for a formal assessment, while the autobiographical paragraph was written for the researcher and was not assessed. The study found that the students tended to use more effective and structured strategies to meet the assessment criteria. Conversely, when students were not required to present their writing for formal assessment, they tended to focus on the flow of ideas, which resulted in fewer informal strategies being employed.

The internalisation of writing tools and resources differed between proficient and less-proficient writers. Since each writer had a unique learning experience, they used personalised writing strategies to mediate their cognition, achieve writing goals, develop certain weak areas, and enhance the writing processes. For example, the use of Google Search differed between proficient and less-proficient writers when writing a reflective journal paragraph. In her log, Leen (proficient writer) reported using Google Search. She wrote, '*The first thing I searched about was the writing topic because I could not talk about anything unless I fully understood the subject*.' In her log, Rana (less-proficient writer) reported using Google Search because '*I want to learn how to write reflective sentences in my paragraph*'.

Proficient writers were found to be more proactive in employing a range of strategies. The analysis of autobiographical writing strategies logs suggests that while both groups used similar tools, proficient writers translated their planning strategies into more detailed paragraphs. This was demonstrated in the translation of mind map ideas into detailed and comprehensive paragraphs. Proficient writers may have used mind maps as a tool for detailed prewriting preparation. Less-proficient writers may use mind maps only to generate ideas, resulting in short and less detailed paragraphs. The lack of writing proficiency may be causing difficulties in developing ideas and organising thoughts. The next chapter presents a discussion of the study's results.

Chapter 6   Discussion

6.1   Introduction

The previous chapters (4 and 5) presented the results of the data analysis in relation to the three research questions. The researcher conceptualised L2 writing as a sociocognitive activity accomplished through interaction with people and resources to mediate the cognitive loads imposed when writing in L2. Thus, in the light of the sociocognitive theory of L2 writing, the researcher discussed the types of mediating writing strategies that EFL proficient and less-proficient writers deployed when writing in L2. These strategies were discussed and examined in light of the sociocognitive theory of writing. This research examined the relationships between three main components of sociocognitive theory—cognition, writer, and context—and studied their influences on the writing strategies employed by EFL writers. The previous chapter also identified contextual and textual factors interrelated with the use of writing strategies. This chapter presents an in-depth discussion of the study's results structured according to the three research questions. In addition, the researcher presents the main findings of each research question and makes connections to existing studies and theories presented in the literature review chapter and the broader literature.

The remainder of this chapter is divided into three sections, and their subsections discuss each research question in turn. Finally, Section 6.5 summarises the discussion of the three research questions.

6.2   EFL Sociocognitive Mediating Writing Strategies

6.2.1   Discussion of Research Question 1

RQ1 aimed to explore how proficient and less-proficient EFL students mediate their writing processes and how this affects their writing when writing in L2. To answer this research question, the researcher used a triangulation of qualitative research tools to conduct an in-depth investigation of different types of mediating strategies. Specifically, the researcher analysed semi-structured interviews, writing strategies logs, writing strategies diaries, and written texts to uncover all the types of sociocognitive mediating writing strategies. In light of the present research, which aims to confirm the interrelationship between cognition, writer, and context (social and textual factors), there were some

instances of repetition and confirmation of these relationships in the EFL writers' employment of writing strategies. Additionally, due to data triangulation, this research question overlaps with RQ3. Therefore, cross-referencing has been used to avoid repetition and to facilitate reading. The following subsection presents the discussion of the first emerging theme.

6.2.1.1 Cognitive Interactional Tools and Materials Strategies

6.2.1.1.1 Planning Strategies

Planning strategies were frequently used by EFL Saudi writers. The planning stage was an important process for preparing the writers for the content of the written texts. It is one of the most important elements in the composition process (Flower & Hayes, 1980, 1981). The findings in the current study indicated that proficient and less-proficient writers employed various cognitive and material tools when planning reflective journals and autobiographical paragraphs, and that each writing stage has a specific cognitive load associated with it. Therefore, EFL writers deployed mediating writing strategies to facilitate the writing processes. In terms of planning, the study found that writers employed different planning strategies when writing different types of text. Mind maps and outlines were the most common cognitive tools used by both groups of writers. However, some proficient and less-proficient writers employed integrated planning strategies by combining cognitive and social tools and materials for more effective planning.

Moreover, the study found that writing genre and writing proficiency level influenced the use of cognitive tools in the planning stage (see Chapter 5). When planning reflective journal paragraphs (see Section 5.3.1), proficient writers mainly interacted with sociocultural tools (Google Search and YouTube), whereas less-proficient writers integrated cognitive tools (mind map and questions and answer techniques), cognitive materials (reading books), and sociocultural tools (social media, and Google Search). Both groups of writers used the social strategies of communication with people to facilitate the planning process. When planning autobiographical writing (see Section 5.4.1), three of the proficient writers used mind maps, and one proficient writer used mind maps in combination with searching for information on Google. On the other hand, less-proficient writers relied only on mind maps for the planning process (see Section 5.3.1 and Section 5.4.1). Another planning strategy reported by participants in the interviews was the use of outlines.

The interaction with cognitive tools and materials helped EFL writers to mediate the planning process and to facilitate it. Previous L2 writing strategies research has focused on the types of mediating resources used by ESL/EFL writers in general (Lei, 2008; Kang & Pyun, 2013; Lei, 2016). Adopting the sociocognitive writing theory, the current study examined and explored all the mediating cognitive and social strategies deployed by EFL writers. The findings suggest that the mind map was the most

common cognitive tool used by both groups of writers, particularly when writing autobiographical writing (see Section 5.4.1). The mind map is a self-access tool that helps writers organise mental thoughts, visualise ideas, and find connections. It is the most straightforward tool for generating ideas and extracting information from the brain (Buzan, 2002). Most of the participants found that mind maps assisted them during the planning stage by extending their mind functions of recalling information and structuring inner thoughts.

Implementing mind mapping techniques has the potential to support students' writing processes by helping them organise their thoughts and structure their texts more effectively. Previous studies have demonstrated the positive impact of mind-mapping strategies on students' writing development (Lai & Chiu, 2013; Al-Zyoud et al., 2017; Naghmeh-Abbaspour & Rastgoo, 2020; Mantra et al., 2021). In the Saudi context, Bukhari (2016) examined the role of mind mapping in the prewriting stage and found that its application contributed to improvements in paragraph organisation, text length, coherence, cohesion, and content development**.**

The present study partially aligns with these findings, particularly with Bukhari (2016), due to the similarity in research context. However, rather than examining writing performance holistically**,** this study focused on observable differences in text length and organisation, as reflected in the autobiographical paragraphs. The findings suggest that although both proficient and less-proficient writers used mind maps in their writing process, their engagement with the tool and the extent to which they translated their planning into written text varied.

The analysis of word counts (see Section 5.4.2) indicates that proficient writers produced longer paragraphs than less-proficient writers when using mind maps**.** This difference in text length may be linked to variations in how writers approached the planning stage and the extent to which they developed their ideas in written form. Previous research has highlighted that proficient L2 writers tend to devote more time to planning, allowing for more structured and elaborated paragraphs, whereas less-proficient writers often struggle with idea expansion and paragraph development (Bai et al., 2014; Sasaki, 2000; Hosseinpur & Kazemi, 2022; Manchón & Roca de Larios, 2007).

Different contextual and textual factors might contribute to the differences in the use of planning strategies between the two groups of writers (see Sections 4.3.1. and 4.4.1). These factors include prior writing experiences, writer-related aspects such as language and writing proficiency, as well as textual influences, particularly the writing genre and its requirements. These factors may have influenced how proficient writers approach the planning process, resulting in paragraphs that are longer and more detailed while limiting the ability of less proficient writers to develop their ideas fully (see Section 5.4.1).

The primary reasons for using mind maps are to solve simple mental problems such as idea generation and charting, but they can also be employed to address more complex issues caused by information overload, attention problems, or the complexity of information required for academic or professional endeavours (Guerrero, 2022). The findings of the current research indicate that cognitive mediating tools such as mind maps are used by EFL writers to offload internal information and assist writers during the planning stage (see Section 4.2.1.1). The present study confirms the findings of Overstreet et al.'s (2023) study, which found that using notes as a cognitive external information source enabled cognition mediation and freed up space in the working memory to activate other mental functions. Cognitive activities are extended and mediated through interaction with and thinking about the surroundings through physical manipulations of environmental structures and resources (Paul, 2021; Overstreet et al., 2023).

The findings related to RQ1 suggested that EFL writers might mediate cognitive loads by interacting with cognitive tools like mind maps when planning texts that mainly require them to recall information and present ideas in a logically coherent manner. Mind maps seemed to be an effective way of organising ideas, finding connections, relating ideas, and subdividing ideas coherently, as reflected in the autobiographical paragraphs written by proficient writers. The next subsection discusses the cognitive writing tools and strategies employed by EFL writers during the writing stage.

6.2.1.1.2 Writing Strategies

As outlined in the first research question, which aims to discuss all the cognitive writing strategies and tools, this section specifies the cognitive writing tools employed by proficient and less-proficient writers. Cognitive writing tools refer to any resources and materials that were used by the EFL writers to mediate the writing process. The study found that some students preferred using the traditional method of writing, which was using pen and paper, as reported in the interviews. They found that writing their thoughts on paper as a draft helped them to evaluate their ideas and the whole structure of the paragraph (see Section 4.2.1.2). Other students integrated different strategic tools. According to their logs, some participants wrote their thoughts on paper and then used the writing assistance tool Microsoft Word. They also interacted with materials such as course books to support them during the writing stage (see Sections 5.3.2 and 5.4.2).

In this research, it was found that using pen and paper writing techniques when writing first drafts has a relationship with the writing proficiency level of the writers. The results indicated that proficient writers tended to arrange their thoughts and write the first drafts on paper before typing their texts using Microsoft Word for both the reflective journal and autobiographical writing (see Tables 6 and 9). The choice of using pen and paper as a first step in the writing stage may be associated with more

positive outcomes (Oatley& Djikic, 2008). Proficient writers were aware of the importance of free writing, which facilitates the flow of ideas and engages them more in the writing.

The process of progressing from pen and paper to a computer implies the implementation of an iterative approach by proficient writers. Several studies have confirmed that writing is not a linear process (Emig, 1971; Zamel, 1983; Abdullah, 2009). Proficient writers understand the need to create several drafts, make changes, and revisit what has been produced so far. The utilisation of traditional writing tools such as pen and paper and digital tools like Microsoft Word by proficient writers indicated that they were likely to be aware of the benefits and affordances of both tools (see Sections 4.2.1.2 and 4.2.2.2).

The use of pen and paper assists writers by translating their cognitive ideas into written sentences without distracting mental functions by paying attention to specific details (Park & Baron, 2017). In fact, the use of a computer at the onset of the writing stage might hinder the flow and presentation of ideas as a writer might be involved in continuous amendments and revisions while writing. Hoomanfard and Meshkat (2015) studied the cognitive processes of advanced EFL writers in two writing modes: using pen and paper and typing on a computer. The results of the screen recordings revealed that the participants in the computerised condition tended to engage in evaluation and revision processes while writing, while those in the handwriting condition postponed the revision until the end of the writing stage. Despite its affordances, handwriting is characterised as a laborious and time-consuming activity that is highly embodied as it demands a deep integration of cognitive and attentional resources with motor and perceptual skills (Mangen & Balsvik, 2016).

In the current study, the analysis of the semi-structured interviews revealed that most students were aware of the affordances of the various tools and artefacts. However, the study found that contextual and textual factors determined the actual employment of these tools. For example, the non-use of the pen and paper method among less-proficient writers might be linked to their writing proficiency level and past learning writing experiences. The use of pen and paper appears to entail a reliance on cognitive resources for elaborating and developing the ideas from the planning stage, which might be perceived as a cognitively demanding task for less-proficient writers. Traditional writing techniques require active elaboration of mental functions and an adequate language repertoire to transfer ideas into linguistic forms (Mangen & Balsvik, 2016). Thus, less-proficient writers mediated the writing process and extended the writing activity through direct interaction with computer assistance tools such as Microsoft Word. This interaction appeared to allow them to advance their writing and deal with language gaps (Overstreet, 2022), but their autobiographical paragraphs were shorter than those of proficient writers (see Table 9). A possible reason for this is that less-proficient writers need more training in the effective implementation of writing assistance tools.

From a theoretical viewpoint, the practice of writing in two modalities (pen and paper and computer) by proficient writers was evident and related to the application of sociocognitive theory to writing as developed in this research. This view presents writing as embodied in and extended to the surrounding environment. In the early stages of writing drafts, the use of pen and paper suggested that writers developed cognitive skills, including attention, recall, and perception, through sensorimotor and environmental means. The implementation of the computer in the second stage of writing indicated that writing is a highly embodied activity that involves the use of social tools, which are influenced by social factors, resulting in interaction with external tools and material artefacts as cognitive mediators and assistance tools for internal resources.

The next subsection discusses the cognitive mediating editing strategies utilised by EFL writers.

6.2.1.1.3   Editing Strategies

The last component related to the first theme, which is the cognitive interactional tools and strategies employed by writers during different writing stages, is the editing writing tools. In the present study, cognitive editing strategies were employed for revision and editing of the written texts. The term 'cognitive editing process' is used to signal inherently cognitive editing strategies, which involve various cognitive processes such as problem solving, attention, critical thinking, language activation and processing, and correction (Clark, 2008). Cognitive editing strategies are employed through interaction with writers' mental activities or with other people. In this study, the researcher explored the writers' interactions with others for the purpose of receiving feedback and making revisions to their writing. In addition, the researcher examined the textual and social factors that influenced their cognitive editing strategies.

In the current study, the analysis revealed two main factors influencing cognitive editing strategies: the writing genres and writing purpose (see Sections 5.3.3 and 5.4.3). The writing proficiency level of the participants varied, which influenced the internalisation of the editing strategies. The participants wrote reflective journals and autobiographical paragraphs. The study found that the majority of both proficient and less-proficient writers either utilised integrated editing strategies or relied only on tools. They communicated with other people (teacher, peers, family members, and friends) and interacted with the automated writing assistance tool, Grammarly.

The findings of the present study are consistent with several studies regarding the types of editing mediating strategies. Namely, Lei (2008) reported that two advanced Chinese students mediated their editing strategies through campus community-mediated strategies and society-mediated strategies. In her study, the two participants communicated with their teacher, experienced people around the campus, and other people, such as friends. In addition, they used the internet to check the meanings

of unfamiliar words and verify the spelling of words they were unsure about. The findings of Kang and Pyun's (2013) study also showed that two advanced American Korean learners mediated their editing process through the computer. Specifically, they sought assistance from the internet and from word processors, which facilitated the editing process by allowing them to move text around and copy and paste words and phrases from the internet. In addition, both writers communicated with other experienced Korean people such as parents, teachers, and friends for consultations about grammatical structures and other writing aspects. On the other hand, Naghdipour (2022) found that Arabic-speaking English learners were mainly involved in self-editing mechanisms like proofreading applications to solve writing problems and correct writing errors. They were less reliant on social strategies that encouraged interaction with other people for feedback and editing purposes. Therefore, the current study contradicted this finding. The present study found that both proficient and less-proficient EFL writers did not rely solely on digital editing tools. They actively interacted with teachers, peers, friends, and family members to obtain feedback and make revisions. The differences between the participants in the current study and in Naghdipour's (2022) study may be due to their differing educational and cultural contexts and to their differing focuses on collaborative learning and support systems. The results suggest that EFL writers would benefit from a more integrated approach, which incorporates both technological tools and social interaction to improve their writing skills, which may lead to more comprehensive and effective improvements.

The findings of the current study add support to previous studies and extend the discussion of mediating strategies by examining how EFL writers mediate each separate cognitive writing process (planning, writing, editing) and the influence of the social and textual factors on the use of sociocognitive writing strategies. As observed in the discussion above, the editing strategies employed by EFL Saudi students are interrelated with textual factors. In other words, writing in different genres determined and influenced the editing strategies employed by students. In addition, the purpose of writing was another variable that influenced the editing strategies. For example, students interacted with tools and people when writing for their teacher, and they mainly used Grammarly when writing personal text for the researcher (see Tables 7 and 10). Drawing on the sociocognitive theory of writing, the present study findings suggest that cognition, context, and writers are inseparable components in any writing act.

The next section discusses the results of the second theme and its subthemes related to answering the first research question.

6.2.1.2   Sociocultural Interactional Tools and Materials Strategies

The main aim of the first research question was to uncover all the current sociocognitive writing strategies employed by proficient and less-proficient writers. In the previous Section, 6.2.1.1, the

researcher discussed the results related to cognitive interactional tools and strategies. Moving to the second theme, the researcher discusses in the subsections below all the sociocultural tools and materials the writers utilised during the writing stages.

6.2.1.2.1   Planning Strategies

The use of social tools in this study entailed any tools created by humans to support interpersonal communication. These tools facilitate communication and ease cultural and language barriers by offering platforms for interaction, feedback, and collaborative learning. For example, Google is a search engine that supports people searching for any kind of information using a variety of languages. The use of social tools in the current study appeared to be highly beneficial for EFL writers. Since the participants were Arabic-speaking English learners, the employment of these tools enabled them to access the English language in various forms and formats to facilitate learning and mediate any cognitive load.

The analysis revealed that proficient and less-proficient writers interacted with different social tools to support and facilitate the planning process. According to the writing strategies logs, diaries, and interview data, the two main search engine tools used during the planning stage were Google Search and YouTube (see Section 5.3.1). In addition, some participants used Google Scholar, as reported in the interviews. The only material used for planning was books (see Section 4.2.2.1).

This aligns with some studies concerning the planning mediating tools employed by EFL writers (Lei, 2016; Overstreet et al., 2023). For example, one finding of Lei's (2016) study was that the Chinese students were involved in internet-mediated strategies by using Google Search to search for information about the writing topic, read sample essays, and search for useful expressions. Arab participants in Overstreet et al. (2023) used Google to initiate searching by copying and pasting phrases and language to guide the research activity and investigate resources. This finding is consistent with this study as the participants reported in the interview that they used Google Search to search for general information.

However, when searching for specific topics or aiming to achieve particular objectives in their research, proficient and less-proficient writers tended to use Google Scholar (see Section 4.2.2.1). The data suggest that both groups of writers were and aware of the importance of using reliable resources and internalised these resources to improve their writing. They played multiple roles, learning to write and writing to learn. This finding is partially consistent with other studies that confirmed proficient writers undertake several roles, such as language learner, reader, and writer, to mediate and facilitate the writing process (Yu & Lee, 2016; Lei, 2008; Lei, 2016; Kang & Pyun, 2013).

This study found that even less-proficient writers showed a desire to improve their writing and were aware of the characteristics of academic writing. For example, Rima, a less-proficient writer, said:

> *I feel that when I start writing, I should be fully aware of the responsibility of what I am writing about. I should write scientifically and be aware of what I am writing. My writing should be clear, sequential, logical, and accurate [...] I use Google Scholar; in addition, and in a more precise way, I go to more than one source.*

Interaction with multimodal tools like YouTube can enhance and facilitate the planning process for EFL writers, and has been confirmed in previously published studies. For example, the finding of this study parallels the studies of Anggraeni (2012) and Meinawati et al. (2022). Anggraeni (2012) found that YouTube videos assist students in exploring and organising ideas and finding correct words to form sentences and paragraphs. Similar findings were reported by Meinawati et al. (2022), who found that YouTube is an effective e-resource that helps EFL students to write English essays more effectively. The researchers confirmed that YouTube provided rich content to the students in terms of vocabulary. This was the case in this study, as students used YouTube to prepare the writing content and learn new vocabulary and expressions. However, the participants in the current study leveraged the planning process by integrating YouTube with other tools such as Google Search or cognitive tools like mind maps. Combining two social tools in the planning stage mediates the process and reflects positively on students' writing outcomes (Overstreet et al., 2023).

Researchers of multimodal learning environments have explored the cognitive advantages of YouTube for learning the main language skills, such as writing. They reported that using captions helped with more in-depth language processing, increasing students' attention, supporting vocabulary learning through multiple modes, letting students explore meaning by breaking down language chunks, and improving long-term retention of information (Zhou et al., 2020; Kabooha & Elyas, 2018; Sadiku, 2018; Alobaid, 2020). In the current study, the students interacted with YouTube to learn vocabulary and brainstorm ideas for the writing topic. The audiovisual tool YouTube is a powerful resource that uses sound and visual elements to assist EFL writers in conceptualising and organising their ideas, particularly during the demanding planning stage. This tool is especially useful when writers are dealing with new content or unfamiliar genres. Vygotsky (1978) proposed that learners mediate learning through interaction with others and various educational tools, fostering knowledge creation and learning. While Vygotsky's emphasis was on direct human interaction, the use of platforms like YouTube can also be seen as a form of mediated interaction. YouTube, in particular, offers access to instructional videos, tutorials, and feedback from educators and peers, creating a virtual interactive learning environment. This form of interaction, although not face to face, allows learners to engage

with educational content and receive guidance, thereby supporting the learning process in accordance with Vygotsky's principles.

The study found two main textual factors influencing the planning strategies: task complexity and task types. Interestingly, these have not been reported in L2 writing strategy research concerning the factors influencing the planning strategies employed by EFL writers. In this study, task complexity and types were also significant factors influencing writing (see Section 4.4.2). Task complexity, as previously defined in Section 5.1, refers to the cognitive load associated with performing the task (Sasayama, 2016). The writing strategies logs revealed that when writing reflective journal paragraphs, both proficient and less-proficient writers used Google Search and YouTube (see Section 5.3.1). On the other hand, when writing autobiographical paragraphs, most participants 7 (out of 8) used mind-mapping strategies (see Section 5.4.1).

The writing of reflective journals was likely to have imposed cognitive loads on EFL undergraduate writers as they had to have prior knowledge about the event being reviewed and familiarity with the conventions of reflective writing (Fang, 2021). To achieve that, the participants facilitated the planning process by interacting with social tools such as Google Search and/or YouTube. According to the writing logs and diaries, they also communicated with their teachers to ask questions, understand the task requirements, and receive feedback on the chosen topic. Proficient and less-proficient writers mediated the cognitive demanding process of planning a reflective journal by extending their minds through their surroundings and relationships (Paul, 2021). Integrating social tools' affordances and communication with the teacher facilitated and mediated the planning process and influenced the final products produced by both groups of writers (see samples of reflective journal paragraphs of a proficient and less-proficient writer in Appendixes E and F). On the other hand, the writing of autobiographical paragraphs was a less demanding task, as the EFL writers needed to recall information and present it in a logical manner. Thus, all the participants extended the mental functions of remembering, recalling information, attention, and structuring cognitive ideas by using cognitive tools such as mind maps (see Section 5.4.1).

The findings of this study are in line with previously published studies (Lei, 2016; Overstreet et al., 2023; Kang & Pyun, 2013) that reported EFL planning mediating strategies of interacting with social tools or other people. The findings support Lantolf's (2000) explanation of mediation, that the learners' cognitive processes are embodied in a social context and mediated by interactions with tools and others (Paul, 2021). However, in light of the sociocognitive theory, the current study extended the body of L2 writing strategy research by further studying variables influencing the planning strategies. In particular, it examined the effect of different cognitive tasks undertaken by EFL writers on their planning mediating strategies.

The next subsection discusses the sociocultural writing tools and materials employed by EFL writers.

6.2.1.2.2   Writing Strategies

In this research, EFL writers interacted with various mediating writing assistance tools to mediate the writing process. In light of Overstreet's (2022) theorisation of writing as an extended mind, the results of this study illustrated the dynamic relationship between cognition, environmental resources, and the writer. The findings revealed that EFL writers used Microsoft Word as a primary writing tool to accomplish the writing task. In addition, writers interacted with other writing assistance tools like Google Translate and less frequently with a paraphrasing tool like QuillBot. Moreover, the strategy of reading books was used less during the writing stage. The discussion presented below is based on findings elicited from the students' interviews, writing strategies logs and diaries, which reflected the writing strategies used when writing in L2.

The use of writing assistance tools was influenced by writing proficiency level and contextual and textual factors (see Section 6.4.1.2). According to the interview, logs and diary data, the majority of the EFL writers relied on Microsoft Word when writing in L2. A few potential explanations for the reliance on using Microsoft Word, particularly for less-proficient writers when writing in L2, were noted in the present study. First, social factors, including previous learning writing experience, were variables that influenced writing strategies. Vasylets and Marín (2022) asserted that writing experience (including years of writing experience, prior writing instruction, familiarity with various writing genres, and time dedicated to practising writing, is an important factor in determining the level of writing fatigue and immersion when utilising two writing modalities (pen and paper or computer). As reported in the interviews, most of the participating EFL undergraduates were fresh graduates from secondary school who had minimum writing experience and poor previous writing instruction (see Section 4.3.1). For EFL writers, writing on the computer might overcome writing fatigue by interacting with Microsoft Word affordances (Darus et al., 2008) to relieve cognitive loads.

 Moreover, the choice of writing modality was found to be associated with writing proficiency. In addition, the writing modality might produce different levels of immersion and pose certain cognitive loads that influence the flow of writing (Kellogg, 1999). In this study, proficient writers' integration of both pen and paper and computer word processors positively influenced the depth and flow of their writing (see Section 6.2.1.1.2). However, since writing with pen and paper poses cognitive loads associated with the active engagement of cognitive functions (Mangen & Balsvik, 2016), less-proficient writers interacted directly with computer affordances to facilitate the writing process. One of the less-proficient writers also interacted with the program Notability to assist her in taking notes digitally. However, as mentioned previously, the use of just one writing modality by the less-proficient

writers influenced their writing outcomes as they produced short and less detailed paragraphs (see Table 9).

Microsoft Word offers several affordances for EFL writers. It supports different writing processes and sub-processes, such as writing (generating ideas and finding synonyms) and editing (checking spelling and auto-correction for typos). In this study, the writing process was mainly mediated through the use of word processer affordances to maximise the quality of written texts, which aligns with and confirms other studies' findings. Previous researchers have reported that ESL/EFL writers mediated the writing process and had more writing advantages when they interacted with Microsoft Word affordances (Kang & Pyun, 2013; Lei, 2016; Wu, 2020; Overstreet et al., 2023; Hoomanfard & Meshkat, 2015; Bailey & Withers, 2018), and the results of the current study further confirm that the choice of writing mediating tools and modalities is influenced by the social factors of individual writers, as noted above.

To write better texts and achieve their writing goals, proficient writers strategically integrated Google Translate with Microsoft Word when writing autobiographical paragraphs (see Section 5.4.2). Google Translate assists during the formation stage (writing) by translating mental ideas into the target language and vice versa (Cancino & Panes, 2021), finding synonyms, and understanding the meaning of digital written texts, including articles and books. Research indicates that the most important technology that supports L2 writing is Google Translate (Jolley & Maimone, 2015; Clifford et al., 2013; Garcia & Peña, 2011).

The current study's findings appear to contradict the arguments concerning the relationship between lower writing proficiency and the use of Google Translate (Bailey, 2019; Levy & Steel, 2015). The analysis of the log data revealed that only proficient writers used Google Translate when writing autobiographical paragraphs. The data suggest a nuanced relationship between higher writing proficiency and the nature of the writing text. Proficient writers used Google Translate to improve their word choices and expand their vocabulary while composing personal writing texts. The nature of personal writing entails access to relevant experiences, language, and events that occur in the writer's own culture. For bilingual learners, writing autobiographical narratives involves multiple components, such as employing code-switching during speech (Marian & Kaushanskaya, 2005) and drawing upon their first language (L1) and cultural background (Javier et al., 1993), which requires translating from L1 to L2 in the written form. Both Marian and Kaushanskaya (2005) and Javier et al. (1993) provide valuable insights into the complex processes involved in bilingual learners' navigation across languages and cultures when creating autobiographical narratives.

In addition to the above mediating writing tools, two EFL proficient writers reported in their writing strategy diaries their use of the paraphrasing tool QuillBot in the writing stage. Proficient writers were aware of the use of paraphrasing strategies to avoid plagiarism. Paraphrasing is a cognitively demanding skill that requires the engagement of higher-order thinking processes (Na et al., 2017). It entails restating the meaning of original sources without copying the text word for word (Trivette, 2020). Hence, EFL writers mediated the process of paraphrasing by using a tool. QuillBot is an advanced AI writing application tool that paraphrases the input text (Dale, 2020). With the advancement of technological applications and AI tools and their affordances, they become a part of the writers' cognitive functions, which support Clark and Chalmers' (1998, p.8) claim that ''cognitive processes ain't (all) in the head!", but they are extended and mediated by interaction with tools and resources. This finding is consistent with other studies demonstrating that QuillBot provided mediation and assistance to EFL writers in terms of paraphrasing skills (Overstreet et al., 2023; Raheem et al., 2023; Mohammad et al., 2024).

While the majority of EFL writers interacted with writing assistance tools when writing, only one proficient writer used the coursebook during the writing stage. The overreliance on writing mediating tools suggests that writing tools are considered necessary supplementary curriculum materials for EFL writers. They facilitate, scaffold, and help writers to overcome writing difficulties and reduce the cognitive load. Reading the physical book without digital affordances, such as quick access to search engines and online dictionaries and translations, could be a challenging task, particularly for less-proficient students. Gibson and Levin (1977) argued that reading requires higher-level cognitive processes, including recognising rules and order, and extracting structured and significant information. Thus, EFL students facilitate the reading process by reading online to take advantage of tools such as translation to the target language, highlighting important texts, and navigating digital texts by using the search bar features.

The next subsection discusses the sociocultural editing tools and materials employed by EFL writers.

6.2.1.2.3   Editing Strategies

The results pertaining to the sociocultural editing strategies indicated that proficient and less-proficient EFL writers used two main strategies during the editing stages: interaction with tools and communication with others. These findings are in line with previous studies which found that EFL writers mediated the editing process and benefited from interactions with tools affordances such as word processors (Kang & Pyun, 2013, Li & Cumming, 2001), Grammarly (Overstreet's, 2022; Naghdipour, 2022, Alotaibi, 2023; Umamah & Cahyono, 2022) and communication with friends and teachers (Kang & Pyun, 2013; Lei, 2008; Lei, 2016; Lee, 2020). The data from this study, however, showed that contextual and textual factors influenced the editing strategies employed by EFL writers.

The study found that writing proficiency level, writing genres, and the purpose of writing influenced EFL writers' employment of editing strategies (see Sections 5.3.3. and 5.4.3). The analysis revealed that most participants used Grammarly during editing (see Section 4.2.2.3). Grammarly offers numerous ways for writers to improve their writing by highlighting errors in grammar, spelling, punctuation, and vocabulary choice and providing suggestions and explanations (Roughton et al., 2019).

The overreliance on automated writing feedback from Grammarly could be linked to social factors such as writers' past learning writing experience. The interview data revealed that the majority of the participants had negative attitudes towards the writing classes at secondary school (see Section 4.3.1). They mentioned that teaching writing skills was not emphasised, and that English teaching was focused mainly on understanding grammatical rules and memorising sentences and paragraphs to pass quizzes and final exams. The practical aspects were ignored. Consequently, the students paid more attention to form-based elements of their writing, such as sentence structure (see Section 4.4.1.1.1). The current study suggests that the previous dominance of the traditional curriculum influenced the EFL editing strategies and pedagogical practices of writing in secondary school, where linguistics aspects were prioritised over developing other writing aspects such as clarity, critical thinking, and audience awareness (Alkubaidi, 2019; Al-Seghayer, 2014; Al-Khairy, 2013; Ankawi, 2015; Sawalmeh, 2013). Previous research also confirmed that previous teaching writing experience influenced the editing strategies used by EFL writers. For example, Naghdipour (2022) found that the overreliance on proofreading applications such as Grammarly could be attributed to the nature of language teaching in EFL contexts, as language accuracy is more appreciated and highlighted at the expense of language fluency. This behaviour was also observed by Murtisari et al. (2019) and supports the sociocognitive theory of writing in showing that social context influences sociocognitive writing processes and strategies.

Another social factor that contributed to EFL writers' use of Grammarly in this study was the nature of the writing classes at the university. During the interviews, some students reported that the duration of writing classes was the main issue that negatively impacted their academic writing learning. They noted that the duration of the writing classes was very short and not sufficient to teach a very important skill like writing, which was also indicated in Al-Seghayer's (2014) research as a main constraint affecting teaching English in Saudi Arabian classes, particularly writing skills (Abkar Alkodimiet al., 2021). Thus, the participants relied on self-editing applications like Grammarly to learn and fix surface-level sentence errors. They communicated with their teacher for broader writing concerns such as paragraph organisation, content, clarity, and coherence and to check overall text quality. Creswell (2014) states that since writing classes in college are time-constrained, teachers should focus on higher-order issues while leaving automated feedback tools to complement them.

The purpose of such tools is to offer feedback on minor issues (Ranalli et al., 2017), especially with the use of accessible tools such as Grammarly.

Consistent with the sociocognitive theory of writing, the findings indicate that EFL students' deliberate conscious writing strategies, including their interactions with digital tools and their communications with other people, were interrelated with the textual factors such as writing genres and with individual writers' social contextual factors. In other words, students' writing strategies were influenced not only by the technical and material affordances available to them but also by social factors and their own unique goals and needs. This study confirms the significant role of contextual factors in shaping EFL writing strategies, as highlighted in Wu's (2020) study: "the contextual and mediational relations were co-determined by an interplay of material, social, and individual factors" (p.13).

The next section discusses the results of the third theme and its subthemes related to answering the first research question.

6.2.1.3   Social Interactional Strategies

This section discusses the third theme to answer the first research question by discussing the types of social interactional strategies that EFL writers deployed as part of their sociocognitive mediating strategies. The following section discusses the first type of social strategy, social formal interaction strategies.

6.2.1.3.1   Social Formal Interaction

The social interaction in this study took a variety of forms and had a variety of purposes. EFL writers communicated formally with their teachers, informally with friends and family members, and collaboratively with their classmates when writing. All of these types of interaction significantly impacted the development of students' academic writing skills. Through interaction with their teachers, the participants gained knowledge about academic writing and an understanding of its requirements. The study revealed that EFL writers interacted with their teachers to obtain advice and feedback, ask questions, and consult about their writing topics (see Section 4.2.3.1).

Interactions with teachers appeared to reduce cognitive loads during the planning, writing, and editing stages and were cited in previously published literature as a mediation strategy for EFL writers. In this research, the writing strategies logs and diaries showed that proficient and less-proficient EFL writers saw their teacher as a trusted person they could rely on to guide them through all the steps of the writing process. This study, for example, parallels the findings of Lei (2008), Kang and Pyun (2013), Lei (2016), and Yu and Lee (2016). Researchers found that EFL writers extended

their minds during writing by interacting with more knowledgeable and expert individuals to facilitate and support their work. They found that teachers played an important role in mediating students' writing and providing a means of resolving issues during the reviewing process (Lei, 2008; Kang &Pyun, 2013; Yu & Lee, 2016).

The present study contrasts with earlier research on mediating writing strategies, which suggested that students interacted with their teachers primarily for editing purposes and to receive feedback (Lei, 2008; Kang & Pyun, 2013; Lei, 2016; Yu & Lee, 2016). The present study found that EFL writers communicated with their teachers for guidance and feedback before and after writing (see Section 4.2.3.1). According to the findings of the previous studies and the present study, the observed shift in communication patterns is likely to be attributed to contextual factors such as changes in curriculum design and instructional methods, which facilitate and encourage collaboration among teachers and students during the learning process. Among EFL writers, the transition from seeking only feedback to seeking both guidance and feedback from their teacher corresponds to Paul's (2021) argument that cognition is distributed through interaction with experts.

The next section discusses the second type of social interactional strategy utilised by EFL writers.

6.2.1.3.2   Social Informal Interaction

Informal interaction refers to social interaction between students and their peers, friends, and family members. The analysis revealed that in the editing stage, EFL writers interacted mainly with friends and family members, such as mothers and sisters, to facilitate and mediate the writing processes (see Section 4.2.3.2). Proficient and less-proficient EFL writers employed social informal writing strategies to mediate cognitive loads and learn academic writing in a relaxed environment.

The present study confirms the findings of previous studies regarding social interaction with family and peers as mediating writing strategies. Namely, Kang and Pyun (2013) found that Korean students interacted with their parents and friends to proofread their texts and correct grammatical structures. The findings of Lei (2008) also showed that the two proficient EFL Chinese writers strategically mediated their writing by interacting with their peers and friends in the campus community. They also socialised with others outside the campus to mediate their writing. On the other hand, Lei (2016) found that proficient and less-proficient writers interacted with others differently. He found that proficient writers communicated with teachers, peers and other social agents, while less-proficient writers communicated with peers and teachers only, and not with any other social agent. The findings of Lei (2016) contradict the current study, as proficient and less-proficient writers in this research valued social interactions with other people, including peers, teachers, friends, and family members.

The study findings support the notion of writing as an extended mind (Overstreet, 2022), as the students manipulated their social surroundings to support their inner mental functions during cognitive activities such as writing. They interacted with other people to enhance and support their cognitive functions (Doiset et al., 1976). Informal communications with friends, peers, and family members are generally less frightening and more comfortable than formal interactions with teachers, which can occasionally cause fear or anxiety. EFL writers may prefer informal settings where they can express themselves naturally, make mistakes, and receive feedback without judgement. Students achieve better learning and writing outcomes in such environments because mutual support and collaboration are prioritised (Jabur, 2016).

The following section discusses the third type of social interactional strategy.

6.2.1.3.3   Group Writing

Group or collaborative writing refers to two or more writers working together to produce a text (Ede & Lunsford, 1990). This efficient instructional activity has been adopted in L2/EFL writing classrooms in the last two decades (Dobabo, 2012; Mozaffari, 2017; Li & Zhang, 2023). The stimulated recall data analysis in the current study revealed that most students favoured group writing over writing individually. They reported positive advantages of writing in groups, such as helping them to co-construct knowledge, facilitating the writing process by working collaboratively, reducing cognitive loads by distributing the writing tasks among group members, promoting social relationships, and acting as a scaffolding strategy for learning and developing writing (see Section 4.2.3.3).

This seems to agree with the findings of several studies that cited the effectiveness of implementing collaborative writing in different classroom contexts. For instance, Storch (2005) found that ESL writers who wrote in pairs composed texts that were shorter yet better in terms of task completion, grammatical accuracy, and complexity than students who wrote individually. In addition, Shehadeh (2011) compared the quality of texts produced by EFL individuals and pairs of writers. He found that collaborative writing had a significant impact on writing content, paragraph organisation, and vocabulary use. Moreover, the results of Chen and Yu (2019) and Aldossary (2021) indicated that the participants had positive attitudes towards group writing and viewed it as a beneficial source for improving writing, providing mutual support, generating ideas together, and having positive psychological (i.e., reducing anxiety) and social (i.e., building interpersonal relationship) effects on writers.

Despite the potential and contributions of collaborative writing, as explained above, this study revealed some concerns that students had about group writing. A few participants reported the disadvantages of group writing, including disagreements about the topic, differences in writing styles,

and a lack of cooperation between members (see Section 4.2.3.3). This finding is partially consistent with previous research which found that during collaborative writing, students were unwilling and found it difficult to accept different opinions (Aldossary, 2021; Chen & Yu, 2019) and inactive participation in group work (Chen & Yu, 2019). One possible explanation for this could be the social factors of previous learning experiences, which impacted students' perceptions of group writing and their engagement with it. Participants in the current study came from education contexts where teacher-centred and exam-oriented approaches dominated, and collaborative learning was not encouraged or supported (Al-Seghayer, 2014). Students' negative attitudes resulted from the lack of collaborative writing in previous secondary school writing classes. Thus, some students were less collaborative and did not take on any roles, resulting in a negative impact on the workflow and a failure to achieve the mutual benefits of collaboration. The findings of this study demonstrate that collaborative writing may not always produce positive results unless teachers carefully administer it. When designing and implementing collaborative writing activities, it is imperative that instructors consider students' learning experiences, styles, and different personalities (Li & Zhang, 2023).

Drawing on the sociocognitive approach and the sociocultural notion of scaffolding (Vygotsky, 1978), the social interaction between students during peer and collaborative writing appeared to allow the students to mediate the writing processes, facilitated learning writing, and scaffolded them to improve their academic writing and overcome writing difficulties. According to Vygotsky (1978), social interaction is crucial to human cognitive development. Through social interaction, students are provided with essential support and scaffolding. The cognitive functions associated with writing, such as planning and structuring, can be facilitated and improved by the presence of other individuals (Redcay & Warnell, 2018; Vygotsky, 1978). Paul (2021) states that individuals can enhance their cognitive abilities and extend their minds by interacting with others, where cognition is distributed among peers.

The discussion of the first research question provides insights into how proficient and less-proficient EFL Saudi undergraduate writers mediated their cognitive loads when writing in L2 and underscores the novelty and uniqueness of these findings. It emphasises the importance of interaction with tools and communication with other people for EFL writers to learn, develop, and facilitate their academic writing. The results of the current study, which confirmed, supported, and added to previously published research, offer a fresh perspective on the affordances of writing assistance tools and resources in the often challenging EFL academic writing process. These findings significantly contribute to our knowledge of the importance of mediation strategies for EFL writers and the essential role of the interaction between writers' cognition and sociocultural and cognitive tools, and communication with teachers, peers, friends, and family members in any writing acts in the EFL writing context.

In the next section, the researcher discusses in detail the results obtained from the semi-structured interviews relating to RQ2.

6.3   Contextual Factors Influencing the Use of Writing Strategies

6.3.1   Discussion of Research Question 2

The second research question aimed to explain the influence of contextual factors on the use of writing strategies by proficient and less-proficient writers. To answer this research question, the researcher conducted semi-structured interviews for an in-depth investigation and understanding of the contextual factors influencing the writing strategies used. This was achieved by listening to different realities, experiences, and stories related to the participants' social context. The following section discusses the results of the first theme.

6.3.1.1   Education History

One of the key themes in this study is the influence of past educational experiences on EFL writers' writing practices and strategies. Interview analyses revealed that most participants received insufficient writing instruction at secondary school. Furthermore, they stated that writing classes were not beneficial and mainly focused on teaching syntactical structures and specific writing genres, such as descriptive paragraphs. The writing assessment entailed memorising grammatical structures and paragraphs, and the examinations had similar content (see Section 4.3.1). At the university level, however, EFL students are expected to produce L2 written texts with expressions, beyond practising simple language forms in writing (Altınmakas & Bayyurt, 2019). As Grabe (2002) claimed, most EFL students lack the experience and practice needed to write the types of texts demanded by various academic fields. According to the findings of this study, the students were dissatisfied with their writing experience at secondary school due to the high expectations of the academic writing level required in medical school. The emphasis in Saudi secondary school writing classes has been on the products rather than the process of writing a paragraph (Alkubaidi, 2019). The process of developing writing skills, generating content, and other writing processes, such as planning and revising, are given less attention in the classroom (Alkodimi & Al-Ahdal, 2021).

Research has shown that past learning experiences have a significant impact on writers' abilities and strategies (de Larios & Murphy, 2001; Cumming, 1989). In addition, studies confirmed that writing strategies are influenced and directed by previous writing experience and/or previous writing instruction (Aljamhoor, 1996; Chaaban, 2010; El-Mortaji, 2001; Fageeh, 2003). The present study found that secondary school students' experiences of inadequate writing instruction, emphasising memorising paragraph structures and basic writing forms, influenced their writing strategies. Based

on the current study's findings, students' overreliance on tools such as Grammarly to learn sentence formulation (see Section 4.2.2.3) and Google Translate to learn vocabulary was associated with previous writing instruction (see Section 4.2.2.2). Due to the lack of proper writing instruction at secondary school, students used writing strategies at university to satisfy the demands of effective and accurate written communication in medical schools. The findings align with Naghdipour's (2022) research. As explained by Naghdipour, EFL undergraduates' reliance on editing tools can be attributed to the nature of teaching writing in the EFL context, favouring accuracy over other language skills, such as fluency and complexity. In his study in Oman, he found that the students primarily used tools and rarely communicated with others due to the influence of past education, where effective collaboration and social communication strategies were less prevalent (Naghdipour, 2021).

Researchers have shown that past learning experiences have a significant impact on not only sociocultural writing strategies but also cognitive writing strategies. For instance, Cumming (1989) found that the student's past learning history influenced their cognitive planning strategies. According to his findings, experienced L2 students used two distinct planning strategies: emergent planning and advanced planning. The results of his study indicate that writers with a background in technical writing typically plan their composition ahead of time, while writers with a background in literacy typically generate ideas as they progress in the text. The study conducted by Sasaki and Hirose (1996) also found that proficient EFL Japanese writers paid greater attention to global organisation than less-proficient writers. The researchers found that the differences were caused by proficient writers' prior learning experience with writing, as they reported having taken free L2 writing practice and systematically summarising texts in L1.

Contextual factors, such as previous learning experiences, were the primary indicators for understanding EFL writing practices. A deliberate use of cognitive and social writing strategies was embodied and situated within the learning environment of the participants. Social context, including educational factors, plays an important role in determining students' EFL writing practices and strategies (Altınmakas & Bayyurt, 2019). Theorists have proposed that cognitive development is shaped and influenced by social factors (Vygotsky, 1978) in a specific context (Lave, 1988), which are influenced by social norms (O'Loughlin, 1995). A mediating writing strategy is used to overcome deficiencies in the student's previous writing experience. It is intended to compensate for inadequate writing instruction during their earlier academic studies.

The following section discusses social goals as a factor influencing the EFL writing strategies used.

6.3.1.2   Social Goals

As outlined in the second research question, social goals, including academic and professional goals, were contextual factors influencing the employment of writing strategies by EFL writers. The next section discusses academic goals.

6.3.1.2.1   Academic Goals

In this research, academic and professional goals were the main social factors beyond using specific writing strategies (see Section 4.3.2). The students who participated in the current study were enrolled in the medical college. The medium of instruction for teaching and communication in this college is English. The interview data analysis revealed that all the students reported having academic goals to improve their writing. In the EMI context, being able to communicate effectively in English is a major requirement, as well as writing scientific papers in medical journals, which is required for college graduation.

Writing effectively is essential for academic success, effective communication, and conducting research (Tsingos-Lucas et al., 2017). As part of the course requirements, medical students are required to develop academic writing skills in order to respond to exam questions, write assignments, and conduct research. Consequently, the students utilised writing strategies to cope with academic writing demands and to improve their writing abilities. The academic goal orientation empowers the students to use cognitive and social strategies and to communicate with others to overcome the cognitive loads imposed by differences in L2 rhetorical structures, styles, and linguistic features, as well as writing difficulties due to poor secondary school writing instruction.

Due to the inadequate writing instruction in their secondary school education, both proficient and less-proficient writers had to adapt their writing practices and strategies to meet the academic demands of their university studies. The study found that less-proficient writers tended to rely more on technology-enhanced strategies integrated with social communication strategies (see Sections 5.3.2.2 and 5.3.3.2). In contrast, proficient writers tended to utilise a combination of materials, social tools, and social communication strategies (see Sections 5.3.2.1 and 5.3.3.1). Possible explanations for this could be that proficient writers are looking to improve their academic writing and want to achieve professional writing standards. The less-proficient writers, however, may rely on technological tools to overcome writing difficulties and facilitate the writing process; they used technological tools such as YouTube to plan writing, Google Translate, an online dictionary to enhance their vocabulary use, and Grammarly to edit texts. The data revealed that such tools were effective in mediating cognitive loads and facilitating students' writing.

A number of studies have documented the influence of contextual factors on students' writing efforts and strategies regarding their academic goals. Naghdipour (2022) found that students used an informal online space (Instagram) to communicate with native competent language speakers to improve their writing. The participants' understanding of the potential of these informal online tools correlates with the implementation of these tools as strategies for improving academic writing in order to attain desired outcomes and goals. In the present study, the students had the desire to avoid plagiarism in academic writing, so they used the QuillBot tool to facilitate paraphrasing and to maintain academic integrity in their academic writing (see Section 4.2.2.2).

The findings of Lei (2016) also support the findings of the current study. Lei found that the writing goals for proficient and less-proficient writers influenced their internalisation of resources and the employment of writing strategies. According to his study, proficient writers aspire to improve their L2 writing, and language proficiency seems to empower them to imitate professional writers and use more linguistic resources. However, less-proficient writers use writing strategies based on their desire to complete the writing task, meet course requirements, and obtain a mark. His study found that less-proficient writers often have difficulty identifying significant language patterns independently. Although they recognise certain linguistic characteristics, they usually lack the awareness to imitate others and adopt basic imitations with minimal revisions consistently. Even though the current study participants shared similar academic goals, they adopted different writing strategies. Their differences may have been primarily the result of differences in their writing proficiency levels and previous learning writing experiences, which affected the way they internalised the resources and the writing strategies they used to attain their unified academic goals (see Chapter 5).

The following section discusses the second social goal influencing EFL students' writing strategies.

6.3.1.2.2   Professional Goals

The desire of EFL medical undergraduate students to improve their academic writing was also motivated by the desire to pursue a career in the medical field and become competent and knowledgeable physicians. The interview data revealed that all the participants reported their desire to improve their academic writing and master the skill of writing critically and academically. EFL writers indicated that these skills are necessary for conducting research, writing medical reports and professional emails, and effectively communicating with patients and other healthcare professionals (see Section 4.3.2.2). In the medical field, mastering English writing is vital for professional and academic success (Barroga & Mitoma, 2019; Surya et al., 2020; Quirk, 2006).

The findings of this study add further support to the earlier findings and confirm that social variables such as career orientation influence students' efforts and learning/writing strategies. According to

Oxford and Nyikos (1989), university students' career orientation significantly influences the strategies they choose for learning. Oxford and Nyikos found that students enrolled in humanities, social sciences, and education employed two types of strategies: functional practice strategies and resourceful, independent strategies. To develop communicative competence, students are encouraged to find extracurricular, communicative practice opportunities in natural settings and be autonomous and independent learners. Similar results were also observed in the study conducted by Mochizuki (1999) and Ehrman and Oxford (1989), supporting the findings presented in this study.

The results of this study indicated, as in Kang and Pyun's (2013) study, that career orientation goals influence the students' use of writing strategies. According to Kang and Pyun, the American student's motivation to improve his Korean language proficiency to find more employment opportunities influenced his writing strategy. He used various mediating strategies such as word processors, the internet, and dictionaries, whereas another student whose motivation was unrelated to career paths used fewer writing strategies. Participants in the current study understood the importance of academic writing in their future medical careers and used writing strategies in order to meet the needs of the professional community (see Section 4.3.2.2). The participants, for example, stated that reading scientific articles in reliable medical journals is an essential part of learning the subject matter and observing the language and style of professional writers (see Section 4.2.2.1).

The sociocognitive writing theory emphasises and supports the interplay of cognition, writer, and context in students' choice of writing strategies to achieve future career goals. According to the results, students' writing strategies are associated with their contextual factors (professional goals). This study found that students had future professional goals that motivated them to improve their academic writing and to employ writing strategies to achieve the desired writing proficiency level required in their future professional settings. As noted by Haneda (2005), L2 learners who have a variety of life histories and learning goals may 'differentially invest their time and energy in mastering the target language in relation to the particular communities that are important in their envisioned futures' (pp. 284–285). Thus, in this study, the students invested effort and time into improving their academic writing by following certain cognitive and social writing strategies to meet the requirements of their academic and professional communities.

The next section discusses the third contextual factor influencing EFL students' writing strategies.

6.3.1.3   Social Environment

One of the contextual factors explored in the second research question is the social environment, which refers to the place where students sit and write. The participants identified two social environments that influenced their writing strategies: the classroom and home.

6.3.1.3.1   Classroom Writing Strategies

Research has indicated that social environments can significantly influence the learning process and experience (Chism & Bickford, 2002; Izuagba et al., 2018). According to the analysis of the interview data, students prefer to write in the classroom, where collaborative writing and peer and group assistance facilitate the writing process. Students also stated that they were able to obtain assistance from experts, such as their teachers, when they were writing in class (see Section 4.3.3.1). In the classroom, a social atmosphere fosters mutual support and scaffolding from peers and teachers, as well as constructive feedback from the teacher.

It seems that the results of the study confirm Paul's (2021) proposal that the mind is extended by surroundings. She argued that not only the physical environment but also the people who exist in it have an influence on our mental function. The classroom setting in this study seems to affect the implementation of the writing strategies. Based on the study's findings, social interaction strategies were the most common strategies that students mentioned when writing in the classroom (see Section 4.2.3). Consequently, this finding supports the claim that cognition is context-bound in that it is situated within a social context and is influenced by the environment within which it is situated (Paul, 2021; Wilson & Clark, 2009).

A classroom's structure, including the seating arrangement and the availability of teaching and learning resources, such as computers and whiteboards, is a factor that contributes to cognitive development. The students managed their surroundings (classroom) to facilitate cognitive functions such as planning, remembering, and generating ideas in writing as a result of their interactions with resources, peers, groups, and the teacher. The size and seating of the classroom may facilitate and promote such interaction. According to Turuk (2008), social-cultural environments play a crucial role in developing more complex human endeavours, such as deliberate attention, logical reasoning, and problem-solving.

According to the interview findings, the classroom atmosphere supported effective social interaction and scaffolded the students' academic writing learning; therefore, they activated strategies for interacting with each other and collaborating in class while writing (see Section 4.2.3.3). Vyortkina (2015) noted that the physical structure of the learning setting might facilitate dynamic interaction, engagement, and collaboration among learners, ultimately leading to improved learning outcomes. The results showed that physical classroom environments can positively impact students' writing strategies and promote social interaction, through which students' cognition is distributed and mediated by student–student and student–teacher collaboration. As a result of the teacher's physical presence, the students were able to overcome writing difficulties, learn writing, and reduce their cognitive load (see Section 4.2.3.1). This finding corresponds to the data revealed by Yang et al.

(2013) that learners prefer the classroom for more engaging learning with a "layout for interaction and collaboration with others" as well as "sufficiency of workspace for course tasks". (p.178)

While interaction with tools effectively supported the writing process, the students reported relying more on human assistance than on writing assistance tools in the classroom. Due to the limited time available in the writing class, the students could not effectively use tools in the classroom (see Section 4.3.3.1). It is also possible that the teacher did not emphasise the benefits of writing assistance tools and their scaffolding role in improving students' writing. In light of the results, teachers should provide clear guidelines and instructions on effectively using writing tools and provide sufficient time for practice.

The following section discusses the influence of the home environment on writing strategies.

6.3.1.3.2   Home Writing Strategies

The social environment where the learner is situated influences their learning process, as discussed in Section 4.3.3.2. Home is another social setting where students prefer to write (see Section 4.3.3.2). When writing at home, writers can structure their surroundings according to their preferences and feel comfortable and in control of the environment. The writing strategies used while writing at home were influenced by environmental factors, as reported by the participants. Moreover, the study found that writing at home positively influenced the students' writing outcomes.

Students' writing at home was also heavily influenced by time. According to the participants, writing at home provided more time for them to organise, plan, and revise their writing, so time was not a major barrier to implementing effective writing strategies as it was in the classroom. In addition, the students reported that writing at home could provide more opportunities for effective learning and writing strategy employment. The ability to concentrate is another factor that influenced the students' writing behaviours and strategies when writing at home.

The data suggest that the social factors of the home setting are influenced by and interrelated with the use of writing strategies. The findings further clarify our understanding of writing as an extended mind by providing additional explanations and support for the theoretical propositions introduced by Paul (2021) and Overstreet (2022). Paul (2021, p.92) emphasises the significant influence of social surroundings on cognitive abilities by stating, "while a laptop works the same way whether it is being used at the office or while we are sitting in a park, the brain is deeply affected by the setting in which it operates". In writing, cognitive processes are not limited to the confines of the individual but are extended and influenced by the surrounding environment. The participants in the present study confirmed that writing at home enabled them to use facilities available at home, including technological tools, desks, and books, and to interact with family members and friends (see Section

4.3.3.2). Moreover, the students manipulated the structure of their social environment to support and meditate their cognitive activities (Overstreet, 2022). In addition to these features, the students were able to benefit from the characteristics of a home, including quietness and concentration, which gave them opportunities to improve their academic writing skills. Writing strategies and extra practice time are required to attain the required level in a short period of time.

The contextual factors discussed, including education history, students' academic and professional goals, and the social environment surrounding the writers, influenced EFL students' writing strategies. The present study revealed a nuanced understanding of the role of context in shaping EFL writers' writing practices and strategies. The social context is integral to understanding a writer's cognition and how to deal with and offload cognitive burdens when writing in different environments, such as in the classroom and at home. The results demonstrated that EFL writers extended and mediated their cognition with their surroundings. This confirmed Paul's notion of the extended mind, which emphasises that the surrounding environment influences human cognition. The interplay between cognition and contexts discussed in the above sections, with its practical implications, highlights important considerations for writing instruction and curriculum development to create a more effective learning environment and develop more effective EFL writing programs.

In the next section, the researcher discusses in detail the results relating to RQ3.

6.4   Textual Factors Influencing the Writing Strategies Used

6.4.1   Discussion of Research Question 3

The third research question aimed to explain the influence of textual factors on the use of writing strategies by proficient and less-proficient writers. To answer this research question, the researcher analysed the data from the semi-structured interviews connected to writer-related factors. Two types of writing samples (reflective journal and autobiography), the writing strategies logs, and the writing strategies diaries were analysed to address data related to the textual factor (writing genres). The following section discusses the results related to the writer-related factors before transitioning to the discussion of textual factors.

6.4.1.1   Writer-Related Factors

6.4.1.1.1   English Language Proficiency

English language proficiency was an important variable that influenced the writing strategies used by proficient and less-proficient EFL writers. Writing proficiency is a key component of overall language proficiency. According to the interview analysis, the participants reported some language and writing

difficulties pertaining to vocabulary, organising ideas, grammar, coherence, use of academic vocabulary, and writing mechanisms (sentence structure, spelling, and punctuation) (see Section 4.4.1).

The study found that the two main reasons for writing difficulties were the lack of writing practice and the little time spent learning academic writing. In the current study, most of the proficient and less-proficient writers showed awareness of the good characteristics of academic writing. During the interviews, they were able to list all the features of academic writing and what they should include and exclude in their writing (see Section 4.4.1). However, the theoretical understanding of academic writing was not reflected in their writing as they did not have time in class to practise writing. Students' writing performance can be significantly impacted by the amount of time spent on writing activities and teaching writing materials (Alharbi, 2019).

Academic writing involves a distinct combination of rhetorical, linguistic, and cognitive skills that extend beyond mere familiarity with academic writing conventions. Research has demonstrated that consistent practice is crucial to internalising these skills and acquiring the procedural knowledge necessary to apply them effectively (Haynes, 2007; Kellogg, 2007; Manchón, 2002). The findings have important implications for academic writing teachers specifically and for academic development units generally. Providing extracurricular activities and academic writing workshops and extending the time for writing classes would give the medical students opportunities to practise academic writing and provide a space for negotiation and feedback (see Section 7.3).

6.4.1.1.2 Academic Writing Skill Difficulties at Sentence Level

Apart from the impact of the language proficiency level on the writing strategies, as discussed in the previous section, the study found that the choice of strategies was also influenced by writing difficulties (see Section 4.4.1.1.1). The analysis revealed that spelling was the most difficult language skill for 13 out of the 16 participants. Research has demonstrated that spelling is challenging even for native speakers. There are a number of reasons that contribute to the severity of this problem for Saudi EFL learners. The inappropriate teaching of English and writing instruction, and a lack of practice in spelling in early education could be important contributors to spelling difficulties for Saudi EFL undergraduates. In addition, a study conducted by Albesher (2018) identified a number of reasons why EFL adult Saudi learners have difficulty spelling, including the differences in sound systems between Arabic and English, the absence of consonant clusters in Arabic, loan words with different pronunciations, confusion regarding vowel combinations, homophones, and the tendency to apply spelling rules too broadly. These factors contribute to the mispronunciation of original English words, leading to errors such as vowel swapping and the omission of double vowels. The finding aligns with existing studies on L2 academic writing, highlighting that spelling is the major writing

deficiency that most EFL Saudi writers face (Almurashi & Sultan, 2023; Qasem, 2020; Hafiz et al., 2018).

To overcome spelling difficulties, students interacted with technological tools to help them spell words correctly, such as online dictionaries, Google Translate, and Grammarly (see Section 4.2.2.2). However, while the study suggests that using tools to solve spelling problems might provide a temporary solution, the students need to learn the spelling rules to avoid making spelling mistakes when spelling correction tools are unavailable, such as in exams.

Another writing difficulty related to the sentence level was lexical use (see Section 4.4.1.1.1). The students reported they lacked academic vocabulary when writing academic texts, as they require specific academic vocabulary and conventions. Vocabulary is regarded as the most important aspect of writing. To produce a successful piece of writing, it is essential to have an adequate store of vocabulary (Ali, 2016). Ali explained that a common issue in classroom activities is the lack of complex vocabulary available to students and teachers. According to Lin and Morrison (2021), acquiring a disciplinary lexicon can be a significant challenge for undergraduates entering university from non-EMI secondary schools. Three participants in the current study reported that insufficient academic vocabulary hindered their composing abilities. Another factor that might hinder EFL students' composition skills is the selection of suitable vocabulary and grammatical structures, which might distract them from the main aims of writing (Katalin & Päivi, 2015).

A possible explanation for the students' difficulties with vocabulary and spelling could be their insufficient past learning writing instruction before they joined the university (see Section 4.3.1). Most students reported that writing was not emphasised in secondary school, and the writing classes focused on memorising grammar rules and paragraphs. In addition, academic writing was not a focus; secondary school students had to write short paragraphs that resembled the example paragraph written by their teacher. There was no room for creative writing or the use of a variety of words, as mentioned by a student in this research.

The participants employed some strategies to enhance their use of vocabulary in writing and overcome vocabulary limitations, such as interacting with Google Translate. They used it to translate from Arabic to English or to find synonyms. Grammarly was also used to suggest correct vocabulary usage (see Section 4.2.2.3). Although these tools mediate the writing process, teachers should encourage students to read academic texts, such as academic papers, in addition to using these tools. Several proficient writers reported reading scientific articles as a way of learning from professional writers. Unprofessional writers may benefit from reading research articles to broaden their vocabulary knowledge and utilise it when writing. It has been found that reading is positively

correlated with good writing performance in terms of learning content and vocabulary building (Ihsan, 2021; Sakurai, 2017).

The students also reported that the correct use of grammar and punctuation was a writing challenge. In their writing, the students reported difficulties with sentence structure and illustrating timeframes with the correct tense. Additionally, students experienced difficulties with punctuation marks, such as commas, question marks and full stops. Also, they did not appear to have a thorough understanding of punctuation marks and their proper use. This might confuse their understanding of a text, making it difficult to follow. The use of grammatical rules and punctuation marks in writing could be influenced by the student's previous grammar instruction. As mentioned in Section 4.3.1, most students memorised grammar rules, but how to apply them in writing was not explained to them. These findings are similar to those reported by Gaffas (2019). According to her findings, EFL Saudi undergraduates were dissatisfied with their writing skills as their writing instruction had been dominated by grammatical instruction from primary school until starting university. Social language use had been absent from their writing instruction, which adversely affected the quality of their written communication and their ability to apply grammatical rules effectively.

Another possible reason for the grammar and punctuation challenges experienced by EFL writers in Saudi Arabia is the fact that English is taught as a foreign language in schools and universities. According to AlTameemy and Daradkeh (2019) and Hammad (2012), the most common reason for errors in English is the lack of English input. Most Saudi students lack the opportunity to practise English outside the classroom and are not encouraged to use it in other situations due to cultural and educational practices that prioritise Arabic, making it easy for them to forget English rules (AlTameemy & Daradkeh, 2019). According to Latif (2007), the primary cause of writing mistakes in foreign languages is a need for greater familiarity with the language's structure, which agrees with the findings of this study.

Throughout the study, the participants relied heavily on Grammarly to learn grammar and punctuation marks, as well as to edit their texts (see Section 4.2.2.3). According to research by Koltovskaia (2020) and (Barrot (2020), Grammarly's automated feedback provides students with immediate feedback rather than waiting for feedback from their teacher or another person. Despite its affordances and mediating support for students in their writing, specifically their editing, teachers must continue providing regular support and assistance. According to this research, the students implemented integrated editing strategies and techniques in response to cognitive difficulties imposed by the writing genre. These included receiving feedback from Grammarly and other people.

6.4.1.1.3   Academic Writing Skill Difficulties at Sentence and Discourse Level

In the current research, some students reported writing challenges at the paragraph level. Lin and Morrison (2021) assert that language problems on global levels are typically regarded as discourse-level errors involving the arrangement of the text, the elaboration of ideas, and the understanding of the audience's needs. According to the present study's findings, the students' main concern was organising and transcribing their ideas into written sentences, as well as the effective use of paraphrasing skills (see Section 4.4.1.1.2). These findings align with previous research, which has also highlighted difficulties in sentence organisation and coherence among Saudi EFL students, attributed to their struggle to elaborate their ideas (Khasawneh, 2023; Al-Zubeiry, 2020; Masadeh, 2019), as well as challenges with paraphrasing (Alaofi, 2020; Huwari & Al-Khasawneh, 2013).

Despite their challenges, the students demonstrated resilience and resourcefulness in their approach to writing. They deployed cognitive strategies, such as outlines and mind maps, to organise and translate their ideas into written sentences (see Section 4.2.1.1). Notably, three students even took the initiative to use QuillBot, a paraphrasing tool, to facilitate the paraphrasing process. Their proactive efforts seem to reflect a determination to improve their writing skills.

The present study found that 74% of the reported difficulties occurred at the sentence level, whereas only 26% were at the paragraph. AlTameemy and Daradkeh (2019) found similar patterns, suggesting that Saudi students have an ongoing problem with sentence and paragraph errors. Sociocognitive factors may have contributed to increased sentence-level difficulties compared to global or discourse-level difficulties. In this study, the most important social factor was the previous education system and teaching methods, which significantly impacted the students' writing proficiency level and their usage of writing strategies. Both proficient and less-proficient EFL writers faced writing difficulties in basic writing skills such as spelling, sentence structure, grammar and punctuation, because "English is not the means of instruction in the educational system of Saudi Arabia. Students are less exposed to English in daily or academic communication and are weaker at English, especially in writing skills" (Al Haysony, 2012). This remains the case today. As a result, the students realised that they needed to improve their fundamental writing skills to meet the writing requirements of their college. To overcome their previous poor writing instruction, they employed writing strategies to enhance their learning writing skills.

Furthermore, although the method for teaching writing in Saudi secondary schools focuses on grammar rules, including punctuation, students still encounter problems with the correct employment of punctuation marks. Ababneh (2017) found that Saudi EFL students made grammar, spelling, and syntax mistakes even after learning English for six years. This slow progress may be due to limited opportunities for Saudi learners to practise English outside the classroom context

(Tahaineh, 2010). This study appears to confirm that the lack of writing practice contributes to weak writing outcomes.

The following section discusses the contextual factors influencing the students' writing strategies, explored in the third research question.

6.4.1.2   Writing Genre

This section provides a comprehensive discussion of the second theme (writing genre) to answer the third research question regarding the influence of textual factors on the writing strategies used by EFL writers. The study examined the influence of text type (reflective journal and autobiographical text) on the writing strategies used by proficient and less-proficient EFL writers. It attempts to understand the influence of task complexity and the cognitive load imposed by two writing genres on the types of sociocognitive mediating writing strategies used by the students. The following section discusses the findings on reflective journal writing strategies employed by proficient and less-proficient EFL writers.

6.4.1.2.1   Reflective Journal Writing

6.4.1.2.1.1   Planning Strategies

The study found that the nature of the writing task influenced the planning strategies employed by proficient and less-proficient writers (see Section 5.3.1). To prepare a reflective journal, careful planning is required to collect the appropriate information. According to the analysis of the students' writing strategies logs, proficient writers relied on sociocultural tools such as Google Search and YouTube during the planning stage to assist them. They also communicated with the teacher to ask questions. In contrast, less-proficient writers employed integrated strategies using cognitive and social tools and materials (for example, reading a book). Furthermore, one less-proficient writer communicated with her peers and another with her teacher (see Table 5).

The data indicate that writing proficiency, task complexity, and text type influence EFL students' planning strategies (see Section 6.2.1.2.1). In order to reduce cognitive load and plan their writing, proficient writers utilised social tools to read information from multiple digital sources, including Google Search and YouTube videos. It is possible that their language proficiency influenced their ability to comprehend the audio and written content provided by technological tools. Less-proficient writers, however, utilised the affordances of social and cognitive tools to minimise the cognitive load associated with planning reflective journals by using mind maps and question-and-answer formats. By offloading and structuring their ideas, cognitive tools support the students' inner mental activities, whereas social tools facilitate the planning stage through the search for relevant information.

Through the use of these cognitive and social tools, writers may gain a better understanding of the topic of their writing and develop ideas (Hung, 2021).

Similar conclusions are drawn in the literature on EFL writing strategies, emphasising the influence of writing proficiency level on planning strategies. In Lei's (2008) study, it was found that Chinese proficient EFL writers used mediating planning strategies during the preparation of their assignments, such as interaction with Google. In the present study, proficient writers demonstrated similar behaviours when they interacted with social tools for writing planning. However, Lei (2016) found that the writing proficiency of writers influenced less-proficient writers' internalisation of planning strategies. She found that they internalised planning resources differently from proficient writers. Less-proficient writers primarily interacted with peers, teachers, and the internet in order to complete the writing task. This finding partially agrees with the present study, as less-proficient writers' planning strategies were primarily influenced by their level of writing proficiency and the type of task. Although they were less-proficient writers, they had similar academic goals to proficient writers, which contradicts Lei's study and demonstrates that writing strategies are determined by the writers' goals. Students' planning strategies were influenced, interrelated, and directed by different social and textual factors in the current study.

The next section discusses the influence of text type on the use of writing strategies by proficient and less-proficient writers.

6.4.1.2.1.2   Writing Strategies

The study examined the writing strategies employed by the students and found that all the proficient and less-proficient students interacted with Microsoft Word, a word processing software, when writing reflective journals, along with other writing assistance tools like Notability and Page (see Table 6). Several studies have shown that the use of Microsoft Word can enhance students' writing skills, specifically by enhancing spelling and grammar through self-checking (Yulanda, 2023; Salehi et al., 2019) and by vocabulary development through the use of the thesaurus (Tami, 2014). It was found, however, that proficient writers also utilised cognitive tools in their writing, such as mind maps, outline forms, and the use of paper-based notes. This finding contradicts the results of Lei's (2016) study in which proficient writers interacted with both people and writing tools but not with cognitive tools.

A possible explanation for this could be the fact that proficient writers, due to their higher language proficiency, can use cognitive tools to generate and organise ideas, such as writing drafts before typing paragraphs. It may be difficult for unprofessional writers to utilise cognitive strategies due to the fact that they require access to their lexical repertoire and the ability to retrieve information,

which less-proficient writers may not have access to due to their language level. Therefore, less-proficient writers find it easy to interface with the features of Microsoft Word to facilitate their writing process and overcome writing difficulties, such as flagging grammatical and spelling errors and finding synonyms.

The progression from using pen and paper to writing thoughts and sequences of ideas on paper first and then using a computer was found to be a strategy associated with proficient writers (see Section 5.3.2). As a result of combining the affordances of the two writing modes, proficient writers were able to produce high-level writing. Using pen and paper allows the writer to concentrate on translating their ideas without distracting their cognitive function (Park & Baron, 2017). It should also be noted that using a computer at the beginning of the writing process may disrupt the flow of ideas as the writer is tempted to continuously edit as the writing progresses.

6.4.1.2.1.3   Editing Strategies

The analysis of the writing strategies logs and diaries revealed that six out of eight students employed integrated strategies when editing their reflective journal paragraphs (see Table 7). The study found that seven out of eight participants interacted with Grammarly to automatically edit their texts, using it to detect and highlight grammatical errors and correct common mistakes. They also communicated with their teacher, friends, or family members for feedback.

The findings highlight the significant role of writing purpose in shaping editing strategies. Proficient and less-proficient writers implemented similar editing strategies for the reflective journal paragraph—both groups mediated the editing process through interactions with people and tools. The rhetorical purposes and audience also influenced the editing strategies used by EFL writers in Wong's (2005) study. The participants wrote the paragraph as a part of the course requirements (see Section 4.4.2.1). They were aware of the importance of writing high-quality texts since they would be assessed by their teacher. Consequently, editing this type of text imposed cognitive loads as the students needed to pay close attention to the overall text quality. Therefore, they mediated the editing process and extended their mind through relationships (Paul, 2021) by communicating with their teacher, family members, and friends to advance the editing process (Overstreet, 2022). This mediation was likely to have been employed because the participants were aware of the limitations of Grammarly in providing nuanced and contextually accurate feedback (Barrot, 2022).

Despite using similar editing strategies, proficient and less-proficient EFL writers internalised these resources in different ways, with proficient writers using Grammarly to refine the content beyond grammar and less-proficient writers focusing on sentence-level error correction (see Section 5.3.3). This finding partially agrees with Lei's (2016) study, which indicated that proficient writers

internalised mediating resources differently from less-proficient writers. For example, Lei found that both sets of writers had different writing goals, which resulted in different uses of community mediating strategies. The differences in the present study, however, were mainly due to differences in the language and writing proficiency levels of both groups of writers. During the editing process, the participants extended their minds through relationships and tools (Paul, 2021) to achieve the required proficiency level and meet their academic needs. The results have significant implications for writing curriculum designers and teachers. They should provide individualised writing instruction and offer writing tools and applications to accommodate different learning styles and needs.

The next section discusses the influence of text type in the form of an autobiographical paragraph on the use of writing strategies by proficient and less-proficient writers.

6.4.1.2.2 Autobiographical Writing

6.4.1.2.2.1 Planning Strategies

The analysis of the autobiographical writing logs revealed that most of the participants, six out of eight, used mind-mapping strategies to plan their writing (see Table 8). Two participants (one proficient writer and one less-proficient writer) indicated in their logs that they did not follow any planning strategies. In addition, one participant integrated the use of a mind map with Google Search. The study indicated that the writing genre is a textual factor influencing students' planning strategies.

A mind map was used by most participants during the planning stage, possibly as a result of the fact that personal writing requires access to the writer's experiences and retrieval of personal information and memories. The use of a mind map seemed to enable the participants to organise and structure their mental ideas. EFL writers used the mind map to brainstorm ideas and organise their thoughts. According to Rababah and Alshunnaq (2023), implementing mind maps as a prewriting strategy significantly enhanced the ability of EFL Jordanian writers to retrieve, generate, and arrange information, and it significantly improved the overall quality of their writing.

While many writers used a mind map during the planning stage, their writing outcomes differed (see Section 5.4.1). The study concluded that writing proficiency and language proficiency are important factors in writing production, not just in planning strategies. In previous research, it has been shown that writing skills and English language proficiency influence the quality of a text (Weijen et al., 2009; Cumming, 1989). In this study, proficient writers wrote longer texts than less-proficient ones, as indicated by word count analysis (see Appendixes G and H). Kamimura's (2016) and Crossley and McNamara's (2012) studies demonstrated similar results. However, the study also found that some less-proficient writers wrote longer texts than their peers in similar groups (see Table 6). Another

explanation for the differences in the depth of writing could be related to the social and emotional connections to the writing topic.

The next section discusses the writing strategies of proficient and less-proficient writers when writing autobiographical paragraphs.

6.4.1.2.2.2   Writing Strategies

The analysis of the writing strategies logs revealed that the type of writing text influenced the writing strategies used by all the participants. All the participants utilised Microsoft Word as a primary writing assistance tool, but there were some differences in the writing strategies employed by both groups of writers. For example, three proficient writers used Google Translate to search for synonyms or translations into English (see Section 5.4.2). Furthermore, they used cognitive strategies like pen and paper before typing their texts. Less-proficient writers used pen and paper as well as the electronic note-taking software Notability (see Table 9).

When writing autobiographical text, proficient writers utilised strategies to enhance their vocabulary, develop ideas, and support details that reflected on their personal experiences. Less-proficient writers, however, utilised only Microsoft Word. It is possible that proficient writers are more proactive and use writing strategies to improve their writing and achieve their writing goals. Several studies have demonstrated that proficient writers employ more effective planning, writing, and editing planning strategies than less-proficient writers (Lei, 2016; Khaldieh, 2000; Ferrari et al., 1998). As a supplementary assistance tool, Google Translate was used by proficient writers in the current study to enhance the richness and depth of their experience and the precision and clarity of their writing, rather than relying on their language alone (see Section 6.2.1.2.2). In addition, their writing proficiency may have assisted them in developing their existing vocabulary knowledge and enhancing it using assistance tools. The internalisation and practical application of writing strategies are factors that differentiate proficient and less-proficient writers (Beare, 2000; Mu, 2005).

Furthermore, the use of pen and paper by three proficient writers to write drafts before typing on a computer indicates that proficient writers tend to view writing as a recursive process, unlike the linear view of less-proficient writers. Activating cognitive function by relying on mental activities such as recalling information and developing ideas can be a cognitively demanding task for less-proficient writers. Consequently, they often seek direct assistance from tools such as Microsoft Word (6.2.1.1.2). This finding aligns with Arifin (2020), who found that proficient writers perceive writing as a cyclical process that involves planning, writing, reading and rereading, practising, and revising. In contrast, less-proficient writers tend to utilise linear and less recursive strategies, which may result from the cognitive demands of the writing process.

Chapter 6

The following section discusses the editing strategies employed by proficient and less-proficient writers when writing autobiographical paragraphs.

6.4.1.2.2.3   Editing Strategies

The analysis revealed that most writers, six out of eight, used Grammarly to edit their autobiographical paragraphs. In addition, two less-proficient writers communicated with their sisters for feedback (see Table 10). The results indicated that using Grammarly and seeking feedback from others allowed the less-proficient writers to produce a paragraph with varied language and expression (see Section 5.4.3).

The study indicated that the purpose of writing and the writing genres were important variables influencing editing strategies. When editing autobiographical paragraphs, most of the writers relied on Grammarly; two of them communicated with their sisters, and one relied on autocorrection on her iPad. Personal writing appeared to be less cognitively demanding for the participants than the reflective journal entry (see Section 4.4.2.2.3). Moreover, the paragraph was written for the researcher and not assessed, so the participants were concerned with editing surface-level errors using Grammarly to clarify the intended meaning. These findings are in line with previous research reporting that system rules (the purpose of writing), which include the assessment guidelines and grading rubric, academic conventions and the instructors' preferences, might guide the writing behaviours and implementation of mediating writing strategies (Kitade; 2014; Lei, 2008; Lei, 2016).

The results of this study suggest that writers' cognition is influenced by social context, which influences writers' behaviour and strategies. The writers in this study responded differently to rhetorical purposes, task requirements, task complexity, and academic and language requirements when writing reflective journals and autobiographical writings. Thus, the employment and internalisation of editing strategies were found to differ among the writers.

As explored and discussed with regard to the third research question, the influence of textual factors showed that language and writing proficiency levels, task complexity, and writing genres significantly influenced the EFL students' writing strategies. Language and writing proficiency levels emerge as critical determinants for adopting writing strategies to facilitate writing, develop academic writing, and improve written texts. Proficient writers were found to be more proactive and engaged in the effective use of writing strategies than less-proficient writers, which was reflected in the length and depth of their writings. Task complexity also plays a pivotal role, as more complex writing tasks impose greater cognitive demands, prompting writers to rely more heavily on strategies like planning, revising, and seeking external assistance to mediate the increased cognitive load. Furthermore, the conventions and requirements of different writing genres appeared to shape the strategic approach

adopted by EFL writers. For reflective journal writing, strategies focused on self-reflection, critical analysis of experiences, and expressing thoughts and emotions become essential. On the other hand, autobiographical writing necessitates strategies for storytelling and descriptive language to recreate personal narratives and life events. Recognising and addressing these textual factors is crucial for enhancing EFL writing instruction and fostering strategic writing skills tailored to students' specific needs and challenges in various writing contexts.

The next section presents a summary discussion of the three research questions.

6.5   Chapter Summary

In this chapter, the researcher discussed the three research questions based on the analysis of the qualitative data gathered from the semi-structured interviews, stimulated recalls, writing strategies logs, writing strategies diaries, and writing texts. Moreover, the chapter discussed the study's main findings and linked them to related literature, highlighting the gap in the literature that the present study aims to fill. The researcher used this link to develop suggestions and recommendations for instruction and curriculum design, which will be discussed in the final chapter of this study. The recommendations aim to improve Saudi university students' writing practices, especially their writing quality, while also guiding pedagogical practice and learning strategies.

The current study addressed a significant gap in the writing strategies literature by developing a writing theory based on previous learning theory (Atkinson, 2002) to investigate the writing strategies employed by EFL writers. The theoretical framework used in this study (see Section 2.10) aims to fill the gap in the literature by reconceptualising writing as a sociocognitive activity that emphasises cognition, writer, and contexts as the main components in any writing act. Considering this framework, researchers can understand the complex interplay between writers' cognition and social contexts, including contextual and textual factors that influence the writers' processes and strategies.

The primary study findings relate to the sociocognitive writing strategies that EFL Saudi writers used when writing in English. Writing in a foreign language, such as English, poses cognitive challenges as well as sentence- and paragraph-level difficulties. Therefore, this study set out to answer three main questions, shedding light on the various writing strategies used by proficient and less-proficient writers. Furthermore, the study explored the contextual and textual factors and examined their influence on writing strategies. The results confirm that cognition, writer, and context are intertwined elements in any writing endeavour in the EFL context. The study also underscores the value of incorporating technological and writing assistance tools in writing instruction, encouraging EFL students to use them to enhance their academic writing skills.

The study's findings underscore the dynamic interplay between writers' cognition function and context, with the social environment playing a pivotal role. The results reveal that EFL writers place significant value on the interaction with tools, resources, and other people to mediate cognitive loads and facilitate the writing process. The learning writing experience and social and professional goals also influence the use of writing strategies. Despite sharing the same academic and future professional goals, the writers' strategies varied due to differences in their writing proficiency levels. This highlights the need for writing teachers to personalise strategies that cater to individual writers and address students' needs. The study also found that the social environment in which the writers perform significantly influences their cognitive functions. This underscores the crucial role of educators in creating a supportive learning environment that allows students to interact with the available learning facilities, thereby promoting positive learning outcomes.

Moreover, the findings of the study underscore the crucial role of textual factors, including writing genres, task complexity, writing purpose, language, and writing proficiency levels, in shaping the use of writing strategies employed by EFL writers. The study observed distinct differences in the use of writing strategies when proficient and less-proficient writers composed two types of texts (reflective journals and autobiographies). This suggests that teachers should consider these factors when guiding students' use of writing strategies, particularly for less-proficient writers who may require more assistance and guidance. This underscores the necessity of a comprehensive approach to EFL writing instruction that considers all these factors. For instance, teachers could provide more structured guidance and support for less-proficient writers while allowing proficient writers more freedom to explore and experiment with different strategies. By doing so, teachers can help all students improve their writing skills and achieve their academic and professional goals.

The next chapter summarises the current research and discusses the implications of the study's findings for L2 pedagogy and research.

Chapter 7 Conclusion

7.1 Introduction

This chapter provides a conclusion and concise summary of the main study's findings, which emerged from the data analysis, and discusses their relevance to answering each research question (Section 7.2). Next, the chapter discusses the study implications for writing teachers and course designers in Section 7.3. The study contributions, including theoretical and pedagogical contributions, are discussed in Sections 7.4.1 and 7.4.2. The chapter also highlights the current study's limitations in Section 7.5. Section 7.6 provides potential avenues for further research to overcome this study's limitations and advance our knowledge of L2 writing strategies.

7.2 Conclusions For Research Questions

7.2.1 Conclusions for the First Research Question: How do proficient and less-proficient EFL students mediate their writing processes?

Investigating how EFL proficient and less-proficient writers mediate their writing processes revealed several key insights. The study found that EFL students employed cognitive tools such as mind maps, brainstorming, and outlining, sociocultural tools like Google Translate and Grammarly, and materials like dictionaries and course books in their writing strategies. They also engaged in social interactions with teachers, peers, friends, and family members for support and feedback. The results demonstrated that EFL writers mediate cognitive loads and facilitate their writing through interactions with tools, resources and people. EFL writers combined multiple strategies throughout the writing process. Proficient writers were more proactive in employing a wider range of strategies, which influenced both their writing process and the way they approached writing tasks. Although proficient and less-proficient writers sometimes used similar writing tools, their internalisation of these tools and resources differed.

Understanding the current EFL sociocognitive writing strategies employed by proficient and less-proficient writers has practical implications. It provides valuable insights into their writing behaviours and strategies, which can be leveraged to develop more effective academic writing approaches. This underscores the need to tailor instructional methods to the diverse needs of students with varying writing proficiency levels. Notably, the findings highlight the role of integrated technologies and AI tools in teaching writing, as teachers can encourage students to make the most of the features and assistance these tools offer. Although this study did not examine group writing as a planned research

task, the interview data suggest that the participants perceived it as a supportive strategy that helped them to organise their ideas and overcome writing challenges. These insights indicate that integrating collaborative writing into instruction may enhance student engagement and provide additional support in the writing process.

7.2.2   Conclusions for the Second Research Question: How do contextual factors influence the use of writing strategies among EFL Saudi writers?

The exploration of the contextual factors and their influences on the writing strategies of EFL Saudi writers uncovered three primary themes: education history, social goals, and social environment. Each of these contextual factors plays a significant role in EFL students' employment of writing strategies. The analysis of the data collected through semi-structured interviews with both proficient and less-proficient EFL Saudi students revealed that the students were dissatisfied with the writing instruction and assessment approach in secondary school, which they deemed to be inadequate and poor, respectively. This led them to follow specific writing strategies to improve their writing and meet the academic study requirements when they started at university. Another contextual factor that emerged was social goals, including academic and professional goals. The strong desire to improve academic writing to enable them to communicate effectively in writing assignments and respond to exam questions led the students to adopt writing strategies to achieve their academic goals. Both groups of writers showed good awareness of the importance of academic writing and effective communication in English in their future professional medical jobs, such as for writing emails and medical documents. Finally, the social environment, where the students sit and write, appeared to influence the employment of writing strategies. For example, when writing in the classroom, the students used social strategies by communicating with teachers and peers. When writing at home, they utilised various writing strategies such as interaction with tools, resources, friends, and family members.

The study's findings emphasise that contextual factors profoundly influence the writing strategies of Saudi EFL students. This understanding is crucial for educators, as it enables them to tailor their teaching methods to address students' needs and compensate for the poor writing instruction that students may receive before joining university. Moreover, understanding students' academic goals and future professional desires will help teachers to guide them by providing assistance and personalised writing strategies to achieve their goals. Additionally, familiarisation with the influence of the environment on the use of writing strategies will help teachers to create supportive learning environments that assist students in writing. This highlights the integral role of educators in the process of understanding and addressing these contextual factors and how to reflect this understanding in their teaching practices.

7.2.3 Conclusion of the Third Research Question: How do textual factors influence the use of writing strategies among Saudi EFL writers?

The examination of how textual factors influence the writing strategies of EFL students has yielded valuable insights into the relationship between English language proficiency, writing genres, and students' writing strategies. The study identified two key textual factors influencing writing strategies: academic writing difficulties, and the task complexity of the two types of texts—reflective journals and autobiographies. English language proficiency, including knowledge of vocabulary, and mastery of writing conventions and the syntactic features of English written texts, emerged as a factor influencing the utilisation of writing strategies. Students who lacked knowledge of English language features found it difficult to effectively utilise writing strategies, relying instead on external resources such as Grammarly to bridge the gap. In addition, the results demonstrated that the students utilised writing strategies based on the perceived complexity of the text types. For example, when writing reflective journals, the students employed more writing strategies than when writing autobiographical paragraphs. Writing a reflective journal imposed cognitive difficulties such as familiarisation with the topic and genre-specific features.

Textual factors appear to play a significant role in the development of the writing strategies of EFL Saudi students. Understanding the task complexity of different writing genres and familiarity with the student's writing proficiency level allow teachers to develop writing curricula that are individualised and fulfil the particular needs of these students, and permit them to offer precise feedback and targeted assistance. Educators can help EFL students to improve their writing proficiency and enhance their academic performance by developing writing instructions that address these textual factors. This approach could improve students' academic success and equip them with the skills necessary to become confident and capable writers in their future academic pursuits.

In summary, the primary study findings relate to EFL writers' sociocognitive mediating writing strategies when planning, writing, and editing their texts. Different writing strategies were used in each writing stage to facilitate the process. The analysis indicated that writing proficiency level and contextual and textual factors influenced the employment of the writing strategies. The present study's findings supported the interrelationship between cognition, writer, and context. The results highlighted the affordances the students received from tools and human interactions to facilitate writing processes, mediate the cognitive loads, scaffold the students' writing and help them to improve their academic writing.

This research is significant in that the researcher developed a sociocognitive framework based on previously established learning and writing theories (e.g., Atkinson, 2002, 2010, 2011; Cumming, 2016; Vygotsky, 1978; Flower & Hayes, 1981; Clark & Chalmers, 1998; Wilson, 2002; Paul, 2021;

Overstreet, 2022). As a result of the sociocognitive approach to EFL writing, the researcher gained a deeper understanding of EFL students' writing strategies and behaviours, as summarised in Section 7.2. The researcher utilised a sociocognitive framework to explore the mediation writing strategies and to examine the contextual and textual nuances influencing EFL writers' writing strategies. The present study responded to the call to investigate writing from multiple cognitive and social perspectives. Therefore, this study reconceptualises writing as a sociocognitive activity achieved through interactions with cognitive and social mediation artefacts, including tools, materials, and people. Writing strategies are defined in this study as the conscious actions, plans, and tools used to improve writing. Social contexts influence these mediating strategies in divergent ways. The findings of the current study's data analysis can be used to improve and enhance Saudi EFL writing instruction, which can, in turn, improve the quality of Saudi EFL students' written products.

7.3   Implications for Writing Teachers and Course Designers

This section offers practical implications for L2 writing instruction, specifically tailored for teachers and course designers in Saudi and similar study contexts. In light of the study's objectives and findings, the researcher provides a comprehensive list of implications that can be directly applied in the classroom.

1.   This study's findings have important pedagogical implications for improving writing instruction. Teachers should integrate writing tools and applications to teach EFL students effectively. As Golonka et al. (2014) point out, "as technologies mature, become readily available, and are adapted for FL (foreign language) pedagogy, instructors may alter their teaching strategies or adjust their teaching activities to most effectively utilise available resources" (p. 70). The results showed that EFL writers mediated writing by interacting with sociocultural tools and other people. These mediation artefacts facilitated the writing process and helped students improve their writing. The study suggests that the students benefited from assistance from tools and communicating with others instead of relying solely on their teacher's feedback and help. Teachers should create effective environments by providing sufficient time for students to consult writing tools and communicate with their peers. One reason for this conclusion is that some students are too shy to raise questions or ask their peers; therefore, interaction with tools might achieve the purpose and fulfil their needs.

2.   Students' writing practices in academic writing and language learning have changed significantly due to the emergence of advanced technology and the internet (Moore et al., 2016; Peters & Cadieux, 2019). In today's interconnected world, technology is undergoing numerous digital developments, including AI (Raheem et al., 2023). Therefore, teachers

should provide instruction on effectively utilising writing tools and AI applications to facilitate the writing process in several ways, including generating ideas, creating drafts, revising, and editing. By providing explicit instruction, teachers can assist students in selecting suitable tools, understanding their functions, and effectively integrating them into the writing processes. The study suggests that the employment of writing tools and applications such as Grammarly, QuilBot, and Google Search has become a part of writers' inner mental functions. As observed in this study, the students relied on tools to support and mediate cognitive loads in writing. However, students might commit mistakes when employing these strategies involving using automatic paraphrasing technologies, such as failing to provide appropriate attribution or copying and pasting material from online sources. Thus, teachers must demonstrate the correct practices and the consequences of misuse to avoid the inappropriate use of these tools. This is highly recommended for undergraduate students, like those in this study who were fresh secondary school graduates, as most of them would have no training on implementing these tools effectively and appropriately in their writing.

3. Teachers should provide personalised individual assistance, especially for less-proficient writers. Particularly in their first year of university study, they need substantial assistance, mainly when dealing with demanding subjects such as medical studies. Therefore, teachers must provide clear and direct guidance regarding efficient writing strategies specifically tailored to meet the needs of these particular students. Teachers can assist inexperienced writers in enhancing their writing abilities by breaking complex skills into smaller, more achievable tasks and providing clear explanations and demonstrations. This approach enables students to understand better how to employ strategies in their writing effectively. Furthermore, it is essential to illustrate effective writing strategies and provide examples in a variety of genres in order to help students understand what strategies to use when writing different types of texts and how to use writing strategies to deal with the cognitive demands of various genres. By being exposed to excellent writing samples and demonstrations of effective strategy implementation, less-proficient writers can acquire valuable insights that allow them to enhance their writing skills (Arifin, 2020). Focused assistance is essential for providing less-proficient writers with the required abilities to excel in academic pursuits, particularly in challenging subjects such as medical studies, where proficient written communication is critical for fulfilling course expectations.

4. The stimulated recall data provide evidence that the students recognised collaborative writing experiences as a desirable instructional strategy as they supported the inclusion of group writing activities in the writing curriculum. Considering the positive aspects expressed by the students, such as improved cooperation, diversity of viewpoints, and broadened understanding of learning academic writing, group writing has the potential to promote

collaborative learning, cognitive mediation, and mutual peer support. The findings of this study support the importance of continuing to incorporate group writing into writing instruction, which can enhance students' learning experience and improve their academic writing abilities. There are, however, specific difficulties associated with group writing activities, which were highlighted by some students, such as inequitable involvement, dependency on others within the group, disagreement between group members, and differences in writing styles. There is a need to carefully monitor group dynamics and encourage fair participation since some students may rely on more proactive group members to develop ideas and participate in the writing process (Aldossary, 2021). Teachers should address these challenges to provide all students with valuable opportunities to participate in collaborative writing activities and benefit from the experience.

In light of these findings, there are two main implications for practical application. First, educators should explicitly direct and assist students to foster active participation and equitable involvement. To address problems associated with incorporation and dependency on others, teachers can employ strategies that clearly define responsibilities and anticipated outcomes, enforcing organised cooperative procedures and cultivating a positive educational environment. Additionally, teachers can continuously monitor and evaluate group dynamics to identify any challenges that may arise, promoting a more inclusive and practical collaborative writing experience for all students (Aldossary, 2021). Furthermore, teachers should receive training and assistance on effectively implementing optimal strategies for promoting collaborative writing exercises as part of their professional development programmes (Chen & Yu, 2019). To successfully incorporate collaborative writing techniques into the writing curriculum, the academic development unit should provide instructors with the necessary knowledge, skills, and resources to efficiently manage group dynamics and encourage equal participation in the writing process.

5. Teachers should allocate sufficient time for students to practise writing. The interview data revealed that the time allocated to the writing class was insufficient, which was one of the reasons for the students' poor academic writing. The students were aware of academic writing characteristics and requirements and were able to list all the academic writing features. However, they reported difficulties with applying theoretical knowledge in practice. Many students reported that a lack of writing practice was the main reason for poor writing outcomes. Due to insufficient time allocated to the writing classes, students and teachers face challenges finding time to write or do extra practice in class. Time constraints were the main problem behind the poor writing outcomes, as reported in several studies (Abkar Alkodimiet al., 2021; Alzahrani et al., 2020; Alharbi, 2019; Al-Seghayer, 2014). Despite this, curriculum designers might find it challenging to allocate extra time to writing classes since

they must pay equal attention to other language skills. Thus, the study offered several suggestions for curriculum designers and teachers to help students improve their academic writing as follows:

- The English Language Institute should encourage, promote, and support students' use of library facilities as an integral part of their educational experience. The institute should also select writing books specifically tailored to assist students in improving critical skills at various proficiency levels. Promoting library engagement and the availability of specific resources will enable students to supplement their learning and practice writing on their own time and in peace. Familiarity with library resources and facilities will help medical undergraduate students become aware of the affordances they can access, which might help them with writing their course assignments and research papers.

- The academic development unit and the English Language Institute should provide extra writing classes and organise academic writing workshops. Many students expressed their struggle with the limited time in regular writing classes. By attending extra writing classes, students would have additional opportunities to receive personalised support and develop their academic writing skills. These additional classes could be optional and not assessed, providing a low-pressure environment for students to seek additional support.

- Universities and English language centres and institutes should offer online writing workshops that address various academic writing elements and needs. Online workshops can benefit students who cannot attend in-person workshops because of demanding schedules or other obligations. Providing greater accessibility to writing instruction fosters diversity and ensures that all students have the opportunity to improve their writing skills (Alzahrani et al., 2020). These workshops foster collaboration and peer learning and are interactive environments for sharing concerns and solutions. Surveys and academic writing needs analysis could be conducted at the beginning of the academic year. The educators can use the obtained results to design writing workshops tailored to students' needs.

7.4   Theoretical and Pedagogical Contributions

Previous researchers investigating EFL writing strategies examined cognitive and sociocultural writing strategies separately. To the best of the researcher's knowledge, this study is the first in the Saudi context to examine writing strategies and writing problems by considering the complex interaction between writers' cognition and contexts. The researcher examined the influence of contextual and textual factors on writing strategies and examined cognitive mediating strategies to offload cognitive demand in order to enhance writing and achieve its goals. As a result, this study has filled the gaps in

the literature concerning English writing strategies in EFL contexts in general and in the Saudi Arabian context in particular.

7.4.1   Theoretical Contributions

This study responds to the call to investigate writing strategies from multiple social and cognitive perspectives. Cognitive theory views writing as an inner mental operation involving planning, writing, and reviewing. Researchers like Flower and Hayes (1981) have used TAP to uncover the cognitive process during the writing act. Although their cognitive writing model is still influential (see Figure 1), it received much criticism from theorists and researchers for isolating cognition from the social context. Early writing studies used cognitive theory to investigate writers' writing process (e.g., Arndt, 1987; Victori, 1999). These studies yield important results and enrich our understanding of cognitive functions during writing. Despite this, researchers and theorists have acknowledged the importance of considering contexts when examining the writing process and writing strategies. Therefore, they call for a shift in paradigms from cognitive to considering the social nature of writing and the factors influencing writing practices (Vygotsky, 1981; Cumming et al., 2002; Kessler, 2020; Wu, 2020; Overstreet et al., 2023). Researchers and theorists responded to this call and used a sociocultural perspective. However, they did not explore the factors that influence the use of mediation writing strategies (Lei, 2008; Kang & Pyun, 2013; Yang, 2014; Yu & Lee, 2016). The current study provided a comprehensive picture of EFL writing strategies by examining factors influencing students' writing practices and strategies. It explained the dynamic relationship between cognition and context in writing.

In order to offer a more explanatory account of EFL writing behaviours and strategies, this study suggests a sociocognitive model that expands upon established theoretical viewpoints. This framework expands on previous models by adding new theoretical insights. It is based on Atkinson's (2002) sociocognitive approach, which emphasises the inseparability of cognition from its social and material environment. In particular, it incorporates the idea of sociocognitive alignment proposed by Nishino and Atkinson (2015), highlighting the dynamic relationships that exist between writers and their ecosocial environments. It also incorporates viewpoints from the extended mind theory and embodied cognition, offering more comprehensive understanding of the writing process (see Sections 2.6.1 and 2.6.2).

The model is graphically depicted in Figure 2, which shows how the writer, cognition, and context interact, with interaction at its core. This approach emphasises how these components are interrelated and dynamic, in contrast to standard models that regard them as separate entities. By combining these viewpoints, the study reconceptualises L2/EFL writing as a sociocognitive process

that is influenced by textual and contextual factors and mediated by sociocultural affordances, resources, and human agents.

The results highlight the important role of context in influencing writing practices and strategy application. The study specifically shows how writers interact with cognitive and sociocultural tools, resources, and humans to mediate cognitive load. This is consistent with the ecological viewpoint of van Lier (2004), which sees writing and language acquisition as situated, dynamic processes influenced by social, temporal, geographical, and symbolic factors. The study clarifies how textual and contextual elements interact with cognition to shape the writing practices and strategies used by EFL learners. The study provides a thorough understanding of Saudi EFL writing by presenting this model, highlighting the interconnectedness of the cognition, material, and social aspects of the writing process.

By applying the sociocognitive perspective to analyse writing strategies, researchers can understand the contextual and textual nuances that influence writing strategies and the difference between the writing process and the strategies of individual writers. According to van Lier (2004), the language learning context should be examined as a process encompassing the entire world, considering various scales, such as spatial and temporal dimensions. It should also consider the physical, social, and symbolic factors influencing language learning activities. The findings indicated that context was a leading indicator for understanding EFL students' writing practices, including their writing difficulties, motivations, and desires. The results indicated that specific academic and professional goals drove the EFL writers to follow specific writing strategies.

Understanding task complexity and cognitive loads associated with different writing genres contributes to understanding how writers' cognition is mediated when writing different writing tasks. In light of the sociocognitive perspective, the study found a strong connection between cognition and contexts. EFL writers in this research responded differently to each text type's requirements (reflective journal and autobiography). For instance, they were able to extend their minds by utilising environmental structures. They strategically interacted with their surroundings, such as notes and computer screens, and effectively used the classroom and home facilities and features. Additionally, they mediated their cognitive loads through interaction with sociocultural affordances and people, including teachers, friends. and family members. Hence, this study stresses the critical role of context in overloading cognition and facilitating the writing processes. This study confirms and supports the notion of embodied cognition that emphasises the complex interplay between the brain, body, and environment (Wilson, 2002).

7.4.2   Pedagogical Contributions

The current study's findings provide valuable insights that can inform and guide instruction of EFL writing in Saudi Arabia. This, in turn, contributes to improving writing outcomes for Saudi EFL students. The emphasis on improving writing proficiency may help Saudi students meet the demand for English proficiency and be better prepared for medical and other scientific majors.

The researcher investigated the significant relationship between cognition, writer and context. The identified links can help teachers and researchers to increase their understanding of the complex interplay between context and EFL writing. Understanding previous writing instruction can guide current teaching practices by improving writing instruction and creating writing syllabuses that address the gap between students' insufficient writing instruction and their current writing skills. The lack of writing practices and inappropriate teaching methods were the prominent problems faced by EFL Saudi students at secondary school (Alkodimi & Al-Ahdal, 2021; Kiuhara et al., 2009), negatively influencing their writing skills when they joined higher education. Thus, this study highlighted the importance of considering education history to better understand EFL writing practices and improve writing instruction. In addition, the study identified relationships between goals, including academic and professional goals, that drive and motivate students to improve their academic writing skills. The findings can help teachers to consider students' goals and develop writing instruction and programs to help students reach their goals by guiding them on how to use effective writing strategies.

The researcher investigated the relationship between writing genres and writing strategies use, specifically the influence of task complexity on the employment of writing strategies. The findings contribute to teachers' and educators' understanding of the cognitive loads associated with different writing genres and the writing strategies used to mediate cognitive demands. The study demonstrated the differences in the writing strategies employed by EFL writers when writing reflective journals and autobiographies. By understanding the cognitive demand of each writing task, teachers can guide students to use effective writing strategies and processes to facilitate writing and mediate cognitive burden by interacting with writing assistance tools, materials and people.

A summary of the research contribution is presented in the following Figure 12.
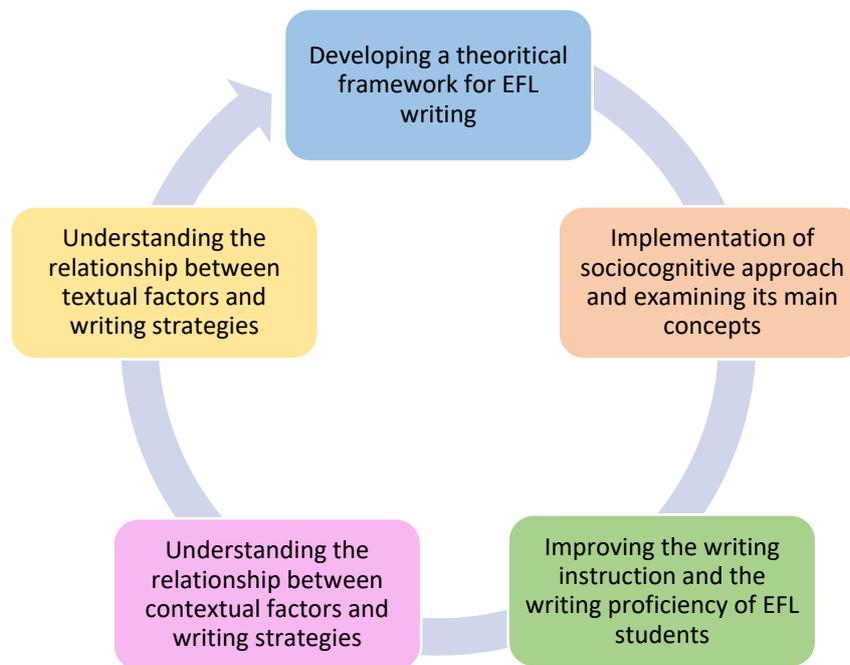
Figure 12   Summary of the Research Contribution

7.5   Limitations of the Study

The researcher undertook a rigorous investigation to produce objective, reliable results from the obtained data. Chapter 3 provides an overview of the methodology choices and processes used to ensure rigour. However, there are some limitations worth considering in interpreting the results of this study:

1. The sample size of the participants was not large. Initially, the researcher aimed to select the participants from one class group to avoid the influence of other variables, such as writing instruction. However, due to the limited number of students who agreed to do the writing exam, the researcher asked other students in another group to participate. Although the participants in this research were from two separate class groups, only eight students agreed to complete the whole research process. The reasons for this were that writing is a demanding task for EFL students, and the researcher faced challenges in recruiting students to complete the research process related to L2 writing.

2. Due to time constraints and the requirement to obtain permission to access male departments, as well as the cultural norms in Saudi Arabia that limit communication between male students and female teachers, the researcher was only able to recruit participants from the female section. This choice was made to adhere to institutional regulations and cultural traditions. Therefore, as the sample exclusively consisted of female students, the results may not comprehensively reflect the perspectives and experiences of male students. It is therefore essential for future research to consider these constraints and

aim to obtain a gender-diverse sample of participants to thoroughly understand writing strategies and experiences across genders.

3. Another limitation was the inclusion of only students in the foundation year of the medicine college due to the considerable challenges of obtaining permission to include students in the subsequent years. Although it would have been beneficial to include second and third-year students to conduct more thorough comparative analyses of novice and advanced writers, administrative constraints, such as the presence of distinct administrative teams responsible for different academic years, hindered my ability to recruit participants beyond the foundation year. Thus, recruiting efforts focused primarily on the first-year cohort. In light of this, the study's results may have limited applicability beyond the first-year students, and it is advised to use caution when applying the results to higher academic levels.

4. A wider variety of tools may have been utilised to offer a more comprehensive viewpoint, particularly by including an objective observer. For instance, in the present study, classroom observations were not included. Utilising audio recordings in observation research methods can enhance the level of information obtained. This approach allows for deeper insights and a more comprehensive understanding of students' behaviours during the writing process. Additionally, it aids participants in recalling their thought processes during the stimulated recalls related to their performance and the evaluations of the group writing.

7.6   Suggestions for Further Research

The present study investigated current EFL sociocognitive writing strategies. The researcher developed a sociocognitive approach that explored and confirmed the complex interaction between sociocognitive components, exploring the interplay between cognition, writer, and context. However, there is still a significant need for further research in this specific field:

1. Future researchers should trace EFL students' interactions with humans and writing resources, including tools, by examining cognitive mediations when interacting with each mediation separately, to shed more light on their potential affordances and limitations. This will contribute significantly to curriculum design and teaching by maximising the implementation of effective writing strategies.

2. The present study investigated the students' writing strategies when writing two types of texts (reflective journal and autobiography). Future studies could add more genres, such as descriptive writing tasks, summaries, and letters, to examine their complexity and the mediation strategies used to mediate cognitive loads. The current study observes that different writing tasks may pose cognitive loads. Therefore, including more writing genres

when exploring writing strategies may increase our understanding of students' differing writing strategies to deal with task complexity and cognitive loads.

3. More research needs to be conducted in different EFL and ESL contexts to further examine the influence of contextual factors on writing strategies. This research was conducted in the EFL Saudi context, and different contextual factors were found to influence EFL Saudi students. Therefore, examining the influence of contextual factors in broader contexts on writing strategies will enhance our understanding of this important component of the sociocognitive approach.

4. This study did not include classroom observations, which may provide further information and insights about writing instruction in Saudi universities. As a result, the self-reported data obtained from the interviews may be validated further. In future research, classroom observations may be conducted to better understand the writing difficulties students experience at Saudi universities (or any other academic institution). This would allow for a more accurate diagnosis of the challenges in writing instruction and strategies and enable the development of more comprehensive solutions.

5. This study provides valuable insights into the writing strategies of proficient and less-proficient EFL writers enrolled in the foundation year at a Saudi university. Nevertheless, to advance future research on writing strategies, it is essential to broaden the scope of this comparison to encompass students from various academic years, such as the second, third, and fourth years. Such a longitudinal exploration study would provide a comprehensive examination of writing strategies, helping us better understand how these strategies develop over time within the academic setting. Examining students at different levels in their university studies could provide insights into the progression of writing strategies and the impact of teaching interventions across different levels of writing skills. Moreover, using such a comparison method could provide valuable insight into the design of the curriculum and the implementation of teaching methods specifically tailored to meet the changing requirements of students as they progress through their academic journey at a Saudi university.

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Appendix A   Semi-structured Interview Questions

<u>Semi-structured interview for students [approx. 30-50 min]</u>

Name: …………………………………

Date: ………………………………….   **Day: ………………………………….**

<u>First, about learning writing experiences</u> :

1. **How can you describe your learning writing experience?**

Prompts/Probes:

a) Do you like to write in English? why?
b) What you usually write in English?
c) Do you write in English when you were in high school before you join the university?
d) What type of writing did you do before you join the university? e.g. sentences, paragraphs, essay
e) How would you describe your level of English writing and why? Ex. Beginner, intermediate, upper intermediate
f) How do you describe the writing classes in high/secondary school? In what ways do you benefit from these classes?
g) Did you do any actions such as joining writing classes, did online courses, or doing any personal training to improve your English academic writing?
h) In your opinion, do you think your learning writing experience in the past has influenced your current level of writing now? Can you clarify?

<u>Second, about the writing difficulties students face :</u>

2. **What writing difficulties do you face during writing in L2?**

Prompts/Probes:

a) Some researchers and teachers say writing in a second language is easier than writing in a first language. would you agree?
b) What do you think are the most common problems in writing?
c) Do you have these problems?
d) Describe the most significant challenges do you face when you write in L2.?
e) Do you face difficulty in the following writing areas?
    - Organising ideas
    - Spelling
    - Sentence structure
    - Vocabulary choice
    - Correct grammar
    - Punctuation: commas, capitals

Third, about the strategies and techniques students do to overcome difficulties and improve their academic writing:

3. **What are the writing techniques and strategies you use to improve your writing?**

Prompts/Probes:

a) Do you want to improve your academic writing? why?
b) In your opinion, what are the good characteristics of good academic writing?
c) What steps or techniques would you recommend other students use when writing?
d) What steps or techniques do you use when writing? can you explain in detail
e) When you have a problem with your writing, what would you do? *Do you use any programs, or apps, or ask for help from someone? Please explain in more detail.*

Fourth, about the writing classroom and the affordances they can have from the writing classes:

4. **In your opinion, do you think writing classes are useful to improve your academic writing?**

Prompts/Probes:

a) Do you believe that the writing tasks that you did in the class are enough to learn how to write in English? if answering Yes, Can you explain in what ways do you benefit?
b) Do you like to work in a group when you write? Why?
c) What benefits did you gain from working in groups when writing? Can you explain more?
d) When you write in class, do you think you can use more techniques and strategies than when you write at home or any place other than the classroom?
e) In your opinion and from your experience, do think the time for writing class is efficient to learn how to be a better writer? **If no**
f) What do you recommend as a student studying in a university to have in order to improve your writing? such as facilities, workshops, writing centres and so on

We reach the end of the interview, do you have anything or any idea, comments you wish to add, or questions you want to ask?

Appendix B   A Sample of Writing Strategies Log

Writing Strategies Logs

Name :	
Writing Topic	Litre of Tears
Writing Purpose	Academic requirement for the English language course

Writing text :

In my free time, I watch many series. I want to write about Litre of Tears series to remind you that life is full of difficulties, but we have to be strong. The series talk about the story of a girl who struggles with her illness. Aya is the heroine of this series and the story was based on her diary.

I could feel Aya suffering and how she was facing many difficulties. I think the ending was very disappointing. I learned that I would fight for my dream as Aya did. She was able to achieve her dream, which is to write a book about her illness. A wonderful, dramatic and realistic series that makes you live all the feelings that you see. I advise everyone to watch it.

Appendix B

	The writing process	The strategies
☐	**Planning**	The first thing I asked the doctor about the required points in writing, such as (the key sentence and the plot of the story...) Then I used the Google program to search for the topic and collect my thoughts.
☐	**Writing**	I arranged the ideas that I wanted to talk about, then I started writing by myself. I searched the difficult words using some sites such as Google, for example, if I wanted to use the word [influential], I used to write (ways to use the word influential in a sentence in English). I also used the university English book because I make sure of some rules when writing, for example, if I want to talk about something that happened in the past, I use verbs in the past tense, and so on.

Writing processes and strategies:

Explain the strategies you use to complete each writing process:

☐	**Editing**	In the end, I used Grammarly to check my writing. I also sent my writing to a group of my friends and asked them to proofread it and if it needed to be modified or not.

Reasons (In your opinion, Explain why you use these writing strategies mentioned above)

The first thing I searched about was the writing topic because I could not talk about anything unless I fully understood the subject.

I used Grammarly because I have a little weakness in some grammar.

I used the university English language book because it is full of vocabulary and grammar rules that help me write.

Appendix C   A Sample of Writing Strategies Diary

Writing Strategy Diary

Name:…………

Date: ………………………………….

Please answer the following question after you finish your writing

1. **In your opinion, what processes and aspects of writing do you find easy when you write?**

Gathering and arranging information for me is the easiest part of writing.

2. **In your opinion, what processes and aspects of writing do you find challenging when you write?**

The writing part itself is difficult for me, and it takes a long time to do it. Sometimes I have mistakes in the same grammar, so I take time to correct them

3. **What did you do to complete your writing?**
   ➢ **Did you communicate with anyone to discuss the writing topic?**

After I finished writing, I sent my writing to some of my friends to evaluate it. I also asked the teacher about some things that I am not sure about (i.e. did I write it correctly or not)

   ➢ **Did you communicate with your teacher to ask questions and discuss the writing topic?**

Yes, after I finished my writing, I asked the teacher to evaluate the writing and give me feedback and things I need to amend.

   ➢ **Did you use any writing tools, apps, or software to write? Name them and explain**

Yes, I used only one application, which is Grammarly. Some of my friends advised me to use it. It is a program that helps in writing, identifies errors in spelling and grammar, and corrects them as well.

4. **From your experience, did the writing strategies help you with writing preparation and writing process, such as planning, writing, and editing, Explain)**

Yes, writing strategies helped me a lot. My writing became more organized and contained a few errors. I also felt easy to arrange information because before I write I searched for basic and important information.

5. **In your opinion and from your experience, do you use different strategies and social tools in academic writing, such as essays and paragraphs, and when writing non-academic texts, such as writing an email to your friend? Are there any differences in the writing strategies used in these two types of writing? please explain**

Yes, there is one difference for me. I think that when writing academically, I should use scientific and academic terms and be more accurate, but when writing a personal experience, I can be flexible in writing.

6. Are you satisfied with your writing? What are the improvements you achieve, and what difficulties do you face?

Yes, I am satisfied with my writing. I have improved significantly in formulating sentences and searching for alternatives to some vocabulary. I have also become faster in writing. The difficulty I encountered in writing is grammar.

Appendix D   Stimulated Recalls Questions

Stimulated interviews for students [approx. 15-20 min]

Name: …………………………………

Date: ……………………………….   Day: ………………………………………

These stimulated recall questions are to be asked when the students finish the group work.

About the benefits and affordances of group work:

1.   What benefits did you have when working in a small group to accomplish the writing task?

Prompts/Probes:

1.   In the writing class, you worked in a small group and started with your group members writing about the topic you will write about this semester. To what extent did this group work help you in your writing before writing individually?
2.   Some researchers argued that writing in a small group can be more challenging than writing individually. To what extent do you agree or disagree with this statement
3.   In your opinion, do you think writing in small groups is important before writing individually?
4.   Why do you think writing in small groups is a good strategy/step in writing class?
5.   What do you think the students can gain when writing together in a small group?
6.   In your opinion, does writing in a small group can benefit students and solve the writing problems they might face?
7.   What writing strategies/ techniques do you employ when writing in groups?
8.   Can you describe the support the teacher would provide during the group work in the class and outside class time?
9.   Do you communicate with the teacher during group work?

Appendix D

Appendix E   A Sample of a Reflective Journal Paragraph (Proficient Writer)

Name: …………………………………

Tittle: ……Inside Out…………………….

Animation movies have became interesting for all generation these days. People like to watch them because they take them to an imaginary world. An example of that is Inside Out movie. It is an American animated film directed by Pete Doctor. This film is about inner working inside the mind of a young girl, her name is Riley. Within her mind, there are five personified emotions which manage her thoughts and actions. Joy, sadness, anger, fear, and disgust are the imaginary characters that control her feelings. I like this movie because I felt that is not only described a feeling of unreal character, but also described feelings of many kids. For instance, it showed the strange period when a child starts to question things and have new experiences. I learned that growing up can be rough road and we also guided by our emotions like Riley. All in all, I highly recommend watching this movie.

Appendix F   A Sample of a Reflective Journal Paragraph (Less-Proficient Writer)

Name: …………………………………

Tittle: ……… When Breath Becomes Air………………….

When Breath Becomes Air

Reading books is the best way to spend time, one of my favourite books is When Breath Becomes Air. The book was written by an Indian neurosurgeon name Paul kalanithi. The book has three parts; life before cancer, during cancer, and the third part was written by his wife after his death.

Paul's transformation from a medical student asking what makes virtuous and meaningful life into a neurosurgeon working on the core of human identity, Dr. Paul was diagnosed with lung cancer. One day he was a doctor treating the dying, the next he was a patient struggling to live. This book taught me about cancer from both a doctor's perspective and a patient's perspective, I really enjoyed reading every part of the book. Even though the book is incredibly sad in the end.

Appendix G   A Sample of an Autobiographical Paragraph (Proficient Writer)

Name:…………………..

Tittle: …Why I Chose Medicin…………

It is known that choosing a major before graduating from high school is not easy. It may be the hardest thing to do during a study life, and it took me a long time to choose my major. However, now I study medicine for many reasons. First of all, I have been interested in health and diseases from an early age. There is no specific cause for that, but no doubt that it had an effect on my decision. The second reason is that I wanted to make a difference in people's lives. Obviously, the primary thing I will do as a doctor is saving lives and having many opportunities to help people recover. Also, the work I am going to do is important to both the individual and the community. Third, being a life-long learner. Studying medicine can provide me with a huge information in different aspects of science, such as physics, biology, chemistry, and several other subjects. Finally, medicine will give me a secure future. Although it is a sad fact, people will always need healthcare and the demand for doctors will not stop. In Conclusion, I am still in my first year of medical college, and I know that I am going to face many challenges and new reasons for continuing my dream. My goal is to become a successful doctor in many ways. For example, I hope to be part of people improving the healthcare system in my country. Furthermore, I want to have new experiences and increase my professional knowledge.

Appendix H   A sample of an Autobiographical Paragraph (Less-Proficient Writer)

Name:…………………………..

Tittle: …Why I Chose Medicin…………

Studying medicine is a passion from a young age. My mother motivated me a lot and stayed up to teach me to reach this goal. My mother is my first supporter and I am trying hard to reach this goal. I do not have a great background in medicine, but while I was in school I was very excited about biology and chemistry classes in the field of the human body. I love meditation on operations surgical. When someone in my family got sick, I always looked for the symptoms of the disease and its treatment. This is my passion and my dream.

Appendix I   Scoring Scheme for the Writing Proficiency Test Jacobs et al.'s ESL writing profile (1981)

Category	Score	Criteria
Content	30-20	**EXCELLENT TO VERY GOOD:** knowledgeable - substantive thorough development of thesis - relevant to assigned topic.
	26-22	**GOOD TO AVERAGE**: some knowledge of subject - adequate range - limited development of thesis - mostly relevant to topic, but lacks detail
	21-17	**FAIR TO POOR:** limited knowledge of subject - little substance •inadequate development of topic
	16-13	**VERY POOR:** does not show knowledge of subject - non-substantive – non-pertinent - OR not enough to evaluate
Organisation	20-18	**EXCELLENT TO VERY GOOD**: fluent expression • ideas clearly stated/supported - succinct - well-organised - logical sequencing - cohesive
	17-14	**GOOD TO AVERAGE**: somewhat choppy - loosely organised but main ideas stand out - limited support - logical but incomplete sequencing
	13-10	**FAIR TO POOR**: non-fluent - ideas confused or disconnected - lacks logical sequencing and development
	9-7	**VERY POOR:** does not communicate - no organisation - OR not enough to evaluate
Language Use	25-22	**EXCELLENT TO VERY GOOD:** effective complex constructions - few errors of agreement, tense, number, word order/function, article, pronouns, prepositions

	21-18	**GOOD TO AVERAGE**: effective but simple constructions - minor problems in complex constructions - several errors of agreement, tense, number, word order/function, article, pronouns, prepositions but meaning seldom obscured
	17-18	**FAIR TO POOR:** major problems in simple/ complex constructions - frequent errors of negation, tense, number, word order/function, article, pronouns, prepositions and/ or fragments, run-ons, deletions - meaning confused or obscured
	10-5	**VERY POOR:** virtually no mastery of sentence construction rules - dominated by errors - does not communicate - OR not enough to evaluate
Vocabulary	20-18	**EXCELLENT TO VERY GOOD**: sophisticated range - effective word/idiom choice and usage - word for mastery - appropriate register
	17-14	**GOOD TO AVERAGE**: adequate range - occasional errors of effective word/idiom form, choice, usage but meaning not obscured 13-10
	13-10	**FAIR TO POOR**: limited range - frequent errors of effective word/idiom form, choice, usage - meaning confused or obscured
	9-7	**VERY POOR**: essentially translation - little knowledge of English vocabulary, idioms, word form - OR not enough to evaluate
Mechanics	5	**EXCELLENT TO VERY GOOD:** demonstrates mastery of conventions - few errors of spelling, punctuation, capitalisation, paragraphing
	4	**GOOD TO AVERAGE**: occasional errors of spelling, punctuation, capitalisation, paragraphing but meaning not obscured

	3	**FAIR TO POOR**: frequent errors of spelling, punctuation, capitalisation, paragraphing - poor handwriting - meaning confused or obscured
	2	**VERY POOR:** no mastery of conventions - dominated by errors of spelling, punctuation, capitalisation, paragraphing - handwriting illegible - OR not enough to evaluate

Appendix J   Participant Information Sheet

Participant Information Sheet

Study Title: A sociocognitive Study on Writing Strategies in EFL Writing by proficient and less-proficient Students in a Saudi University

Researcher: Samar Alharbi

ERGO number: 69308

You are being invited to take part in the above research study. To help you decide whether you would like to take part or not, it is important that you understand why the research is being done and what it will involve. Please read the information below carefully and ask questions if anything is not clear or you would like more information before you decide to take part in this research. You may like to discuss it with others, but it is up to you to decide whether or not to take part. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

Hello, my name is Samar Alharbi. Currently, I am conducting a research as a part of the requirement of a PhD degree in Applied Linguistics. I am a researcher at the University of Southampton, UK. I am interested in exploring the social cognitive writing strategies and the social cultural affordance EFL students use in L2 writing. Therefore, in my study, I try to answer the following questions:

1. *How do proficient and less-proficient EFL students mediate their writing processes, and how does this affect their writing?*
2. *Are there any common tendencies and patterns in the writers' mediation strategies, actions and the use of social-cultural affordances when writing?*
3. *How is the EFL students' language proficiency, writing goals, and education history interrelated with their mediation strategies and actions in writing?*

This research is funded by Umm AL- Qura University and sponsored by the University of Southampton.

Why have I been asked to participate?

You have been asked to participate in this study as you are learning English as a foreign language, and you are currently in the preparatory year at the medical college. Also, you have writing classes, and you are engaging in writing activities.

What will happen to me if I take part?

If you agree to participate, I will arrange for a brief informal meeting to get to know you and schedule interviews. After that, I will contact you to set up a time for an initial interview. You have the option of having your interviews conducted in either English or Arabic. In addition, you need to submit a minimum of four paragraphs. After you finish and submit each paragraph, you need to complete writing strategies logs and diaries. A short demo lesson and practices on how to complete these forms (logs and diaries) will be given. Finally, you will be invited to stimulated recall interviews to discuss the written documents you submit and the writing strategies you employ and the social cultural affordance you use in your writing. All these procedures will happen in a period between two to three months.

Are there any benefits in my taking part?

Your participation is significant and helpful in understanding what writing strategies and social cultural affordance current students use. This exploration will give us insights into the writing strategies because continued innovations in social tools and technologies have brought changes in students' writing strategies and L2 writing pedagogy. The students will raise awareness about the social cognitive writing strategies available to them when they write.

Are there any risks involved?

There are no possible psychological or physical risks involved in this research. Also, there are no sensitive topics will be included in the interviews. However, you have the right to withdraw from the research at any time if you wish.

What data will be collected?

The data in this research will be in the following forms:
- *Emails exchange between the researcher and the students for sending documents and contents related to the research.*
- *Consent forms*
- *Interviews' audio recordings*
- *Audio recording transcriptions*
- *Written documents including writing texts, writing strategies logs and diaries.*

The researcher will collect all the data. The communication between the researcher and the participants will be online using various tools such as emails, telephone calls, and online meeting platforms like Teams, Zoom and Cisco Webex. All the exchange emails will be kept in a password protected University of Southampton email account, and all emails will be deleted after the study is finished. All the audio recordings will be transcribed and then destroyed. The data will be completely anonymised, and the participants will refer to using pseudonym names or alphabetical letters. All the collected data will be stored securely in a password-protected computer.

Will my participation be confidential?

Confidentiality will be maintained at all stages of the research. Firstly, all the information obtained from the participants will be kept on a password-protected computer. Secondly, the names of participants will not be mentioned directly in the research. They will be referred to using pseudonym names or alphabetical letters. Thirdly, all the emails between the researcher and the participants will be kept in a password protected University of Southampton email account. All emails will be destroyed after the study is finished. Fourthly, the raw data and other files containing participants' details such as interviews recordings, transcriptions and written documents will be saved securely in university servers looked with a secure password. Finally, all the data will be used for the research and publication purposes and will not be displayed or shared with another person other than my supervisors.

Do I have to take part?

No, it is entirely up to you to decide whether or not to take part. If you decide you want to take part, you will need to sign a consent form to show you have agreed to take part.

What happens if I change my mind?

You have the right to change your mind and withdraw at any time without giving a reason and without your participant rights being affected. However, it would be very appreciated if you inform the researcher about your desire to stop participating in the research. All of your information shared before you withdraw will be removed, which would have no impact on you anyway.

What will happen to the results of the research?

Your personal details will remain strictly confidential. Research findings made available in any reports or publications will not include information that can directly identify you without your specific consent. The results of your responses will be written up as part of a research thesis to obtain a doctoral degree in the field of applied linguistics. Results may also be utilised for research publications and all your data will be completely anonymised. Upon the completion of this research project, the participants will receive a copy of the results.

Where can I get more information?

If you have any questions, comments and concerns about this research project, please do not hesitate to contact me via my email (sea1n19@soton.ac.uk) or contact my supervisors team at their email Dr Rugang Lu (R.Lu@soton.ac.uk) , Dr Chris Lewis (C.Lewis@soton.ac.uk) , and Dr Vicky Wright (v.m.wright@soton.ac.uk).

What happens if there is a problem?

If you have a concern about any aspect of this study, you should speak to the researcher who will do her best to answer your questions.
If you remain unhappy or have a complaint about any aspect of this study, please contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

Thank you very much for your time reading the above information and your consideration in taking part in this research.

Appendix K   Consent Form Arabic

Arabic CONSENT FORM

نموذج موافقة

عنوان الدراسة: دراسة فعلية اجتماعية واستراتيجيات القلق ي تكتاب غة الإنجليزي ة للغة أجنبية من قبل الطالبات الماهرات الغير ماهرات في جامعة شعوبية

اسم الباحث: سمل حربي
رقم الموافقة للبحث: 69308

من فضلك قم بوضع عالمة من الظلئت توافقي على محتواها :

لقد فهمت المرمك الدراسة ول يحق في السؤال عنها متى ماوجت لدي المسألة

- أفق على الشراك ف ي هذ ه الدراسة البحثية وأفق على استخدام بيانالي ف ي غرض البحث

أدرك أن ارتكتي ف نه هالدراسة تطوعية ويحق اني نسحاب متى
- ما أردت

أدرك أن المعل ومتالي تم جعها عني من مشاركتي ف ي هذه الدراسة سيتحفظها بسررية تا مه على جهاز أسير محمي بكلمة مرور وأن منعلومات ستستخفمق طلغرض هذا الدراسة .

السم : ....

التوقيع : ....

التواريخ: ....

أسم الباحث: ....

التوقيع : ....

التواريخ : ....

Appendix L   Consent Form English

CONSENT FORM

Study title: A Sociocognitive Study on Writing Strategies in EFL Writing by proficient and less-proficient Students in a Saudi University

Researcher name: Samar Alharbi

ERGO number: 69308

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (insert date /version no. of participant information sheet) and have had the opportunity to ask questions about the study.

I agree to take part in this research project and agree for my data to be used for the   purpose of this study

I understand my participation is voluntary and I may withdraw at any time without my   legal rights being affected

Data Protection

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name)...

Signature of participant...

Date...

Name of researcher (print name)..

Signature of researcher ....

Date...

Appendix L

Appendix M   A Sample of the Participant's Writing Test

Writing Proficiency Test

University ID: .

Do you believe having three semesters in one academic year would be helpful for students?

- Give reasons for your answer and include relevant examples from your knowledge or experience.
- Please write at least 150 words.
- You have 40 minutes to finish writing your paragraph

Well in The first I Think it is not areally good direction for alot of reason. The main reason it's we are human we needrest. Three semesters in one year it's a kind of diffust for all students speically for medicn students,because we have a diffust Textbooks. we are always being waiting for holdigys to deal with our social Live Also, when we reach to The Last semesters already our minds was losing alot of energy. Thenwe will Lose alot of morks which mean it is not fair becase we are The first medicn studentsdeal with Three semesters with knew text books That it is really hard for us., so it is not helpful aT all, also it's cost more money Then Two Semesters and with out benefit. So I hope They will canseld This all semester To makes us happy and having social Live.

1

Appendix N   MAXQDA Data Analysis Sample
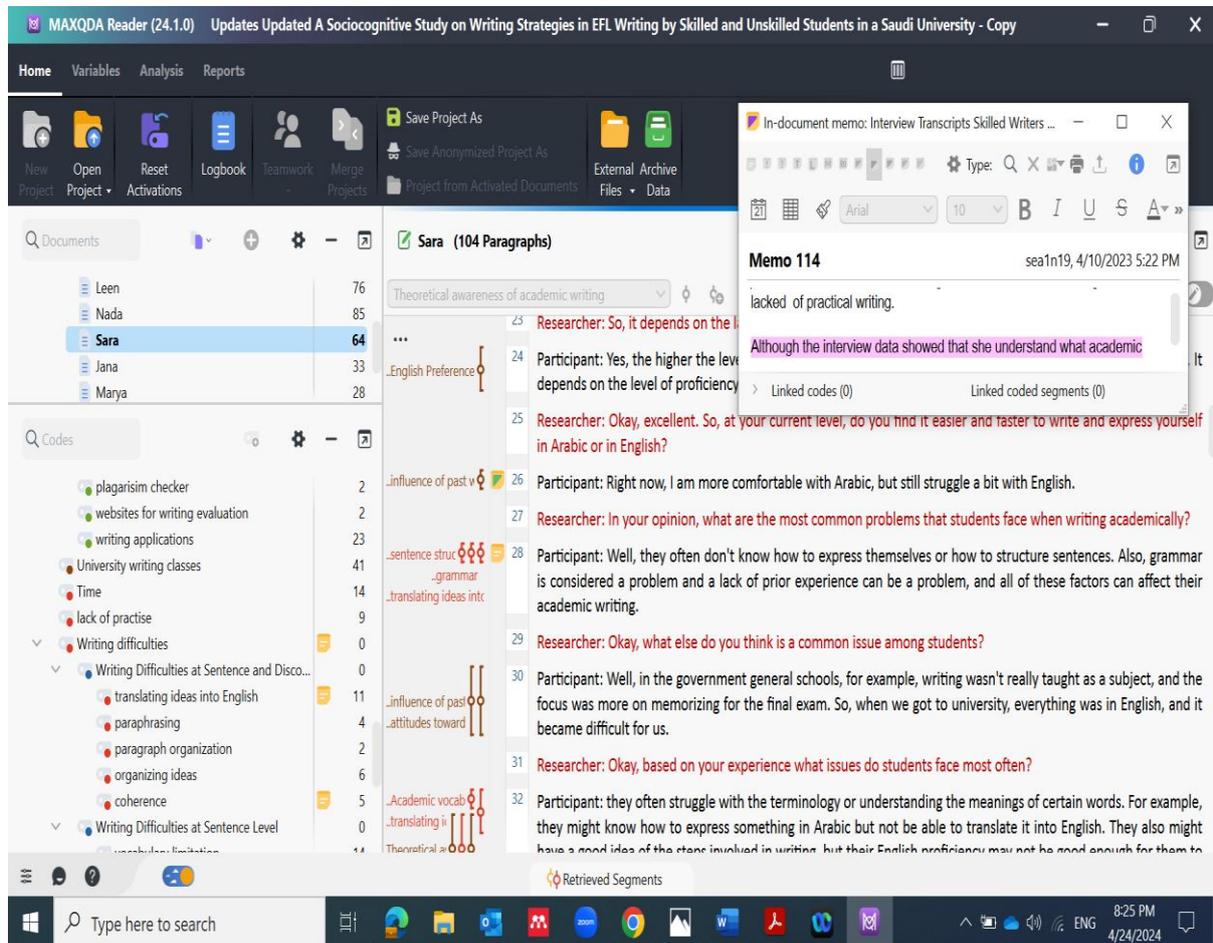
Appendix O   A Sample of Reflective Journal

Research Journal (Reflection on my first semi-structured interview, December 2022)

In today's semi-structured interview, I experienced a mixture of fear, excitement and apprehension. During the interview, I listened carefully and took notes. These notes were extremely helpful. They served as a guide to elaborate on the important points reported by the participant. However, even though I had prepared question prompts, sometimes the discussion led us in another direction. Therefore, the use of notes and question prompts proved very effective. Additionally, I listened to the entire interview in order to evaluate the overall flow and dynamics of the interview.

As I knew I would have to give the participants time to respond to my question, I reassured them that they didn't have to rush. When the participant gave a short answer, I tried to engage her in the discussion by asking some short questions. It was also clear to me that students have different personalities. Some students are shy and are not inclined to share their experiences. While I respect this, I tried to encourage her by sharing my own experiences.

It was important for me to reflect and write about the ideas, thoughts and difficulties that arose from this experience. Reflecting further helped me acknowledge the potential bias by answering the following questions: Did my experience and knowledge of the research problem influence the interview? As I conducted the second interview, I considered whether I unintentionally led the discussion to topics that coincided with my theoretical perspectives. For instance, I noticed that I was more inclined to ask follow-up questions on topics that I was more familiar with, potentially biasing the direction of the discussion. In future interviews, I plan to be more conscious of this and ensure I give equal attention to all topics, regardless of my familiarity with them.