Investigating EFL Learners' Awareness and Use of Cognitive and Metacognitive Reading Comprehension Strategies – A Cross Disciplinary Study in Oman

Submitted by

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature: ……..

ABSTRACT

The study compared and contrasted cognitive and metacognitive reading strategies awareness and use of EFL students studying biology, business studies, information technology, engineering, and English in a higher education institution in Oman. It also examined the relationships among strategy preferences and discipline, gender and language proficiency. Quantitative data was collected from 375 students using Survey of Reading Strategies (SORS) and a background information questionnaire. Results from quantitative data reveal that there are no significant differences between students of various disciplines in terms of strategy preferences for metacognitive, cognitive and support strategies. Also, it was observed there is no significant relation between learners' self-perceived proficiency and their scores of SORS. However, differences were found in gender as female students used more strategies as compared to male students. Semi-structured interviews conducted with students from biology, business studies, information technology, engineering, and English disciplines revealed that learners were aware of metacognitive, cognitive and support strategies. But, strategy preferences of students at different proficiency levels were varied. For example, students who had rated their English proficiency as high did not preview a text before reading. In contrast, students who had rated their English proficiency as low were in favor of this strategy. Overall, this study contributes to existing literature and provides insight about strategy preferences of Omani students in different disciplines. An understanding of the similarities and differences of strategy preferences of Omani learners from different disciplines will help teachers and curriculum developers to develop their courses to suit the needs of the learners.

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Introduction

1.1 Background to the Study

Reading plays an important role in our lives. In today's era of technological changes and the Internet boom, reading is an important skill for all individuals. In the field of education, reading plays a significant role for all learners, as they must read from different sources. It has been observed that many foreign language students encounter difficulties with English reading comprehension despite of learning English as a language. Therefore, it has been suggested that students should be taught reading strategies.

Reading strategies have been defined by many researchers in different ways. Garner (1987) defines reading strategies as "generally deliberate, planful activities undertaken by active learners, many times to remedy perceived cognitive failure" (p.50). In addition, Paris, Wasik, and Turner (1991) describe strategies as "actions selected to achieve particular goals" (p.692). Brantmeier (2002) describes reading strategies as "the comprehension processes that readers use in order to make sense of what they read" (p.1). According to Koda (2005), reading strategies consist of three elements: "deliberate, goal/ problem oriented, and reader-initiated /controlled" (p.205).

In a Second Language (SL) or Foreign Language (FL) context, there are many definitions of reading strategies. Wenden (1987) defined SL/FL reading strategies as

problem-oriented actions and techniques, which are used in order to accomplish production goals. Oxford and Crookall (1989) further explained SL/FL reading strategies as learning techniques, behaviors, problem-solving skills, or study skills which can guide learners to be more effective and efficient learners. Carrell, Gajdusek, and Wise (1998) described ESL/EFL reading strategies as the approaches readers use to comprehend the text and the manner in which they use the strategies to achieve successful reading comprehension.

Literature reveals that researchers have identified and categorized ESL/EFL reading strategies into metacognitive and cognitive strategies. El-Kaumy (2004) categorized SL/FL metacognitive strategies into three categories: planning, self-monitoring and self-evaluation. Singhal (2001) describes cognitive strategies as those utilized by SL/FL learners in order to transform the language, and consist of summarizing, paraphrasing, analyzing, and using context clues. Sheorey and Mokhtari (2001) divided ESL reading strategies into three categories: metacognitive, cognitive, and support strategies.

In recent years, researchers have emphasized on the role of metacognition in reading instruction. In the field of language learning, metacognition refers to the actions one uses for planning, organizing, evaluating, and monitoring his or her language learning (O'Maley & Chamot, 1990). According to Baker and Brown (1984), effective readers

employ metacognitive strategies during reading. Researchers have suggested “students without metacognitive approaches are essentially learners without direction or opportunity to review their progress, accomplishments, and future learning directions” (O’Malley, Chamot, Stewner-Manzanares, Russo, & Küpper, 1985:561).

Research in reading and metacognition has shown that there is a need to include the notion of metacognition in teaching reading, as it has been found that awareness of cognitive activity in students is related to their reading ability (Baker & Brown, 1984; Carrell, Pharis, & Liberto, 1989; Garner, 1987). These researchers believe that teachers should promote metacognition in reading classes by making the readers aware of the process of reading and the importance of using metacognitive activities. When the students are familiar with metacognitive activities and their application in reading classes, they will use them to read any kind of text and critically analyze the meaning and writers’ aim.

It has also been found that research on reading English in L1 and L2 reveals that metacognitive awareness has a significant impact on improving reading comprehension (Auerbach & Paxton, 1997; Baker, 2008; Carrell, Gajdusek, & Wise, 1998; Carrell et al., 1989). Researchers have found that skilled readers in both L1 and L2 are aware of metacognitive skills such as planning, monitoring, goal-setting, and assessment strategies (Carrell, Gajdusek, & Wise, 1998; Cohen, 1998; Mokhtari, Sheorey & Reichard, 2008; Pressley & Afflerbach, 1995).

1.2 Nature of the Problem

The aim of this study is to investigate EFL learners' awareness and use of cognitive and metacognitive reading strategies in a higher educational institution in Oman. As an English language lecturer, I have observed that learners' level of cognitive and metacognitive awareness differs from one learner to another. The study supposes that a lower level of awareness and strategy use would be related to the low-ability readers, and in contrast, the high-ability readers would identify themselves with a variety reading strategies such as: re-reading, main ideas detection, and meaning-analysis through context. In other words, it is assumed that the students with low metacognitive awareness do not possess the skills of planning, evaluating, or monitoring their own performance. As a result, these learners greatly depend on their teachers to guide them at every stage of the lessons. In this way, it was observed that they are somehow able to get through the courses. However, when the students are expected to work independently, especially at higher levels in college, they performed poorly. Therefore, I believe that learners' awareness of their metacognitive skills is important for their success in reading comprehension.

Furthermore, it has been observed that there are many factors that have an influence on the learners' awareness and use of cognitive and metacognitive strategies, such as the learners' preferences, gender (males and females), and learners' self-perceived proficiency of language.

1.3 Context: Teaching English in Oman

In Oman, the majority of the students receive primary and secondary education in government schools, which are primarily Arabic medium schools. These schools teach English as a foreign language, and the teaching time allotted varies according different levels; for example, Grades 1-2 (around 5 hours), Grades 3-4 (5 hours), Grades 5-10 (around 4 hours), and Grades 11-12 (4 hours) per week (Al Jardhani, 2014). After completing secondary school, Omani students are admitted in various colleges. These colleges have open admission policies; therefore, they have to enroll the students even if the students are not prepared for college level course work. In order to support these students, all higher educational institutions run the General Foundation Program (GFP). The GFP focuses on developing students' competence in the four skills, namely reading, writing, listening, and speaking.

However, it has been observed that a large number of students in government and private higher educational institutions experience difficulties in studying their specializations in English in spite of studying in the GFP and learning English for nine years at the school level (Al Issa & Al-Bulushi, 2012). According to Al Issa (2002), cited in Al Issa and Al-Bulushi (2012:149), the problem is the way English is taught by many teachers, especially non-Omanis. It has been observed that non-Omani teachers use the Grammar-Translation Method and Audio-Lingual approach, thereby focusing on the product rather than the process of learning. Al Balushi (1999) observes that non-Omani teachers put emphasis on rote learning rather than teaching students skills of analyzing and thinking. This approach has impacted students' attitude towards education as they

rely on memorization and rote learning in order to pass the assessment. In contrast, Omani teachers were found to be lacking in language as well as methodology in teaching. The Ministry of Education provided training to support Omani teachers, yet the outcomes of these efforts reveal students lack the ability to use English language effectively.

Al Issa and Al Bulushi (2012) observe that ELT policy has been resisted, challenged, and ignored by different agents, especially teachers. Woodrow (1991) stresses the role of teachers in the process of changes and for the success of implementation of new ideas. Thus, in order to bring about a reform in the education sector, it is important to bring about a change not only in approach, methodology, and curriculum, but also in the attitudes of teachers.

1.4 Significance of the Study

Recent reading strategy investigation in EFL settings such as Iran, Palestine, Saudi Arabia, Malaysia, China, Bahrain, and United Arab Emirates reveal that successful L2 readers use a variety of strategies more frequently as compared with unsuccessful L2 readers (Al Khatib, 2013; Maasum & Maarof, 2012; McMullen, 2009; Zhang & Wu, 2009; Rahimi & Riazi, 2005; Al Sheikh, 1991; Malcolm,2009).

With reference to Oman, few studies have investigated metacognitive strategies and reading comprehension of Omani EFL learners (Al Harthy, 2005; Al Malki, 1999; Al Shaihani, 2002; Awadh, 2003; Alami,2016; Al Seyabi & Tuzlukova, 2015; Amer et al.,

2010). Awadh (2003) investigated the language learning strategies used by first year graduates enrolled in Sultan Qaboos University. She reported that Omani students used cognitive strategies more than metacognitive strategies. On the other hand, Al Malki (1999) investigated the reading strategies of first year undergraduates at the Sultan Qaboos University. In his study, he divided the participants into two groups: proficient and weak readers. The results of both groups revealed that there were no significant differences between the proficient and weak readers as both groups reported extensive use of cognitive, compensation, and metacognitive reading strategies.

Alami (2016) explored reading strategy preferences of Omani male and female undergraduate students in Salalah College of Technology. It was found that female students use metacognitive strategy more frequently than male students.

Amer et al. (2010) investigated online reading strategies of Omani students who were undergoing teachers training in a university. They adapted SORS in an online survey format. The participants were first year students and fourth year students. The researchers found that there were no statistically significant differences between both groups on overall strategy use as well as metacognitive, cognitive, and support strategies.

Furthermore, some studies were conducted at secondary level and high school. Al Shaihani (2002) conducted an experiment to explore the effect of metacognitive strategy

instruction on the reading comprehension on First Secondary Class female students. She found that students who were taught reading strategies performed better as compared to the control group. In addition, Al Harthy (2005) explored the reading strategies used by Omani 10th grade students. Results reveal that most Omani 10th grade students use cognitive and metacognitive strategies frequently.

Al Seyabi and Tuzlukova (2015) conducted a study to investigate reading strategies used by post-basic school students and foundation program students. The findings revealed that post-basic school students and university foundation students used support strategies and cognitive strategies more frequently than metacognitive strategies.

From the preceding studies, it was observed that few studies were conducted at higher education institutions in Oman (Awadh, 2003; Al Malki, 1999; Alami,2016; Amer et al., 2010; Al Seyabi & Tuzlukova ,2015). The participants of these studies were undergraduate students. But, there is no study to date that has researched the cognitive and metacognitive awareness of reading strategies among students of different disciplines at higher educational institutions in Oman. With the growing number of colleges and universities in Oman, it is important for teachers to be aware of cognitive and metacognitive reading strategies used by students studying in different disciplines. Therefore, this study aims to examine the cognitive and metacognitive awareness and use of reading comprehension strategies of EFL learners studying various disciplines in a higher education institution in Oman.

1.5 Rationale of the Study

This study has evolved from my experience as a teacher of English in the Omani context. I work in a higher education institution in Oman. This college offers four major academic courses; applied science, engineering, information technology, and business studies. Upon completion of the GFP, students join the undergraduate program (Diploma) in which they study their specializations in English language.

When students join the Diploma program, they have to work independently, focusing on their specializations. At the undergraduate level, students are required to refer to a variety of sources in order to comprehend the academic material of their specializations. In this high-stakes setting, the good readers are able to cope with the academic materials. However, it is the poor or inexperienced readers who are pushed to develop their reading strategies, especially the metacognitive strategies associated with planning, monitoring, and evaluating their reading. In order to gain an understanding of how the poor readers cope in this setting, this study aims to examine the cognitive and metacognitive reading strategies awareness of students of different disciplines such as engineering, business studies, information technology, English, and biology.

This study is significant, as it aims to explore strategy preferences of students studying various disciplines. In Oman, a number of studies have been conducted to investigate metacognitive strategy preferences of Omani learners (Al Harthy, 2005; Al

Malki, 1999; Al Shaihani, 2002; Awadh, 2003; Alami, 2016; Al Seyabi & Tuzlukova, 2015; Amer, Al Barwani, & Ibrahim, 2010; Al Mekhlafi, 2017), yet none of them have focused on learners studying different disciplines in a higher education institution. With a growing number of colleges and universities in Oman, it is important for English language lecturers to be aware of cognitive and metacognitive strategies used by students studying in different disciplines. The findings of the study will raise awareness of curriculum developers, administrators, and teachers towards English language teaching to students of various disciplines in Oman.

The study will have implications for the Omani EFL learners and teachers. The results of the study will reflect the awareness of cognitive and metacognitive reading strategies of undergraduate students in the disciplines of English, biology, engineering, information technology, and business studies. In addition, the findings are expected to generate practical implications for EFL reading strategy instruction in the undergraduate program as teachers will know which strategies students of the different disciplines are aware of and which ones they are not using. As a result, they can support the students by designing courses keeping in view the learners' needs of each specialization.

1.6 Research Questions

In line with the various studies conducted in this area, and in order to understand the cognitive and metacognitive awareness and use of strategies by the learners of

different disciplines, the present study aims to investigate the following research questions:

1. Which categories of reading strategies, namely cognitive, metacognitive, and support strategies, do students of different disciplines use?
2. Does gender affect the use of cognitive, metacognitive, and support strategies of students of different disciplines?
3. Does learners' self-perceived level of language proficiency affect the use of cognitive, metacognitive, and support strategies in reading comprehension of students of different disciplines?

Chapter Two

Literature Review

2.0 Introduction

This chapter offers review of related literature to the present study. It begins with discussion of reading comprehension and various models of reading. In the next section, it defines and discusses EFL/ESL reading strategies and highlights importance of strategic reading. Also, metacognitive awareness of strategies are discussed. Later, two important aspects of the present study cognition and metacognition are presented. In addition, reading in first and second language is discussed. A brief explanation on the key concepts such as discipline, and discipline differences, are presented. Furthermore, factors influencing second and foreign language processes have been described. Finally, research questions and significance of the study are presented at the end.

2.1 Reading Comprehension

Bernhardt (1986) defines reading comprehension as a constructive process, which combines individual units to form new meanings. In other words, understanding a text is not only a process that involves breaking down of complex units of language into simple ones. But, it also involves a process in which multiple units are put together to build a larger picture. Bernhardt (1986) also argues that comprehension is a meaning-constructing process. It is based on concepts and inference, thus based on cognition.

Reading comprehension does not occur in a vacuum; rather it comprises of the use of a number of skills and capabilities while carrying out a task or tasks. Snow (2002) states that reading comprehension is “the process of simultaneously extracting and constructing meaning through interaction and involvement with written language” (p.11). This perspective of reading comprehension as active and interactive supports the view that comprehension models need to integrate learners’ strategies (Van Dijk, 1985). Strategies that are applied to reach an adequate interpretation of the text are defined according to the reader’s aim and need. Thus, the end goal of the reading process will determine the type of strategies used in order to understand the depth of processing or time spent in reading. Hence, it is significant to recognize that a learner should be given freedom to express the ability of applying reading skills to a task in a focused socio-cultural context.

There is a consensus among researchers that reading involves the interaction of a variety of processes, knowledge, and abilities. These consist of basic decoding processes such as grapheme recognition, lexical access, phonological representation, and linguistic structure processing, as well as high order cognitive processes such as the use of background knowledge, processing of various strategies, understanding the structure of a text, and few features of vocabulary knowledge. Readers use these strategies to keep a check on their performance throughout each reading activity.

Carrell (1989) emphasizes that reading strategies are significant for what they reveal about the way readers use these strategies to understand a text. These strategies are used by the reader to regulate comprehension and apply repair strategies such as skimming, scanning, guessing meaning in context, skipping unknown words, tolerating ambiguity, reading for meaning, reading critically, making inferences, applying appropriate background knowledge, and recognizing text structure (Carrell, 1991).

2.2 Reading Models

There are some reading models that are often quoted in research of SL and FL reading such as Goodman's (1967) "psycholinguistic" model, Smith's (1971) "top-down" model, Gough's (1972) "bottom-up" model, and Stanovich's (1980) "interactive approaches," Barnett (1988) classifies the reading models into three types: "bottom-up" model, "top-down" model, and "interactive" model.

Bottom-up Model:

In the "bottom-up" model, it is assumed that the reader starts interpreting letters, words, phrases, and sentences, and finally builds up meaning from the text. Phonics can be an example of using "bottom-up" processing, in which a reader studies letter/sound relationships and then moves to decoding words, reading sentences, and finally focuses on the meaning of the text (Reyner, 2008).

Top-down Model:

In the “top-down” model, the reader uses higher-order concepts such as general knowledge of the world or a particular situation, and then focuses on full texts such as paragraphs and sentences. After this, the reader works on the concrete features of the texts such as letters, words, phrases, and grammatical structures. An example of “top-down” processing can be whole language in which the reader creates meaning of a text based with the help of his/her prior knowledge (Reyner, 2008). Literature reveals that the terms “text-based” and “reader-based” are often used for “bottom-up” and “top-down,” respectively.

Interactive Model:

The interactive model theorizes interaction between “bottom-up” processing and “top-down” processing (Rumelhart, 1977; Stanovich, 1980). Rumelhart (1977) states that reading encompasses both “top-down” and “bottom-up” processing. Grabe (1991) suggests that interactive approach refers to two different interactions. One is a general interaction between a reader and a text, and the other is interaction of many types of skills for reading a text. Many second language researchers discuss about the general interaction in which the reader constructs meaning of the text with the help of both the knowledge gained from the text and his background knowledge. However, most cognitive psychologists and educational psychologists stress the interface of different skills, suggesting that during the process of reading, the reader uses both lower-level skills, such as decoding, and higher-level skills, such as comprehension.

The interactive model integrates the role of background knowledge of the reader in the language comprehension process. A theoretical model, which is used to explain and validate the role of background knowledge in language comprehension, is called schema theory (Carrell & Eisterhold, 1983). Hadley (2001) describes the schema theory in language learning as follows: “One of the basic tenets of this theory is that any given text does not carry meaning in and of itself. Rather, it provides direction for listeners or readers so that they can construct meaning from their own cognitive structure (previously acquired or background knowledge). The previously acquired knowledge structures accessed in the comprehension process are called schemata” (p. 147).

Schema theory, which emphasizes the importance of background knowledge in language comprehension, also suggests that “bottom-up” processing and “top-down” processing occur at all levels simultaneously. According to Carrell & Eisterhold (1983), “the data that are needed to instantiate, or fill out, the schemata become available through bottom-up processing; top-down processing facilitates their assimilation if they are anticipated by or consistent with the listener/reader’s conceptual expectations” (p.557). In this section, reading comprehension and reading models were discussed. The following section will discuss different types of ESL/EFL reading strategies.

2.3 ESL/EFL Reading Strategies

When learners read, they interpret, integrate, critique, infer, analyze, connect, and evaluate ideas in texts. They also constantly try to negotiate multiple meanings in their

minds. While reading, learners struggle hard to process text beyond word-level in order to get to the big picture of it. Reading helps learner to develop an active understanding and insight. It improves language and vocabulary knowledge. Good learners use a number of comprehension strategies concurrently and, according to Pressley (2002), they have the ability to select and apply specific strategies to support their understanding, especially with reference to difficult texts.

2.3.1 Definition of ESL /EFL Reading Strategies

Several definitions of Second Language or Foreign Language reading strategies are found in the literature. Wenden (1987) defined SL/FL reading strategies as problem-oriented actions and techniques which are used in order to accomplish production goals. Oxford and Crookall (1989) further explained SL/FL reading strategies as learning techniques, behaviors, problem-solving skills, or study skills which can guide learners to be more effective and efficient learners.

Reading strategies comprise of how SL readers respond to a task, what textual clues they focus on, their awareness of what is read, and the techniques they use when they are unable to understand a text (Block, 1986). O'Malley & Chamot (1990) further explained that SL reading strategies are conscious or unconscious procedures, actions, techniques, or behaviors. Readers use these strategies to solve their difficulties related with understanding and interpretation of a text. Carrell, Gajdusek, and Wise (1998) described ESL/EFL reading strategies as the approaches readers use to comprehend the text and the manner in which they use the strategies to achieve successful reading

comprehension. In the next section, we shall look at differences between reading skills, and reading strategies and discuss strategic reading.

2.4. Reading Skills and Reading Strategies

In the field of reading comprehension, especially in teaching, reading strategies and reading skills are often used interchangeably as synonyms. But, sometimes they are also used to complement relations between each other. This has led to confusion between the two concepts: “strategies” and “skills”. The next section will provide insight about these terms.

2.4.1 Definition: Skills and Strategies

Afflerbach, Pearson and Paris (2008) have observed that there are inadequate definitions which describe skills and strategies. For example, O’Malley and Chamot (1990) define reading strategies as conscious and unconscious procedures, actions, or techniques, which readers use to solve difficulties related to understanding and interpretation of a text. On the other hand, Urquhart and Weir (1998) describe reading skills as cognitive abilities, which a person is able to deploy when interacting with written text. As we can see, both the definitions focus on cognitive abilities, be it conscious or unconscious which a reader uses while reading a text. This similarity in the definitions has led to confusion for educators and researchers. Therefore, now we will have a look at the definitions proposed by Afflerbach et.al (2008).

Afflerbach et.al (2008) define reading strategies as ‘‘deliberate, goal-directed attempts to control and modify the reader’s efforts to decode text, understand words and construct meanings of text’’ (p.368). In contrast, reading skills are ‘‘automatic actions that result in decoding and comprehension with speed, efficiency, and fluency and usually occur without awareness of the components involved’’ (p.368). The difference between reading skills and reading strategies is that reading strategies involve reader’s control and are goal-directed whereas reading skills involve cognitive skills of the learner.

Table 2.1 presented below is taken from Manoli and Papadopoulou (2012) and focusses on the distinctive features of strategies and skills.

Table 2.1: Strategies and Skills

Strategies	Skills
Deliberate	Automatic
Conscious	Unconscious
Mindful / Effortful	Effortless
Goal / Problem-Oriented	Goal/problem free
Reader-Oriented	Text-oriented
Teach, explain, model through think aloud, guided application- gradual release of responsibility – independent practice	Teach, practice to mastery, assess, reteach if necessary

As we can see in table 2.1 Manoli and Papadopoulou (2012) state that one difference between skills and strategies is that of intention as reading strategies are deliberate actions used by a reader to fulfil the goal while skills develop unconsciously, and almost automatically through repetition and practice. Another difference is that strategies are conscious actions taken by a learner in order to solve a problem. On the other hand, skills are unconscious actions of a learner such as finding meaning of an unknown word. Third difference between skills and strategies is flexibility. Strategies are flexible which means that readers use a variety of strategies to fulfil an aim or to find solution to a problem. But readers use different skills to a variety of texts without focussing on a specific goal. Finally, learners can be given strategy training through modelling and guided practice until they become independent readers. However, skills can be taught to learners with the aim of automatic application of skills to a variety of texts until it is mastered.

2.5 Strategic Reading

Literature reveals that strategic reading has been adopted from cognitive development. Therefore, metacognitive awareness of reading strategies can support learners to decide which strategies they can use (declarative knowledge). In addition, this awareness guides them as to how they should use them (procedural knowledge). Furthermore, learners can assess their effectiveness (conditional knowledge) with awareness of the aim of reading (Anderson, 2002; Carrell, 1989). This type of approach

will enable students to ultimately become strategic readers as they feel confident that they have the ability to monitor and improve their reading.

2.5.1 Differences between Skilled and Strategic Readers

Afflerbach et.al (2008) state that skilled readers can be characterised as readers who are motivated and use a variety of strategies which results in high level of performance. On the other hand, strategic readers are flexible and adapt themselves according to the situation in order to reach their goals. 'This cognitive monitoring and repair is an essential aspect of strategic reading' (p.369). Therefore, teachers should train their students to be strategic readers so that they use a variety of approaches, and choose the best option in order to fulfil the task.

2.6 Metacognitive Awareness of Strategy Use in Reading Comprehension

Research in English reading and metacognition has shown that there is a need to include the notion of metacognition in teaching reading, as it has been found that awareness of cognitive activity in students is related to their reading ability (Baker & Brown, 1984; Carrell, 1989; Garner, 1987). Therefore, metacognition, which has been defined as "thinking about thinking" (Anderson, 2002), can also be considered "a predictor of reading comprehension ability" (Baker, 2008:25). Metacognitive awareness comprises not only the knowledge about the purpose of reading, but also the knowledge of the

different strategies that learners use or should use to deal with their problems related to reading comprehension.

2.6.1 Metacognition

Metacognition, which is known to be a concept of thinking about thinking, includes understanding and regulatory skills, which are used to govern one's cognition. Schraw and Dennison (1994) believe that metacognition is composed of two components, which are knowledge about cognition and regulation of cognition.

2.6.2 Knowledge of Cognition

Knowledge of cognition refers to the awareness of individuals about their own cognition. It consists of three different kinds of metacognitive awareness: declarative, procedural, and conditional knowledge (Brown, 1980; Jacobs & Paris, 1987). Declarative knowledge refers to knowing "about" things. This knowledge is directly accessible and applicable as a "knowledge component." Procedural knowledge refers to knowing "how" to do things. This type of knowledge is not directly accessible in knowledge components, but is only subconsciously accessible. It has been observed that people who have a high degree of procedural knowledge are able to perform tasks more automatically, and thus are more likely to have knowledge about a large number of strategies and the ability to sequence strategies effectively (Borkowski, Carr & Pressley, 1987). Conditional knowledge refers ability of deciding about when a particular procedure, skill, or strategy

should be used, and in which circumstances it must not be used. It also entails the ability to understand why a technique is working and what conditions are required for it to work; and why one technique is better than other (Paris, Lipson, & Wixson, 1983).

2.6.3 Regulation of Cognition

The concept of regulation of cognition refers to a set of actions that assist learners to control their learning. Research conducted by various researchers supports the theory that metacognitive regulation helps to improve the performance of a learner in a number of ways, with better use of attentional resources, better use of existing strategies, and a greater awareness of comprehension breakdowns. Three of the regulatory skills are essential and are included in all accounts: planning, monitoring, and evaluation (Jacobs & Paris, 1987). Planning includes the ability to select suitable strategies and selection of resources, which have an impact on the performance. Examples of planning include predictions before reading a text, strategy sequencing, and allotting time consciously before starting a task. Monitoring refers to the ability of a learner to be aware of comprehension and task performance. An example of monitoring is the capability to involve in periodic self-checking while learning. Research has found that monitoring ability develops slowly and is relatively weak in children and adults, too (Pressley & Ghatala, 1990). Lastly, evaluating refers to reviewing the outcomes and the effectiveness of one's learning. Examples of evaluating include re-evaluating one's aims and assumptions. Many studies suggest that metacognitive knowledge and regulatory skills such as planning are linked to evaluation (Baker, 1989).

2.7 Reading in L1 and L2

Research associated to reading English in L1 and L2 reveals that metacognitive awareness has a significant impact on improving reading comprehension (Auerbach & Paxton, 1997; Baker, 2008; Carrell, Gajdusek, & Wise, 1998; Carrell et al., 1989). Grabe (1991) observes that "the ability to use metacognitive skills effectively is widely recognized as a critical component in skilled reading" in the field of L1 reading. Researchers have found that skilled readers in both L1 and L2 are aware of metacognitive skills such as planning, monitoring, goal-setting, and assessment strategies (Carrel et al., 1998; Cohen, 1998; Mokhtar, Sheorey & Reichard, 2008; Pressley & Afflerbach, 1995).

Afflerbach (1998) suggests that successful readers have a command of the language, knowledge, and experience of strategies to solve the difficulties they encounter during reading. On the other hand, less successful readers can develop their reading proficiency by studying different strategies (Auerbach & Paxton, 1997; Baker, 2008; Carell, Gajdusek, & Wise, 1998; Carell et al., 1989).

In the past few decades, researchers have explored the extent to which L2 reading ability has an impact on L1 reading proficiency (Anderson, 1991; Bernhardt & Kamil, 1995; Carrell, 1991; Clarke, 1980; Lee and Schallert, 1997; Olshavsky, 1976). Malcolm (2009) observes that studies have revealed that "a low level of familiarity with the second language appears to "short-circuit" reading ability, forcing readers to a more basic, word

by word approach to decoding text, and disabling the use of their already developed L1 reading strategies" (p.641). Also, the nature and level of L2 needed for reading proficiency is yet to be decided, however it is noted that there are additional factors besides language proficiency, which enable learners to read. The present study deals with cognitive and metacognitive strategies used by learners across various disciplines. Therefore, in the following section, we shall look at the meaning and definition of discipline, and important characteristic features of discipline that will help us in understanding the present study.

2.8 Discipline: Meaning and Definition

Discipline refers to a branch of knowledge studied at the university level. The term discipline is defined as "a particular area of study, especially a subject studied at a college or university" (Cambridge Dictionary, 2018). Another definition of discipline is "a branch of knowledge, typically one studies in higher education" (Oxford English Dictionary, 2018).

Many researchers have made attempts to define discipline. Berger (1971) defines discipline as "a specific body of teachable knowledge with its own background of education, training, procedures, methods, and content areas" (p.5). Collins (2002) describes disciplines as "a body of knowledge or branch of learning characterized by an accepted content and learning" (p.76). Furthermore, Donald (2002) expresses that a discipline is "a body of knowledge with a reasonably logical taxonomy, a specialized

vocabulary, an accepted body of theory, a systematic research strategy, and techniques for replication and validity" (p.8). However, disciplines are expanding all the time. But the challenge is to identify the territories of a discipline as it has been found that many disciplines merge with others. For example, the field of psychology has numerous sub-specialties, thus making it difficult to identify its boundary. In my view, Donald's (2002) definition integrates all aspects of discipline, which were earlier mentioned, namely literature of the topic, theory, vocabulary, and developed research methods. Hence, from the above definitions we can say that it is not easy to describe the term discipline. And to understand what discipline means, we need to have a sound knowledge about all other related aspects such as academic discipline and differences between disciplines.

2.8.1 Academic Discipline

The term "academic discipline" is used for the organization of learning and the systematic production of new knowledge. Often disciplines are identified with subjects which are taught, but it is not necessary that every subject which is taught at a university can be called a discipline. This is because disciplines are categorized by the orderly behavior, which is characteristic of a discipline. These behaviors are revealed in the approaches that scholars' undertake to understand and investigate new knowledge, their ways of working, and perceptions of the world around them. In this context we can mention Beyer and Lodahl (1976), who describe disciplinary fields as the structure of knowledge in which faculty members get training and socialize; teach, research, and do administration work. Also, they work on research and education.

2.8.2 Differences in Discipline(s)

Although disciplines may have a common philosophy, especially for knowledge and knowledgeable inquiry, the differences between them are so vast that disciplines has been stated to as the major source of disintegration in the field of academics (Becher, 1987). Disciplines differ by ways of presentation, their preference for approaches in investigation, and the extent to which they gain information from other fields and answer questions or concerns. In other words, we can say that scholars in various disciplines "speak different languages," and in fact describe things in a different way for the same phenomena.

2.9 Factors Influencing SL/FL Learning Process

There is plenty of literature available on English learners' use of language learning strategies within an ESL or EFL context. Some of the recent studies have examined the effect of age, gender, years of study, language proficiency, learning style and ethnicity as variables on the learners' language learning strategy use (Macaro, 2001a; Macaro, 2001b; Peacock & Ho, 2003; Sheu, Wang, & Hsu, 2013).

Research also suggests that the learning style of a learner has a substantial effect on students' selection of learning strategies, and that both styles and strategies have an impact on the learning outcomes (Ehrman & Oxford, 1989). Choice of individual learning

styles of learners greatly depends on a variety of factors that influence their learning process. Kolb (1981) identifies “five particular levels of behavior: personality types, early educational specialization, professional career, current job role, and adaptive competencies” (p.7). Research shows that preference of language strategies is also related to ethnicity, language-learning purpose, the nature of the task, and learning style (Politzer & McGroarty, 1985). Other factors proposed by Oxford and Nyikos (1989) and Oxford (2011) related to selection of language learning strategies are: language being learned; level of language learning and proficiency. Also, degree of metacognitive awareness; sex; affective variables for example attitudes, motivation, and language learning goals; specific personality traits; over-all personality type; learning style; career orientation or field of specialization; national origin; aptitude; language teaching methods; task requirements; and type of strategy training.

Since the present study aims to explore cognitive and metacognitive strategies used by learners in various disciplines, it looks at three key factors which influence the reading comprehension to a great extent: strategy preferences of EFL learners, gender, and the learners’ self-perceived level of language proficiency. We will discuss these factors in detail in the next section.

2.9.1 Strategy Preferences of EFL Learners

The first research question aims to explore the cognitive, metacognitive, and support strategy preferences of learners in various disciplines. There are many studies conducted to examine the language learning strategy preferences of EFL learners.

Zhang and Wu (2009) conducted a study in China to investigate metacognitive awareness and reading-strategy use of Chinese senior high school students. They found that most of the strategy preferences of the learners belonged to high usage and medium usage. None of the strategies was reported as low usage. As for students' preferences towards the three categories of Survey of Reading Strategies (SORS), it was seen that cognitive strategies were the most preferred strategies of Chinese learners. This was followed by metacognitive strategies and support strategies.

Magogwe (2013) explored reading strategy preferences of university students studying social sciences in Botswana. Results of the study revealed that cognitive strategies were used with high frequency (M=3.97) while metacognitive strategies and support strategies were reported as medium use (M=3.42).

Maarof and Maasum (2012) investigated reading strategies of EFL undergraduates in Malaysia. The study revealed that cognitive strategies were the most favored strategies of the undergraduates, so they were used with high frequency. In addition, metacognitive

strategies were the second most preferred strategies and were ranked as high usage while support strategies were the least preferred strategies but were ranked as medium use.

Literature also reveals that many studies have been conducted comparing strategy preferences of EFL and ESL learners. A study conducted by Mokhtari and Reichard (2004) investigated whether significant differences exist between first and second language learners in their metacognitive awareness and perceived use of reading strategies when reading academic texts in English. Participants of this study were 141 US and 209 Moroccan college students. The results of the study revealed that both groups displayed moderate to high strategy awareness and preferences for cognitive strategies. This was followed by support strategies as the second most preferred category, whereas metacognitive strategies were the least preferred category.

Shoerey and Mokhtari (2001) examined metacognitive awareness of reading strategy differences of native and non-native college students in the United States. They found that both ESL and native English speaking U.S. students' preferences for the three categories of SORS were the same. Both groups most preferred category was cognitive strategies. The second most preferred strategies were metacognitive strategies and the least preferred were support strategies.

Commander, Ashtong, and Zhao (2016) explored language learning strategies of undergraduate students in the United States and China. The findings revealed that overall strategy preferences of U.S. and Chinese students were the same. Both groups most preferred strategies were cognitive strategies. After that, the second most preferred category was metacognitive strategies, while the least preferred were support strategies.

A study conducted by Karbalaei (2010) using the Metacognitive Awareness of Reading Strategies Inventory (MARSI) compared reading strategy preferences of undergraduate Iranian EFL and Indian ESL students. The study revealed Indian ESL students having better use of metacognitive and support strategies than Iranian EFL students. As for cognitive strategies, both groups reported the same use.

Park (2010) conducted a study in Korea to explore reading strategies of Korean students when they read authentic expository/technical texts and authentic narrative texts. Data was collected using the SORS. Findings of the study revealed that the most preferred category of Korean students was cognitive strategies. The second most preferred category was metacognitive strategies, and least was support strategies.

Al-Mekhlafi (2017) investigated metacognitive awareness of reading strategies of tertiary level Omani students studying in a higher education institution. MARSI was used as an instrument to collect data. He found that Omani learners most preferred strategy

was support strategy. Cognitive strategy was the second most preferred category and metacognitive were least preferred strategy.

It is interesting to note that the above-mentioned studies were conducted in similar ESL / EFL learning environments. Most of the participants were undergraduate students. However, in one study, the participants were from high school (Zhang & Wu, 2009). Also, there was similarity in strategy preferences of EFL learners in many studies as cognitive strategy was the most preferred strategy. It was followed by metacognitive and support strategies (Zhang & Wu, 2009; Magogwe, 2013; Maarof & Maasum, 2012; Shoerey and Mokhtari, 2001; Commander, Ashtong and Zhao ,2016; Park,2010). However, there were differences in strategy preferences in two studies. Mokhtari and Reichard (2004) revealed that cognitive strategies were most preferred category of EFL and ESL learners. And, support strategies were second most preferred category and metacognitive strategies was least preferred category. In contrast, Al-Mekhlafi (2017) found that support strategies were the most preferred category of EFL learners. Cognitive strategies were next and metacognitive were least preferred strategy. From these studies, we can conclude that cognitive strategies are the most preferred strategy category of most EFL learners. Thus, we can assume that EFL learners who have similar learning environments have similar strategy preferences. But, there are some differences in strategy preferences in some studies which could be due to a number of factors which are stated earlier in section 2.9.

2.9.2 Gender and Reading Comprehension

As regard to the second research question, many studies have been conducted to explore whether gender has an impact on strategy preferences of learners. A study was conducted by Poole (2010) with 103 males and 96 female Colombian high school students. It was found that male and female learners' use of metacognitive strategies was ranked as moderate use. However, statistical analysis revealed females use metacognitive strategies more frequently than males. As for cognitive strategies, it was seen that females used them with higher frequency than the male learners. Lastly, both males and females preference for support strategies was in moderate frequency. But, statistics revealed that females used them significantly more than males.

Sheorey (2006) used the Survey of Reading Strategies (SORS) in order to explore the strategies preferences of 323 female and 276 male Indian university students. The results revealed that females' overall use of reading strategies on the three scales of SORS (i.e. problem-solving reading strategies, global reading strategies, and support strategies) are higher than males.

Sheorey and Baboczky (2008) investigated the strategy use of 134 male and 411 female Hungarian college students. The results of the Survey of Reading Strategies (SORS) showed that females scored higher than males on the individual strategies, overall strategy use, and on all three subscales of SORS.

Park (2010) explored strategy preferences of 60 male and 55 female Korean students using the Survey of Reading Strategies (SORS). He reported that overall strategy use of female learners was higher than male learners. As for individual scales of SORS, females most preferred strategies were cognitive strategies and metacognitive strategies as they were ranked as high usage. On the other hand, support strategies were ranked as moderate use. As for male learners, cognitive strategies were the most preferred strategies and were ranked as high use. However, metacognitive strategies and support strategies were ranked as moderate usage.

Kamran (2013) investigated strategy differences between 54 Iranian male and 60 female learners. The instrument used to collect data was the Survey of Reading Strategies (SORS). Statistical tests did not reveal any significant differences between male and female learners for metacognitive strategies and support strategies. But, difference was found in cognitive strategies in which female students outperformed male students.

Another study in Oman which explored Omani students reported use of reading strategies was conducted in Salalah College of Technology by Alami (2016). The researcher used Metacognitive Awareness of Reading Strategy Inventory (MARSI) which was administered to 100 students (90 females, 110 males). It was found that male and female students overall preference for the three scales of MARSI was same. Both genders selected cognitive strategies with a high mean. Metacognitive strategies were

the second most preferred category and support strategies were ranked as the least category. Although, both genders had similarity in rating for the three categories of SORS yet there were some differences too. Overall score of female students of all the three scales of SORS was higher than male students. The mean of male students was between 3.45-2.11 which is moderate use. But the mean of female students was between 3.89-3.50 which is high use of strategies.

In contrast, to the above studies, some studies did not find any distinction in strategy use between males and females. Abu-Snoubar (2017) conducted a study to explore gender differences of EFL learners in Al-Balqa Applied University. The participants were 30 male and 70 female students studying in various academic fields. The instrument used in the study was Survey of Reading Strategies (SORS). Survey results revealed that both male and female students were high users of overall reading strategies. Furthermore, both genders rated the three categories of SORS in the same order with highest rating for cognitive strategies, followed by support and metacognitive strategies.

Al-Sohbani (2013) investigated strategy preferences of male and female learners in a university in Yemen. Survey of Reading Strategies (SORS) was administered to 100 students (female =70, male=30). Data revealed that male and female students overall scores on the three scales were similar as both selected problem-solving strategies as the most frequently used category. This was followed by support strategies and global

strategies were the least used category. Furthermore, statistical tests revealed no significant differences between both genders.

Amer et al. (2010) conducted a study in Oman with EFL first year and fourth year student teachers. The participants of the study were first year (male n=22, female n=101) and fourth year (male n=41, female n=56) The Survey of Reading Strategies (SORS) was adapted as an online survey. The researchers did not find any significant differences between male and female students for overall strategy use or in the three scales of SORS.

From the studies mentioned above, we can observe that researchers have found significant differences in the preferences of reading strategies of males and females (Amer,et al., 2010; Lan & Oxford, 2003; Kamran, 2013; Sheorey, & Mokhtari, 2001; Poole, 2010; Sheorey, 2006; Park, 2010). The common finding of these studies suggested that females' overall use of reading strategies is higher than males. However, some recent studies found that there are no significant differences between genders in terms of reading strategies preferences (Abu-Snoubar, 2017; Al-Sohbani, 2013). One reason for the difference could be that these ESL / EFL male and female students were taught various reading strategies in school and college. Therefore, it is possible that these students have a strong command of English language, which could be due to their exposure to the language. Nowadays, we can see that many parents are sending their children to private schools as they want them to be proficient in English.

2.9.3 Language Proficiency and Reading Comprehension

With reference to the third research question, whether learners' self-perceived level of language proficiency affects the use of cognitive, metacognitive, and support strategies of students of various disciplines, we need to understand how learners' language proficiency and its application facilitates or restricts learners' reading comprehension. Research about metacognition in L2 reading strategies suggests that readers' metacognitive awareness is associated with their achievement in L2 reading comprehension (Sheorey & Mokhtari, 2001; Anderson, 2002; Mokhtari and Reichard, 2004). In other words, both reading proficiency and L2 overall proficiency are linked with readers' growth of metacognition. Also, various studies reveal interesting findings on the impact of learners self-perceived language proficiency and the scores on the three scales of SORS.

A SORS-based study was carried out by Sheorey and Baboczky (2008). The participants of the study were 545 Hungarian college students. They were asked to rate their reading ability in English on a scale from one to six. The results of the survey showed that the students who rated themselves as strong readers had a high mean on eight individual strategies and on the global strategies, which is a subscale of SORS.

Sheorey, Kamimura and Freiermuth (2008) explored the reading strategies of 237 Japanese students who were studying technical English at a university in Japan. The students were divided into high and low groups based on their self-perceived reading

ability. The results presented significant differences between the high and low groups on nine individual strategies. Also, it was observed that the high group used more strategies as compared to the low group.

Yang (2002) studied successful and less successful Chinese EFL learners. Six extremely proficient and six less proficient learners participated in think-aloud protocols from English language textbooks and received strategy instruction. The findings indicated that highly proficient readers were able to monitor their comprehension and were not affected by grammar and lexical items. In contrast, minimally proficient readers, were unable to monitor their comprehension, and often became distracted by grammar and vocabulary.

Rahman et al. (2010) investigated strategy preferences of proficient and less proficient ESL University students in Malaysia. They reported that high proficient learners of English used different types of strategies. But, learners who were less proficient did not have knowledge about metacognition. So, they were unable to use appropriate strategies to evaluate their reading comprehension.

Zhang and Wu (2009) evaluated metacognitive awareness and reading-strategy use of 270 Chinese EFL students using the SORS. The students were divided into three groups based on their self-rated proficiency. The results revealed that the students used

the three scales of SORS, namely metacognitive, support, and cognitive strategies at a high-frequency level. As compared to intermediate proficiency group and the low-proficiency group, the high-proficiency group displayed more reading strategy awareness for the two categories of reading strategies: metacognitive and cognitive. However, there were no statistically significant differences found between the three proficiency groups for support strategies.

Some studies reported that there were no differences between learners of different proficiencies. Thao, Mai, and Ngoc (2014) investigated reading strategy preferences of first year students at Saigon Technology University. The SORS was used as the instrument, and on the basis of the responses, the students were divided into high and low proficiency groups. The findings of the study revealed that there were no significant differences between high and low proficiency students for metacognitive and support strategies. Also, there were no differences between overall strategy use between both groups. However, there was difference between the high and low proficiency groups for cognitive strategies.

Malcolm (2009) explored reading strategy awareness of Arabic-speaking medical students using SORS. The participants of the study were Year 1 and Year 4 students studying medicine. The students were divided into high group and low group according to their proficiency with the help of their TOEFL scores. The researcher found that apart from translation, both groups of learners reported using similar strategies. Another

interesting finding of this study was that both groups of learners were high users of cognitive strategies.

Al Malki (1999) investigated the reading strategies of first year undergraduates at the Sultan Qaboos University using MARSI. In his study, he divided the participants into two groups: proficient and weak readers. The results of both revealed no significant differences between the proficient and weak readers, as both groups reported extensive use of cognitive, compensation, and metacognitive reading strategies. However, good readers as compared to the weak ones used some cognitive strategies more frequently. Overall, both groups reported similar use of compensation and metacognitive reading strategies.

Magogwe (2013) investigated reading strategy awareness of University of Botswana students. The participants were first year students from social sciences faculty. With the help of responses from the SORS, students were categorized into four groups based on their proficiency: poor, moderate, good, and excellent. The results of the survey revealed that students across all the four levels of proficiency were high users of metacognitive strategies.

From the above-mentioned studies, we can observe that awareness of reading strategies of learners could be subject to their reading proficiency. This could be because

learners who had rated their language as high proficiency used more strategies than learners who had rated their language as low (Sheorey, Kamimura & Freiermuth, 2008; Sheorey & Baboczky, 2008; Yang,2002 and Rahman et al., 2010). These findings are consistent with prior research studies that found successful learners use a wide range of strategies more proficiently than less successful learners (Anderson, 2002; Park, 2010; Mokhtari & Sheorey, 2002; Al Sheikh, 1991).

However, there were some studies which did not find significant differences between high proficiency and low proficiency learners (Malcolm,2009; Zhang & Wu, 2009; Thao, Mai & Ngoc,2014; Al Malki,1999). But there were some interesting findings in these studies. Zhang and Wu (2009) found that high proficiency and low proficiency learners were aware of cognitive and metacognitive strategies. Thao et.al (2014) observed that high proficiency learners gave a high mean to cognitive strategies as compared to learners with low proficiency. Al Malki (1999) found that mostly good readers used cognitive strategies as compared to weak ones. Magogwe (2013) noted that learners of all proficiency used metacognitive strategies extensively. The common finding in all these studies was ESL/ ESL learners were aware of cognitive and metacognitive strategies, irrespective of their self-rated reading proficiency. However, as Mokhtari and Sheorey (2002) observe that “mere awareness of certain strategies does not always translate into actual use of the strategies concerned “ (p.6). In addition, they state that as SORS is a self-report instrument, therefore it is difficult to tell whether students actually use these strategies, which they are reporting. Therefore, there is a need for triangulation of data in order to get reliable results. Also, researchers propose to go beyond identifying the

strategies used by readers and to understand the reading process and understand how learners select and adjust strategies (Riazi & Alhaqbani, 2012).

2.10 Research Questions

From the above studies, it was observed that in order to explore metacognitive awareness of Omani learners few studies were conducted at higher education institutions in Oman (Awadh, 2003; Al Malki, 1999; Alami,2016; Amer et al, 2010; Al Seyabi & Tuzlukova ,2015). The participants of these studies were undergraduate students. But, there is no study till date which has researched about cognitive and metacognitive awareness of reading strategies among students of different disciplines at a higher education institution in Oman. With the growing number of colleges and universities in Oman, it is important for teachers to be aware of cognitive and metacognitive reading strategies used by students studying in different disciplines. Therefore, this study aims to examine the cognitive and metacognitive awareness and use of reading comprehension strategies of EFL learners studying various disciplines in a higher education institution in Oman.

In line with the various studies conducted in this area and in order to understand the cognitive and metacognitive awareness and use of strategies by the learners of different disciplines, the present study aims to investigate the following research questions:

1. Which categories of reading strategies namely cognitive, metacognitive and support strategies do students of different disciplines use?
2. Does gender affect the use of cognitive, metacognitive and support strategies of students of different disciplines?
3. Does learners' self-perceived level of language proficiency affect the use of cognitive, metacognitive and support strategies of students of different disciplines?

2.11 Summary

This chapter has presented the review of related literature to the present study, "investigating EFL learners' awareness and use of cognitive and metacognitive reading comprehension strategies: a cross disciplinary study in Oman." First, it discussed different aspects of reading comprehension and reading models. Next, it discussed types of ESL/EFL reading strategies and highlights importance of strategic reading. It has also presented the viewpoint that metacognitive awareness is the most significant factor for academic reading. It has discussed that the metacognition and cognition enable students to increase awareness of their reading strategies, which in turn helps them to assess themselves in comparison to other readers. According to Paris & Winograd (1990), metacognition should not be considered as the final objective for curriculum or instruction. On the other hand, it should be viewed as an opportunity to "provide students with knowledge and confidence that enables them to manage their own learning and empowers them to be inquisitive and zealous in their pursuits" (p.22).

This chapter also highlighted the key aspects of discipline such as: academic discipline, and discipline differences. As Younglove et al. (1999) stated, “No discipline is an island entire in itself” (p.1). That is to say, disciplines are by no means discrete entities; they necessarily overlap, borrow, and encroach upon one another. However, as each discipline can claim expert knowledge in its own domain, not all disciplines are created equal. Some disciplines would be more useful, more demanding, tougher, or more important than others.

Finally, factors influencing the SL/FL learning process such as: strategy preferences of EFL learners, gender, and learners’ self-perceived language proficiency have been presented.

Chapter Three

Research Methodology

3. Introduction

The purpose of this study is to explore the cognitive and metacognitive reading strategies used by students of various disciplines. This chapter discusses the theoretical framework of the study. In addition, a justification for choosing a mixed methods approach is presented. Furthermore, the methodology and variables are discussed. In addition, details of data collection instruments and data analysis are presented. Finally, the chapter shows the ethical criteria followed in order to maintain the confidentiality of the information obtained from the participants.

3.1 Paradigm Informing the Present Study

Kuhn (1962) introduced the notion of "paradigm." Bogdan and Biklen (1998) define paradigm as *"a loose collection of logically related assumptions, concepts or propositions that orient thinking and research"* (p.22). In the field of research, theoretical framework is sometimes referred to as a paradigm (Mertens, 2005, p.2).

There are two paradigms that have dominated the field of research: positivism and interpretivism. Positivism is based on the assumption that "the social world can be studied in the same way as the natural world" (Mertens, 2005, p.8). The positivist's epistemology is based on the assumption of empiricism. Positivists believed that observation and

reason are the only means of understanding behavior. Also, they believed that what we experience through our senses is verified knowledge, as it is based on facts. Therefore, if we want to deal with authentic knowledge, then the means of obtaining it is by observation and experimentation (Crotty,1998). The ontological assumption of the positivists is objectivity. As the researcher does not participate in the study, he or she does not add his or her own assumptions or interpretations to the information obtained (Guba and Lincoln, 1994). Based on the ontological and epistemological approaches of the positivists, this paradigm follows quantitative data collection method. In the field of quantitative research, data collection focuses on the observation of the phenomena without any interference from the researcher. The researcher collects data through surveys and experiments. This quantitative data is analyzed through statistics.

In contrast, the interpretivists, who are also referred as antipositivists, argued that an individual's behavior can only be understood by the researcher when he understands the individual's interpretation of the world around them. Thus, the interpretivist researcher depends on "the 'participants' view of the situation being studied" (Creswell, 2003, p.8). Social science is thus seen as subjective rather than objective. The epistemological assumptions of the positivists were challenged by the phenomenologists of the interpretive paradigm. The phenomenologist argues that human behavior should be seen in totality rather than in parts as the positivists who analyzed a phenomenon by breaking it into parts. Also, it is important to experience human behavior in order understand it completely (Krauss, 2005, p.759).

The ontological assumption adopted by the interpretive paradigm is that there is no single reality apart from our perceptions. Since each individual experiences a different reality, which he perceives from his point of view, therefore, each individual experiences a different reality. As a result, the phenomenon of multiple realities exists (Krauss, 2005, p.760). Also, each researcher is unique; therefore, it is important to take into account his or her interpretations of the research. As a result, the research is based on the researcher's interpretations of the study (Krauss, 2005, p.760). Researchers in this paradigm depend on qualitative data collection method and techniques in order to interpret the data. Qualitative data is narrative as it involves information collected from the participants through interview, observation, or documents. The data is analyzed looking for patterns and themes.

Since the aim of the study is to explore the cognitive and metacognitive strategies of learners of different disciplines, a pragmatic approach which mixes quantitative and qualitative approaches was considered the best method to collect data. Bergman (2008) observes that the mixed method design is one of the most popular designs in the research methodology today as the researcher makes use of a combination of quantitative and qualitative methods. Therefore, this study uses the mixed methods approach.

3.2 Rationale for a Mixed Method Design

The rationale for combining quantitative and qualitative methods in this study was because quantitative approach was not sufficient to identify students' awareness and use

of certain strategies. As quantitative data is numerical, thus the information collected from such data is numbers. The aim of this study was also to gain insight about how factors such as learners' preferences, gender and learners' self-perceived proficiency of language have an impact on their strategy preferences. Therefore, qualitative method such as interviews was important to know more about students' preferences and the way they used different strategies. As a result, I decided to combine and use both methods to understand the research questions from different perspectives.

Denscombe (2008) states that a mixed methods approach is advantageous, as it compensates for certain strengths and weaknesses associated with a method. The mixed methods approach is based on the philosophy of pragmatism. Denscombe (2008) states that:

> Pragmatism provides a set of assumptions about knowledge and inquiry that underpin the mixed methods approach and distinguishes the approach from purely quantitative approaches that are based on a philosophy of (post) positivism and purely qualitative approaches that are based on philosophy of interpretivism (Johnson & Onwuegbuzie, 2004, p.273; Maxcy, 2003; Rossman & Rallis, 2003).

Denscombe (2008) observes that it is possible to identify three aspects of pragmatism, which are not mutually exclusive and might have an overlap between them. First, pragmatism provides a fusion of approaches. This is because some mixed methods researchers prefer some compatibility between the "old" philosophies of research (Datta, 1994; Maxcy, 2003; Tashakkori, Teddlie & Teddlie, 1998; Teddlie & Tashakkori, 2003). This means that these writers are in favor of the use of quantitative or qualitative

methodologies. In fact, they have argued in favor of the mixed methods approach as it involves the use of qualitative and quantitative methods in the same project. Second, pragmatism provides a base for an alternative in case researchers feel that quantitative or qualitative methods are not sufficient for their study (Johnson, Onwuegbuzie & Turner, 2007; Tashakkori & Creswell, 2007). Third, researchers believe that mixing methods from different paradigms is not only allowable, but also desirable because a combination of both qualitative and qualitative research will provide an answer to good social research (Greene, Benjamin, & Goodyear, 2001; Greene, Kreider, & Mayer, 2005; Rocco et al., 2003).

3.2.1 Mixed Method Research Design

As stated earlier, this study uses a mixed methods approach in order to answer the research questions. An explanatory sequential design was selected for data collection and analysis of this study. Creswell (2013) observes that the explanatory sequential design has an advantage both for researchers as well as for the audience in terms of designing and conducting a study. An example of this model is presented in the following image:

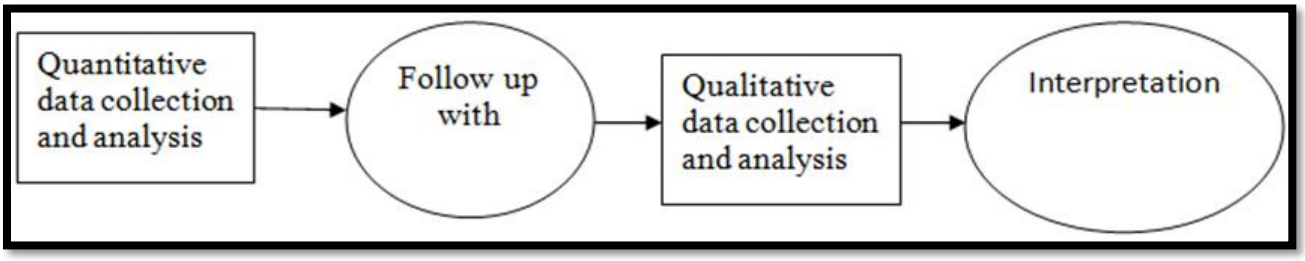

Figure 1: Explanatory Sequential Mixed Methods Design (Creswell, 2002)

As seen in Figure 1, in the explanatory sequential design the researcher collects the quantitative and qualitative data in two phases, with quantitative data collection followed by the qualitative data collection. In this study, I had administered a questionnaire to students who were chosen randomly to participate in the study; which will be explained later in the chapter. The instrument used to collect quantitative data is Survey of Reading Strategies (SORS) questionnaire. After that, interviews were conducted with some students who had volunteered to participate in the study. The rationale for this approach was that information collected from survey provides a general picture of the research problem. In contrast, data collected from interviews will provide in-depth information about the research questions.

3.3 Variables

The participants of this study were undergraduate students in a higher education institution in Oman. The total number of respondents who had completed the Survey of Reading Strategies (SORS) was 375.

3.3.1 Disciplines

The first variable of this study was discipline. Thus, data was collected from students belonging to English, biology, engineering, I.T. and business studies

3.3.2 Gender

The second variable is the gender of the participants. Both male and female students participated in the study. From the 375 participants, there were 129 males and 246 females.

3.3.3. Self -perceived Level of English Proficiency

The third variable is the participants' self-perceived level of English proficiency. The students were asked to rate their English proficiency on a 5-point Likert scale ranging from 1 (lowest), 2 (low), 3 (average), 4 (high), to 5 (highest). It was observed that the majority of the participants rated their English proficiency as average (58.4%). Also, many participants had rated their English proficiency as high (30.4%). Highest and low were rate as 5.1%, respectively. In addition, lowest was rated as 1.1%.

3.4 Instruments

3.4.1 Survey of Reading Strategies (SORS)

The quantitative research design employed the SORS as the instrument. SORS was developed by Mokhtari and Sheorey (2002), in order to explore the reading strategies of post-secondary students. These students were native and non-native speakers of English. SORS is based on the Metacognitive Awareness of Reading Strategies Inventory (MARSI), which was originally developed by Mokhtari and Reichard (2002).

According to Mokhtari and Sheorey (2002), the SORS aims to “measure the type and frequency of reading strategies that adolescent and adult ESL students perceive they use while reading academic materials in English” (p.4). Mokhtari and Sheorey tested by SORS as an instrument to measure reading strategies of students in high school, college, and university. They found that it had demonstrated reliability and validity as a dependable measure.

The SORS consists of 30 items, each of which uses a 5-point Likert scale ranging from 1 (I never or almost never do this) to 5 (I always or almost always do this). Students are asked to read each statement and circle the number on the rating scale that reflects their reading strategy use. Results reveal that the higher the score is, there are more chances that the student is aware of and most likely to use a particular reading strategy.

Mokhtari and Sheorey (2002) state that the SORS measures three broad categories of reading strategies: a) Global Reading Strategies, or GLOB, which measures metacognitive strategies, b) Problem Solving Strategies, or PROB, which measures cognitive strategies, and c) Support Strategies, or SUP, which measures support strategies. Metacognitive strategies are “those intentional, carefully planned techniques by which learners monitor or manage their reading” (p.436). Cognitive strategies are “the actions and procedures that readers use while working directly with the text.” Examples of cognitive strategies are adjusting one’s speed while reading or guessing the meaning

of unknown words (p.436). Support strategies are “basic support mechanisms intended to aid the reader in comprehending the text such as using a dictionary, taking notes or highlighting textual information” (Mokhtari & Sheorey, 2002, p.436).

Table 3.1 presents details of the reading strategies in the three scales of SORS. A sample of the questionnaire is attached in the appendix.

Table 3.1: Three Sub-categories of the Survey of Reading Strategies

Sub-category	Description
GLOB	I have a purpose in mind when I read. (item 1) I think about what I know to help me understand what I read. (item 3) I take an overall view of the text to see what it is about before reading it. (item 4) I think about whether the content of the text fits my reading purpose. (item 6) I review the text first by noting its characteristics like length and organization. (item 8) When reading, I decide what to read closely and what to ignore. (item 12) I use tables, figures, and pictures in text to increase my understanding. (item 15) I use context clues to help me better understand what I am reading. (item 17) I use typographical features like boldface and italics to identify key information. (item 20) I critically analyze and evaluate the information presented in the text. (item 21) I check my understanding when I come across new information. (item 23) I try to guess what the content of the text is about when I read. (item 24) I check to see if my guesses about the text are right or wrong. (item 27)
PROB	I read slowly and carefully to make sure I understand what I am reading. (item 7) I try to get back on track when I lose concentration. (item 9) I adjust my reading speed according to what I am reading. (item 11) When text becomes difficult, I pay closer attention to what I am reading. (item 14) I stop from time to time and think about what I am reading. (item 16) I try to picture or visualize information to help remember what I read. (item 19) When text becomes difficult, I re-read it to increase my understanding. (item 25) When I read, I guess the meaning of unknown words or phrases. (item 28)

SUP	I take notes while reading to help me understand what I read. (item 2) When text becomes difficult, I read aloud to help me understand what I read. (item 5) I underline or circle information in the text to help me remember it. (item 10) I use reference materials (e.g. a dictionary) to help me understand what I read. (item 13) I paraphrase (restate ideas in my own words) to better understand what I read. (item 18) I go back and forth in the text to find relationships among ideas in it. (item 22) I ask myself questions I like to have answered in the text. (item 26) When reading, I translate from English into my native language.(item 29) When reading, I think about information in both English and my mother tongue. (item 30)

3.4.2 Reliability

As mentioned earlier, the SORS instrument is based on the MARSI, which was originally developed by Mokhtari and Reichard (2002). Mokhtari and Reichard (2002) developed the MARSI to measure "native English-speaking students' metacognitive reading awareness and use of reading strategies when they read academic materials" (p.3). It was validated using a large native speaker population (N=825), which represented reading abilities of students from middle school to college. The reliability of the three subscales were as follows: Global Reading Strategies (0.92), Problem Solving Strategies (0.79), and Support Strategies (0.87). In addition, reliability for overall scales was 0.93 reflecting that the instrument was a dependable measure of metacognitive awareness of reading strategies.

Mokhtari and Sheorey (2002) modified the MARSI in order to develop the SORS, as they wanted to use it with adolescent and adult students for whom English is a second or foreign language. In order to accomplish this, they made some changes in the instrument. First, several items were rephrased so that ESL learners can understand them easily. Second, keeping in view research related to reading strategies across languages, two key strategies were added to the instrument. These strategies were "translating from one language to another," and "thinking in the native and target language while reading". Finally, two items were removed; "summarizing information read," and "discussing what one reads with others," as they did not match with the research based on metacognition and reading comprehension. After the changes were made to the instrument, Mokhtari and Sheorey (2002) tested the revised instrument on a population of ESL students studying in two universities in the United States. In addition, the instrument's internal consistency reliability coefficients indicated Cronbach's alpha =0.89 for the overall scale which indicated a reasonable degree of consistency to measure metacognitive of reading strategies between non-native students of English.

In this study, the internal consistency of the SORS instrument was measured and was found to be Cronbach's alpha =.85, thus indicating a high level of consistency. The reliability of the three subscales were as follows: Global Reading Strategies (Metacognitive Strategies) (0.68), Problem Solving Strategies (Cognitive Strategies) (0.69), and Support strategies (0.71). These indices reveal that the instrument is reliable

for assessing cognitive and metacognitive strategies of students in different disciplines (Taber, 2017).

3.4.3 Pilot Study

In this study, an Arabic version of the SORS was used so that participants could respond accurately to the items in the questionnaire. As the students are non-native speakers of English, I assumed that there are chances of incorrect responses, which could be due to language barrier. Therefore, I decided to get the questionnaire translated into Arabic.

There are two approaches for translating a text: direct or literal translation, and oblique translation. Literal translation can take place when two languages are similar in terms or structure, lexis, or morphology. In contrast, oblique translation takes place when both languages have different structures. Thus, it is not possible to translate word for word. Oblique translation involves several translation techniques such as transposition and modulation (Molina & Albir, 2002). As English and Arabic have different structures, therefore direct translation is not possible. As a result, an oblique translation technique was applied to translate the instrument.

The translation process comprised of the following stages. First, a professional translator translated SORS into Arabic. Next, it was given to nine lecturers who were

native speakers of Arabic. Based on the feedback from the lecturers, changes were made in items 1, 3, 17, 18, 26, 27, 28, 29, and 30. These statements were re-worded to make them easier for the students to understand, but the content of the statements is same. This was done by either replacing the words, which may sound a bit complex, adding some words to provide more explanation, or by deleting the unnecessary words that may cause confusion or lead to being misunderstood by the participants. For example, in statement 29, the *phrase my mother tongue* (in Arabic) has been replaced by the phrase *my native language*. Finally, with the help of these changes, the final draft of the Arabic version of the SORS was made. A copy of the Arabic version of SORS is attached in the appendix.

3.4.4 Background Information Questionnaire

Mokhtari and Sheorey (2002) suggest that a background information questionnaire should be administered along with the SORS. The aim of the background information questionnaire is to collect data about the participants' background information such as age, gender, and their self-perceived level of proficiency in English, or the overall score obtained in a standardized test such as the Test of English as a Foreign Language (TOEFL). In this study, the background information questionnaire consisted of four items: a) gender, b) specialization, c) current GPA, and d) students' self-rated English proficiency. At the end of the questionnaire, there was a section for students to give their contact number if they were interested in participating in the interviews.

3.4.4.1 Sample of Background Information Questionnaire

PART A:

1. Gender : a) Male b) Female

2. Specialization :
   a) Biology
   b) Business Studies
   c) Information Technology
   d) Engineering
   e) English

3. Current Grade Point Average (GPA) :

   a) A – between 3.7- 4.0
   b) B – between 2.7-3.3
   c) C – between 1.7-2.3

4. How would you rate your academic English reading proficiency? (Circle one)

lowest	low	average	high	highest
1	2	3	4	5

Part B: Would you like to participate in an interview for this study?

a) Yes – Please give your name and contact number below
   ……
b) No

3.5 Semi-structured Interviews

The qualitative research design of this study employed interviews to collect data. Researchers consider interviews as a significant tool for qualitative study. Dornyei (2007) states that interviews are the most frequently used tool in qualitative research (p.134). Similarly Cohen, Manion, and Morrison (2011) emphasize that “the interview is a flexible tool” for data collection for different channels such as verbal, non-verbal, and spoken or heard (p.349).

The interview has advantages for the researcher. Cohen et al. (2011) suggest that an interview benefits both the interviewer and the interviewee, as it gives them an opportunity to discuss their understanding of the world from their perspective. Furthermore, Selinger and Shohamy (1989) observe that “interviews are personalized and therefore permit a level of in-depth information-gathering, free response, and flexibility that cannot be obtained by other procedures” (p.166). This indicates that interviews are useful tools for conducting research.

Researchers have classified interviews under different categories. Dornyei (2007) identifies three types of interviews: the structured interview, the unstructured interview, and the semi-structured interview. In a structured interview, the researcher has a list of pre-prepared list of questions to ask the interviewee. The unstructured interview gives freedom to the interviewees to express themselves, as it does not restrict them to interview questions. The interviewer does ask some opening questions, after which

he/she listens to the respondent. The semi-structured interview bridges a gap between the structured and unstructured interviews as it follows a set of pre-planned questions but the format is open ended as it encourages the interviewees to express themselves openly. In other words, the interviewer guides the respondents but also gives them space to express their opinion. For this study, semi-structured interviews were conducted to explore the cognitive and metacognitive reading strategies awareness and preferences of students in English, biology, engineering, I.T., and business studies.

3.5.1 Selection of Students

In the first phase of data collection, the researcher administered the SORS questionnaire to students of different disciplines, namely English, biology, I.T., engineering, and business studies. At the end of the background questionnaire, a section was added in which students who were willing to participate in an interview could provide their name and contact number. At the end of the survey, it was found that more than 60 students from various disciplines had volunteered for the interview.

First, I made a list of students who had volunteered to participate in the study. Next, these names were segregated according to specializations, gender, and level of proficiency, as they were variables of my research questions. I tried my best to select students who represented high, medium, and low achievers with the help of students' self-rated language proficiency in order for the data to be similar to the questionnaire population. Next, I contacted them by telephone and informed the students about the aim

of the study. I explained to the students that the interview would be recorded, and their identity will be protected. Also, I informed them that they are not under any obligation to participate in the study and that they can opt out at any stage. Finally, I asked them if they were willing to participate in the interview. Many students declined to participate in the study for various reasons. At the end, only 12 students confirmed their participation for the interviews, and I subsequently arranged a time to meet each student.

The interviews were conducted in the academic advising room in my office, and it took almost two weeks to finish them. I had received permission from my institution to use this room for the interviews. On the day of the interview, I welcomed the students and thanked them for supporting my study. Then, I informed them about the aim of the study, and gave them two copies of the consent form. I gave them time to read and sign the form and answer any questions they wanted to ask about the study. I kept one copy of the consent form and other was given to the students. Finally, I asked their permission to record the interview on my phone. The interviews were conducted in English and the duration was between 30 and 50 minutes.

3.5.2 Interview Procedure

Prior conducting the interviews, an interview schedule was created. This document had a step-by-step procedure for conducting the interviews. The interview questions were based on the research questions and the literature reviewed in the previous chapter. The

aim of the interview was to explore metacognitive, cognitive, and support strategy preferences of learners and the different ways in which they used those strategies. Therefore, interview questions were segregated into the three categories of SORS: metacognitive, cognitive, and support strategies. Also, a list of clarifying and additional questions was used to gain more information from the participants. Thus, the interview questions were predetermined but the format of the interview was semi-structured. Also, I was flexible with the order of questions in order to avoid interrupting the interviewee.

The interview questions were piloted with a male student. During the pilot interview, it was observed that the student was talking about two to three strategies at the same time as they were interlinked. For example, item numbers 13 and 28 in the questionnaire are about strategies used by learners when they come across a new word and guessing meaning of a word. The student discussed both of them at the same time as they were connected to finding meaning of new words. Therefore, some changes were made to the interview questions.

3.5.3 Participants

Twelve students pursuing different specializations, such as English, biology, I.T., engineering, and business studies participated in interviews. Out of these 12 students, there were seven males and five females. These students were interviewed about their preferences and use of strategies employed by them to ensure better comprehension.

Table 3.2 Demographic Information of the Participants

Pseudonym	Specialization	Gender
Ali	English (ENG)	Male
Ahmed	English (ENG)	Male
Rahma	Biology (BIO)	Female
Said	Biology (BIO)	Male
Salma	I.T.	Female
Hamid	I.T.	Male
Faris	Engineering (ENGG)	Male
Hiba	Engineering (ENGG)	Female
Mohammed	Engineering (ENGG)	Male
Abdullah	Engineering(ENGG)	Male
Fatma	Business Studies (B.S.)	Female
Maryam	Business Studies (B.S.)	Female

3.6 Data Analysis

3.6.1 Quantitative Data Analysis

The first research question aims to explore the cognitive, metacognitive, and support strategies used by students of English, biology, engineering, I.T., and business studies on the three sub-scales: metacognitive, cognitive, and support strategies. Descriptive statistics and inferential statistics were performed on the three categories of strategies in order to identify the most and least frequently used strategies by different disciplines. Also, as the three scales were dependent variables and the specializations

were independent variables, therefore one-way multivariate analysis of variance (MANOVA) was used. The aim of using MANOVA is to test if the specializations differ significantly in their preferences of metacognitive strategies, cognitive strategies, and support strategies.

One-way MANOVA was employed was to analyze data for the second research question, which aims to explore if gender has an impact on learners' use of cognitive, metacognitive, and support strategies for the disciplines of English, biology, engineering, I.T., and business studies. Data collected was divided in two categories: male and female. Descriptive statistics and inferential statistics were performed on the three categories of strategies in order to identify the most and least frequently used strategies by male and female learners.

The last research question explored learners' self-perceived level of English proficiency and its impact on their use of cognitive, metacognitive, and support strategies for the disciplines of English, biology, engineering, I.T., and business studies. The participants were divided into three groups: low group, average group, and high group, based on their rating of English proficiency. It was observed that majority of participants belonged to average group and high group, and there were few participants in the low group. Therefore, average and high groups were selected for statistical analysis. Descriptive statistics were performed on the three categories of strategies, namely metacognitive, cognitive, and support strategies in order to identify the most and least

frequently used strategies by average group and high group. Also, one-way MANOVA was conducted to analyze if learners' self-perceived language proficiency had an impact on their score in the three scales of the SORS.

3.6.2 Qualitative Data Analysis

3.6.2.1 Thematic Analysis

Once the data collection process is over, which is once the researcher has collected, compiled, and organized the data suitably; perhaps the most crucial phase of research takes flight. In this stage, analysis of the data collected takes place. In the present study, the method of analysis was thematic content analysis. This requires an analysis of the data transcripts, which would inadvertently lead to emergence of various themes within the data.

The qualitative data analysis requires the active participation of the researcher to gain a comprehensive understanding of the content. It is thus not enough for the researcher to merely serve as an investigator of specific relations among the discrete variables (Denzin & Lincoln 2002; Patton, 2002). There are two fundamental approaches, namely deductive and inductive, for analyzing qualitative data. In the deductive approach, researchers impose their own structure or theories on the data and then use them to analyze the interview transcripts. In contrast, the inductive approach involves analyzing data with little or no predetermined theory and uses the actual data itself to derive the structure of analysis. Since qualitative data is dependent on the data in the transcripts of

the interviews as the source for extracting the relevant themes and structure therefore, the inductive approach was selected for the present study.

Qualitative data was analyzed adopting the thematic content analysis technique. The initial stage of the data analysis process engaged with open coding, wherein the transcripts were rigorously read to convert the text into single phrases for obtaining keywords symbolizing the emergent themes. The second stage was axial coding which included extracting details about the key areas identified in the first stage. This was done by gathering examples of strategies derived from the transcript text and categorizing them under the above-mentioned emerging themes. These themes helped to gain a comprehensive knowledge about the content and further relate it with the research objectives and questions. As a result, with the help of thematic content analysis, the desired aim of the study was attained.

3.7 Ethical Considerations

As an EdD research student, I followed the ethical procedures laid down by my university and BERA ethical regulations. In order to do this, I completed the ethics application form and sent it to my supervisors for approval. After approval, the form was sent to the Ethics Committee. The committee approved it during their meeting. The committee had sent me an ethics approval certificate.

Next, I sent a copy of ethics approval certificate and an application requesting permission to collect data to the Head of Department of the English Language Center. My application was sent to the Research Committee of the college. Upon approval, I was given permission to collect data.

Besides these procedures, I followed ethical procedures during various stages of data collection. All the participants who participated in the survey and interview were informed about the purpose of the study. They were asked to sign a consent form. The participants had the right to withdraw from the study at any point. In addition, I maintained confidentiality regarding the personal details of the participants; therefore, pseudonyms were used in analysis to address the participants who were interviewed.

CHAPTER 4
Findings

This mixed method study aims to explore the metacognitive, cognitive and support strategies used by students of different disciplines. Survey of Reading Strategies (SORS) was used as an instrument to collect quantitative data. Furthermore, interviews were conducted in order to explore the strategies preferred by the participants.

4.0 Phase I: Survey

The results of the Survey of Reading Strategies (SORS) are presented in this section. Descriptive statistics were performed on the three sub-scales of SORS which are metacognitive strategies, cognitive strategies and support strategies to identify the most and least frequently used categories for biology, business studies, I.T., engineering, and English.

According to Mokhtari and Sheorey (2002), as frequency of strategy use on the SORS scale ranges from 1 to 5, therefore, responses of the students can be classified using the three levels of strategy use developed by Oxford and Burry-Stock (1995) for general learning strategy use. In this classification, a mean of 3.5 or higher is considered as high, mean of 2.5 - 3.4 is considered as moderate usage and mean of 2.4 or lower is considered as low usage. Green and Oxford (1995) had developed these three levels of strategy use for Strategy Inventory for Language Learning (SILL) to ensure a valid

analysis. It has been observed that “SILL appears to be the only language learning strategy use instrument that has been extensively checked for reliability and validated in multiple ways” (Oxford and Burry-Stock ,1995, p.4) . Also, SILL has been used to assess language learning strategies of learners of English as a second or foreign language. Therefore, these three levels of strategy use are suitable for the current study.

Table 4.1 reveals overall strategy use for the three categories: metacognitive, cognitive and support strategies.

Table 4.1: Overall Strategy Use of Three Scales (n= 375)

Category of Strategy	Mean	S.D.	Level
Metacognitive	3.37	0.50	Moderate
Cognitive	3.75	.58	High
Support	3.63	.63	High

As we can see from table 4.1 cognitive strategies were given the highest mean (3.75), followed by support strategies (3.63) while metacognitive strategies (3.37) were given moderate mean.

4.1 Research Question 1

Descriptive and inferential statistics were employed to analyze results for the first research question: *Which categories of reading strategies namely cognitive, metacognitive and support strategies do students of different disciplines use?* Results are presented for the 30 items of SORS which represent three categories of strategies,

namely metacognitive, cognitive and support strategies. The descriptive statistics included means, and standard deviation of the three categories of strategies across students of biology, business studies, I.T., engineering, and English.

Table 4.2 presents overall strategy use of students in biology, business studies, I.T., engineering, and English.

Table 4.2 Overall Strategy Use of Various Disciplines

Biology	8.61
Business Studies	8.23
I.T.	8.20
Engineering	8.20
English	8.20

As we can see in table 4.2 the overall strategy use of biology students was the highest (M=8.61). This was followed by business studies students, which had a mean of 8.23. On the other hand, the mean of I.T., engineering and English students was 8.20.

Table 4.3 presents strategy preferences of students in biology, business studies, I.T., engineering, and English.

Table 4.3 Strategy Use Across Academic Majors (n=375)

Academic Major	**Metacognitive**		**Cognitive**		**Support**	
	M	S.D.	M	S.D.	M	S.D.
Biology(N=62)	3.46	.52	3.89	.50	3.79	.58
Business Studies(N=64)	3.31	.57	3.70	.63	3.65	.71
I.T. (N=62)	3.31	.43	3.69	.57	3.61	.59
Engineering (N=124)	3.40	.47	3.65	.64	3.42	.58
English (N=63)	3.33	.46	3.65	.62	3.65	.65

From the table 4.3 above we can see that cognitive strategies was given a high level strategy usage (i.e. mean values of 3.5 or above) across biology (M=3.89), business studies (M=3.70), I.T. (M=3.69), engineering (M=3.65), and English (M=3.65). Also, support strategies were given a high level usage (i.e. mean values of 3.5 or above) among students of biology (M=3.79), business studies (M=3.65), I.T. (M=3.61) and English (M=3.65). However, engineering students had ranked support strategies as moderate use (i.e. a mean of 2.5-3.4) with a mean value of 3.42. In contrast, metacognitive strategies were ranked as moderate usage (i.e. a mean of 2.5-3.4) by biology (M=3.46), business studies (M=3.31), I.T. (M=3.31), engineering (M=3.40), and English (M=3.33).

4.1.1 Biology

Table 4.4 illustrates reading strategy preferences of biology students.

Table 4.4 Reading Strategy Preferences of Biology Students (n=62)

		Mean	SD	Level
META 1	Setting purpose for reading	3.61	0.93	High
META 2	Using prior knowledge	3.35	1.04	Moderate
META 3	Previewing text before reading	3.73	0.98	High
META 4	Checking how text contents fits purpose	3.45	1.14	Moderate
META 5	Skimming to note text characteristics	3.24	1.17	Moderate
META 6	Determining what to read	2.95	1.23	Moderate
META 7	Using text features (e.g.tables)	3.92	0.96	High
META 8	Using context clues	3.61	0.91	High
META 9	Using typographical aids (e.g.italics)	3.53	1.20	High
META 10	Critically evaluating that is read	3.03	0.97	Moderate
META 11	Resolving conflicting information	3.71	0.88	High
META 12	Predicting or guessing text meaning	3.48	1.13	Moderate
META 13	Confirming predictions	3.40	1.17	Moderate
COG1	Reading slowly and carefully	4.16	0.83	High
COG 2	Trying to stay focused on reading	4.16	0.83	High
COG 3	Adjusting reading rate	3.63	1.03	High
COG 4	Paying close attention to reading	3.90	0.99	High
COG 5	Pausing and thinking about reading	3.65	0.91	High
COG 6	Visualizing information read	3.85	1.05	High
COG 7	Re-reading for better understanding	4.06	0.99	High
COG 8	Guessing meaning of unknown words	3.73	0.93	High

SUP 1	Taking notes while reading	3.52	1.14	High
SUP 2	Reading aloud when text becomes hard	3.81	1.24	High
SUP 3	Underlining information in text	4.10	0.99	High
SUP 4	Using reference materials	3.90	1.04	High
SUP 5	Paraphrasing for better understanding	3.56	1.05	High
SUP 6	Going back and forth in text	3.60	1.02	High
SUP 7	Asking oneself questions	3.63	1.10	High
SUP 8	Translating into a native language	4.05	1.06	High
SUP 9	Thinking about information in both English and mother tongue	3.97	0.99	High

The means and standard deviation in table 4.4 show that biology students most preferred metacognitive strategy was META 7 "*Using text features (e.g. Tables)*" which was given a high mean value of 3.92 (SD= 0.96) while META 6 "*Determining what to read*" was given a moderate mean value of 2.95 (SD=1.23). As for cognitive strategies, there were two strategies, which were given a high mean by biology students. These strategies are COG 1 "*Reading slowly and carefully*" and COG 2 " *Trying to stay focused on reading"* which had a mean value of 4.16 (SD=0.83) respectively. On the other hand, support strategy preferences of biology students' revealed SUP 3 *"Underlining information in text"* was the most preferred strategy with a high mean value of 4.10 (SD=0.99). On the other hand, SUP 1 "*Taking notes while reading"* was the least preferred support strategy with a moderate mean value of 3.52 (SD=1.14).

4.1.2 Business Studies

Table 4.5 presents reading strategy preferences of business studies students.

Table 4.5 Reading Strategy Preferences of Business Studies Students (n=64)

		Mean	SD	Level
META 1	Setting purpose for reading	3.61	0.93	High
META 2	Using prior knowledge	3.35	1.04	Moderate
META 3	Previewing text before reading	3.73	0.98	Moderate
META 4	Checking how text contents fits purpose	3.45	1.14	Moderate
META 5	Skimming to note text characteristics	3.24	1.17	Moderate
META 6	Determining what to read	3.95	1.23	High
META 7	Using text features (e.g.tables)	3.92	0.96	High
META 8	Using context clues	3.61	0.91	Moderate
META 9	Using typographical aids (e.g.italics)	3.53	1.20	High
META 10	Critically evaluating that is read	3.03	0.97	Moderate
META 11	Resolving conflicting information	3.71	0.88	High
META 12	Predicting or guessing text meaning	3.48	1.13	Moderate
META 13	Confirming predictions	3.71	0.88	High
COG1	Reading slowly and carefully	3.81	1.28	High
COG 2	Trying to stay focused on reading	3.98	0.95	High
COG 3	Adjusting reading rate	3.30	1.20	High
COG 4	Paying close attention to reading	4.06	1.10	High
COG 5	Pausing and thinking about reading	3.30	1.11	Moderate
COG 6	Visualizing information read	3.59	1.26	High

COG 7	Re-reading for better understanding	3.94	1.01	High
COG 8	Guessing meaning of unknown words	3.63	1.06	High
SUP 1	Taking notes while reading	3.63	1.20	High
SUP 2	Reading aloud when text becomes hard	2.98	1.63	Moderate
SUP 3	Underlining information in text	4.03	1.26	High
SUP 4	Using reference materials	3.88	1.21	High
SUP 5	Paraphrasing for better understanding	3.45	1.25	Moderate
SUP 6	Going back and forth in text	3.16	1.34	Moderate
SUP 7	Asking oneself questions	3.47	1.15	Moderate
SUP 8	Translating into a native language	4.09	1.02	High
SUP 9	Thinking about information in both English and mother tongue	4.17	0.88	High

The means and standard deviation in table 4.5 show that the most preferred metacognitive strategy of business studies students is META 6 "*Determining what to read*" which was given had a high mean value of 3.95 (SD=1.23). On the other hand, META 10 "*Critically evaluating that is read*" was given a moderate mean value of 3.03 (SD=0.97). As for cognitive strategy preferences, the most preferred strategy was COG 4 " *Paying close attention to reading*" with a high mean value of 4.06 (SD=1.10). However, there were two strategies COG 3 and COG 5 which were ranked as least preferred by business studies students. COG 3 "*Adjusting reading rate*" was given a moderate mean value of 3.30 (SD=1.20) while COG 5 "*Pausing and thinking about reading"* was given a moderate mean value of 3.30 (SD=1.11). In the support strategy category, the most

preferred support strategy was SUP 9 "*Thinking about information in both English and mother tongue"* which had a high mean value of 4.17 (SD=0.88). In contrast, SUP 2 "*Reading aloud when text becomes hard*" was given a moderate mean value of 2.98 (SD=1.63).

4.1.3 Information Technology (I.T.)

Table 4.6 indicates reading strategy preferences of I.T. students.

Table 4.6 Reading Strategy Preferences of I.T. Students (n=62)

		Mean	**SD**	**Level**
META 1	Setting purpose for reading	3.44	0.88	Moderate
META 2	Using prior knowledge	3.44	0.93	Moderate
META 3	Previewing text before reading	3.66	1.09	High
META 4	Checking how text contents fits purpose	3.18	1.06	Moderate
META 5	Skimming to note text characteristics	2.95	1.08	Moderate
META 6	Determining what to read	2.94	1.08	Moderate
META 7	Using text features (e.g.tables)	3.79	0.94	High
META 8	Using context clues	3.32	0.99	Moderate
META 9	Using typographical aids (e.g.italics)	3.42	1.24	Moderate
META 10	Critically evaluating that is read	2.76	1.14	Moderate
META 11	Resolving conflicting information	3.39	1.06	Moderate
META 12	Predicting or guessing text meaning	3.15	1.20	Moderate
META 13	Confirming predictions	3.63	0.89	High

COG1	Reading slowly and carefully	3.79	1.04	High
COG 2	Trying to stay focused on reading	3.98	1.06	High
COG 3	Adjusting reading rate	3.48	1.16	Moderate
COG 4	Paying close attention to reading	3.77	1.01	High
COG 5	Pausing and thinking about reading	3.44	0.95	Moderate
COG 6	Visualizing information read	3.69	1.12	High
COG 7	Re-reading for better understanding	3.79	1.03	High
COG 8	Guessing meaning of unknown words	3.58	0.95	Moderate
SUP 1	Taking notes while reading	3.69	1.24	High
SUP 2	Reading aloud when text becomes hard	3.42	1.33	Moderate
SUP 3	Underlining information in text	4.08	0.91	High
SUP 4	Using reference materials	3.23	1.15	Moderate
SUP 5	Paraphrasing for better understanding	3.31	1.05	Moderate
SUP 6	Going back and forth in text	3.16	1.15	Moderate
SUP 7	Asking oneself questions	3.71	1.08	High
SUP 8	Translating into a native language	3.89	1.12	High
SUP 9	Thinking about information in both English and mother tongue	3.89	1.12	High

From table 4.6 above, the mean and standard deviation reveal that the most preferred metacognitive strategy of I.T. students is META 7*" Using text features (e.g.tables)*" with a high mean value of 3.79 (SD=.973) while the least preferred metacognitive strategy is META 10 *" Critically evaluating that is read*" which was given a

moderate mean value of 2.76 (SD=1.14). As for cognitive strategy preferences of I.T. students, the most preferred strategy was COG 2 "*Trying to stay focused on reading*" which had a high mean value of 3.98 (SD=1.06). In contrast, the least preferred cognitive strategy was COG 5 "*Pausing and thinking about reading*" with a moderate mean value of 3.44 (SD=.952). Lastly, in the support strategy category, the most preferred strategy of I.T. students is SUP 3 "*Underlining information in text*" with a high mean value of 4.08 (SD=0.91). On the other hand, the least preferred support strategy of I.T. students is SUP 6 "*Going back and forth in text"* with a moderate mean value of 3.16 (SD=1.15).

4.1.4 Engineering

Table 4.7 reveals reading strategy preferences of engineering students.

Table 4.7 Reading Strategy Preferences of Engineering Students (n=124)

		Mean	**SD**	**Level**
META 1	Setting purpose for reading	3.79	0.90	Moderate
META 2	Using prior knowledge	3.54	0.95	Moderate
META 3	Previewing text before reading	3.49	1.14	High
META 4	Checking how text contents fits purpose	3.32	0.98	Moderate
META 5	Skimming to note text characteristics	3.10	1.15	Moderate
META 6	Determining what to read	3.05	1.14	Moderate
META 7	Using text features (e.g.tables)	3.80	1.02	High
META 8	Using context clues	3.62	0.92	Moderate
META 9	Using typographical aids (e.g.italics)	3.40	1.26	Moderate

META 10	Critically evaluating that is read	2.90	1.06	Moderate
META 11	Resolving conflicting information	3.76	1.01	Moderate
META 12	Predicting or guessing text meaning	3.06	1.15	Moderate
META 13	Confirming predictions	3.27	1.03	Moderate
COG1	Reading slowly and carefully	4.00	1.01	High
COG 2	Trying to stay focused on reading	3.94	0.96	High
COG 3	Adjusting reading rate	3.32	1.12	Moderate
COG 4	Paying close attention to reading	3.92	1.02	High
COG 5	Pausing and thinking about reading	3.45	1.01	Moderate
COG 6	Visualizing information read	3.87	0.96	High
COG 7	Re-reading for better understanding	3.94	0.96	High
COG 8	Guessing meaning of unknown words	3.44	1.09	High
SUP 1	Taking notes while reading	3.61	1.12	High
SUP 2	Reading aloud when text becomes hard	3.33	1.42	Moderate
SUP 3	Underlining information in text	3.91	1.15	High
SUP 4	Using reference materials	3.58	1.26	High
SUP 5	Paraphrasing for better understanding	3.47	1.11	Moderate
SUP 6	Going back and forth in text	3.31	1.01	Moderate
SUP 7	Asking oneself questions	3.64	1.06	High
SUP 8	Translating into a native language	3.69	1.24	High
SUP 9	Thinking about information in both English and mother tongue	3.99	1.02	High

From table 4.7, we can observe that the most preferred metacognitive strategy of engineering students is META 7 " *Using text features (e.g.tables)"* which had a mean high value of 3.80 (SD=1.02). On the other hand, the least preferred metacognitive strategy of engineering students is META 6 "*Determining what to read"* which had a moderate mean value of 3.05 (SD=1.14). Cognitive strategy preferences of engineering students revealed that their most preferred strategy was COG 1 "*Reading slowly and carefully"* which was given a high mean of 4.00 (SD=1.01). However, the least preferred strategy of engineering students was COG 3 "*Adjusting reading rate*" with a moderate mean value of 3.32 (SD=1.12). Finally, the support strategy preferences of engineering students revealed that the most preferred support strategy was SUP 9 "*Thinking about information in both English and mother tongue"* which was given a high mean of 3.99 (SD=1.02). But, SUP 6 "*Going back and forth in text"* had a moderate mean value of 3.31 (SD=1.01).

4.1.5 English

Table 4.8 presents reading strategy preferences of English students.

Table 4.8: Reading Strategy Preferences of English students (n=63)

		Mean	**SD**	**Level**
META 1	Setting purpose for reading	3.76	0.87	High
META 2	Using prior knowledge	3.40	1.13	Moderate
META 3	Previewing text before reading	3.48	1.27	Moderate
META 4	Checking how text contents fits purpose	3.32	1.13	Moderate
META 5	Skimming to note text characteristics	2.86	1.15	Moderate

META 6	Determining what to read	3.21	1.09	Moderate
META 7	Using text features (e.g.tables)	3.87	1.02	High
META 8	Using context clues	3.67	0.97	Moderate
META 9	Using typographical aids (e.g.italics)	3.54	1.33	High
META 10	Critically evaluating that is read	2.67	1.22	Moderate
META 11	Resolving conflicting information	3.52	1.11	High
META 12	Predicting or guessing text meaning	3.40	1.13	Moderate
META 13	Confirming predictions	3.43	1.20	Moderate
COG1	Reading slowly and carefully	3.94	1.05	High
COG 2	Trying to stay focused on reading	4.14	0.80	High
COG 3	Adjusting reading rate	3.44	1.12	Moderate
COG 4	Paying close attention to reading	4.29	0.99	High
COG 5	Pausing and thinking about reading	3.19	1.06	Moderate
COG 6	Visualizing information read	3.68	1.25	High
COG 7	Re-reading for better understanding	3.90	1.01	High
COG 8	Guessing meaning of unknown words	3.60	0.89	High
SUP 1	Taking notes while reading	3.52	1.09	High
SUP 2	Reading aloud when text becomes hard	2.98	1.41	Moderate
SUP 3	Underlining information in text	4.00	0.98	High
SUP 4	Using reference materials	3.71	1.22	High
SUP 5	Paraphrasing for better understanding	3.25	1.40	Moderate
SUP 6	Going back and forth in text	3.00	1.23	Moderate
SUP 7	Asking oneself questions	3.37	1.17	High

SUP 8	Translating into a native language	3.94	1.13	High
SUP 9	Thinking about information in both English and mother tongue	4.05	0.96	High

Table 4.8 shows that the most preferred metacognitive strategy of English students was META 7 *"Using text features (e.g.tables)"* which was given a high mean of 3.87 (SD=1.02). On the other hand, the least preferred metacognitive strategy was META 10 *"Critically evaluating that is read"* which was given a moderate mean of 2.67 (SD=1.21). Cognitive strategy preferences of English students reveal that the most preferred strategy was COG 4 "*Paying close attention to reading*" which had a high mean value of 4.29 (SD=0.99). The least preferred cognitive strategy was COG 5 "*Pausing and thinking about reading"* with a moderate mean value of 3.19 (SD=1.06). Furthermore, the most preferred support strategy of English students was SUP 9 "*Thinking about information in both English and mother tongue"* with a high mean value of 4.05 (SD=0.96) while the least preferred strategy was SUP 2 *"Reading aloud when text becomes hard"* which was given a moderate mean value of 2.98 (SD=1.41).

4.1.6 Statistical Analysis for Research Question 1

The first research question aims to explore the strategy preferences of students of English, biology, engineering, I.T. and business studies in the three subscales of SORS: metacognitive strategies, cognitive strategies and support strategies. As the three scales were dependent variables and the specializations were independent variables,

therefore one-way multivariate analysis of variance (MANOVA) was used for statistical analysis.

4.1.6.1 Levene's Test of Equality of Error Variances

Next, table 4.9 illustrates result of Levene's Test of Equality of Error Variances

Table 4.9 Levene's Test of Equality of Error Variances

Levene's Test of Equality of Error Variances				
	F	df1	df2	Sig.
Cognitive	1.792	4	370	.130
Metacognitive	1.688	4	370	.152
Support strategies	.627	4	370	.644

As we can see in table 4.9, it was found that the assumption of equality of variances across groups which is required for post-hoc separate ANOVAs is not violated for each of the three dependent variables as p-value of Levene's test is greater than 0.05 for each of the 3 dependent variables, metacognitive (p=0.152), cognitive (p=0.130), and support strategy (p=0.644). Also, the assumption of multivariate normality may be assumed to be fulfilled as the data is large with 375 participants for each of the dependent variables.

Table 4.10 presents results of multivariate tests.

Table 4.10 Results of Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.981	6229.484[a]	3.000	368.000	.000	.981
	Wilks' Lambda	.019	6229.484[a]	3.000	368.000	.000	.981
	Hotelling's Trace	50.784	6229.484[a]	3.000	368.000	.000	.981
	Roy's Largest Root	50.784	6229.484[a]	3.000	368.000	.000	.981
Discipline	Pillai's Trace	.034	1.066	12.000	1110.000	.385	.011
	Wilks' Lambda	.966	1.064	12.000	973.928	.388	.011
	Hotelling's Trace	.035	1.061	12.000	1100.000	.390	.011
	Roy's Largest Root	.018	1.698[b]	4.000	370.000	.150	.018

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: Intercept + Discipline

The results of multivariate tests in table 4.10 reveal that assumptions of variance-covariance matrices, equality of variances across groups and multivariate normality of the MANOVA are satisfied. Also, multivariate test results show that Wilks' Lambda (p=0.368) is not significant at 0.05 level as the p-value is greater than 0.05. Hence, we can conclude that there are no significant disciplinary differences between learners along the three scales of SORS.

4.2 Research Question 2

Inferential statistics following the descriptive analyses were employed to analyze the results for the second research question: *Does gender affect the use of cognitive, metacognitive and support strategies of students of different disciplines*?

The total number of participants in this study were 375 out of which there are 246 female students and 129 male students. Table 4.11 presents descriptive statistics.

Table 4.11 Descriptive Statistics

Category	Gender	N	Mean	S.D.
Cognitive	Male Female	129 246	3.66 3.80	0.56 0.59
Metacognitive	Male Female	129 246	3.33 3.40	0.47 0.52
Support	Male Female	129 246	3.41 3.76	0.60 0.63

As we can see from table 4.11, cognitive strategy was the most preferred strategy of male and female students of biology, business studies, I.T., engineering, and English. It was ranked as high usage by males (M=3.66) and females (M=3.80) of these disciplines. In addition, metacognitive strategies were ranked as moderate use by male (M=3.33) and female (M=3.40) students of biology, business studies, I.T., engineering, and English disciplines. But, there were differences in support strategy preferences. Female students (M=3.76) had ranked support strategies as high use while male students had ranked them as moderate use (M=3.41).

Furthermore, in order to determine individual strategy preferences between genders in different disciplines, an independent t-test was performed. The results are presented in table 4.12

Table 4.12 Strategy Preferences of Males and Females (M=129, F=246)

		Male		Female			
		Mean	**SD**	**Mean**	**SD**	**T**	**p-value**
META 1	Setting purpose for reading	3.81	.929	3.61	.949	2.014	0.05
META 2	Using prior knowledge	3.54	.938	3.38	1.092	1.382	0.17
META 3	Previewing text before reading	3.36	1.272	3.62	1.091	-2.084	0.05
META 4	Checking how text contents fits purpose	3.27	1.106	3.37	1.090	-.808	0.42
META 5	Skimming to note text characteristics	2.86	1.148	3.12	1.174	-2.036	0.05
META 6	Determining what to read	3.11	1.179	3.03	1.176	.631	0.53
META 7	Using text features (e.g.tables)	3.70	1.053	3.85	1.008	-1.350	0.18
META 8	Using context clues	3.55	1.064	3.53	1.005	.128	0.89
META 9	Using typographical aids (e.g.italics)	3.24	1.272	3.56	1.256	-2.289	0.09
META 10	Critically evaluating that is read	2.71	1.137	2.84	1.093	-1.080	0.28
META 11	Resolving conflicting information	3.57	1.084	3.67	.962	-.879	0.38
META 12	Predicting or guessing text meaning	3.25	1.122	3.27	1.210	-.174	0.86
META 13	Confirming predictions	3.29	1.044	3.38	1.146	-.734	0.46
COG1	Reading slowly and carefully	3.84	1.085	4.01	1.030	-1.506	0.14
COG 2	Trying to stay focused on reading	3.93	.949	4.08	.920	-1.455	0.15

COG 3	Adjusting reading rate	3.40	1.146	3.42	1.117	-.165	0.87
COG 4	Paying close attention to reading	3.93	1.059	4.00	1.020	-.660	0.51
COG 5	Pausing and thinking about reading	3.29	1.005	3.48	1.021	-1.685	0.10
COG 6	Visualizing information read	3.67	1.095	3.80	1.119	-1.099	0.27
COG 7	Re-reading for better understanding	3.80	.983	4.00	.992	-1.847	0.07
COG 8	Guessing meaning of unknown words	3.41	.951	3.65	1.022	-2.244	0.13
SUP 1	Taking notes while reading	3.48	1.143	3.66	1.149	-1.456	0.15
SUP 2	Reading aloud when text becomes hard	2.77	1.383	3.59	1.382	-5.442	0.07
SUP 3	Underlining information in text	3.84	1.153	4.09	1.030	-2.099	0.05
SUP 4	Using reference materials	3.45	1.241	3.75	1.182	-2.309	0.09
SUP 5	Paraphrasing for better understanding	3.19	1.215	3.54	1.123	-2.837	0.05
SUP 6	Going back and forth in text	3.05	1.199	3.36	1.100	-2.450	0.12
SUP 7	Asking oneself questions	3.36	1.135	3.69	1.078	-2.738	0.12
SUP 8	Translating into a native language	3.64	1.228	4.03	1.074	-3.152	0.10
SUP 9	Thinking about information in both English and mother tongue	3.88	1.040	4.11	.930	-2.149	0.05

As shown in table 4.12, there are no significant differences between strategy preferences of males and females in different disciplines. Male students have ranked 14

strategies as high use while female students ranked 20 strategies as high use. Furthermore, male students had ranked 16 strategies as moderate use whereas female students had ranked 10 strategies as moderate use. It is also noted that none of the strategies were ranked as low usage by either gender. These findings will be discussed in chapter five.

4.2.1 Statistical Analysis for Research Question 2

In order to determine if gender difference has an impact on metacognitive, cognitive and support strategy preferences of learners in different disciplines, a one-way multivariate analysis of variance (MANOVA) was used. Table 4.14 presents results of Levene's Test of Equality of Error Variances

Table 4.13 Levene's Test of Equality of Error Variances

Levene's Test of Equality of Error Variances				
	F	df1	df2	Sig.
Cognitive	.963	1	373	.327
Metacognitive	1.339	1	373	.248
Support strategies	.010	1	373	.921

As we can see in table 4.13, it was found that the assumption of homogeneity with the dependent variables (strategies) across gender is not violated for each of the three

dependent variables as p-value of Levene's test is greater than 0.05 for each of the 3 dependent variables, metacognitive (p=0.248), cognitive (p=0.327), and support strategy (p=0.921). Also, the assumption of multivariate normality may be assumed to be fulfilled as the data is large with 375 participants for each of the dependent variables.

Table 4.14 presents results of multivariate tests. Multivariate tests were analyzed to know if there are statistically significant differences between genders for the three scales of SORS.

Table 4.14 Results of Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.975	1751.623[b]	8.000	366.000	.000	.975
	Wilks' Lambda	.025	1751.623[b]	8.000	366.000	.000	.975
	Hotelling's Trace	38.287	1751.623[b]	8.000	366.000	.000	.975
	Roy's Largest Root	38.287	1751.623[b]	8.000	366.000	.000	.975
gender	Pillai's Trace	.024	1.114[b]	8.000	366.000	.352	.024
	Wilks' Lambda	.976	1.114[b]	8.000	366.000	.352	.024
	Hotelling's Trace	.024	1.114[b]	8.000	366.000	.352	.024
	Roy's Largest Root	.024	1.114[b]	8.000	366.000	.352	.024

a. Design: Intercept + gender

b. Exact statistic

c. Computed using alpha = .05

The result of multivariate tests in table 4.14 reveals that assumptions of variance-covariance matrices, equality of variances across groups and multivariate normality of the

MANOVA are satisfied. Also, multivariate test results show that Wilks' Lambda test (p=0.352) is not significant at 0.05 level as the p-value is greater than 0.05. Hence, we can conclude that there are no significant differences between genders for the three scales of SORS.

4.3 Research Question 3

Descriptive and inferential statistics were employed to analyze the results for the third research question: *Does learners' self-perceived level of language proficiency affect the use of cognitive, metacognitive and support strategies in reading comprehension of students of different disciplines?*

During data collection, the Survey of Reading Strategies (SORS) was administered with a background information questionnaire. The aim of background information questionnaire was to collect data about the participants such as age, and gender. Also, the participants were asked to rate their English proficiency on a 5-point Likert scale ranging from 1(lowest) to 5(highest).

Table 4.15 shows the rating of the language proficiency by the participants of all disciplines.

Table 4.15 Language Proficiency of Participants in All Disciplines

Rating	Frequency	Percent
Lowest (1)	4	1.1
Low (2)	19	5.1
Average (3)	219	58.4
High (4)	114	30.4
Highest (5)	19	5.1

We can see in table 4.15 that majority of the participants rated their English proficiency as average (58.4%) on the Likert scale. Also, many participants rated their English proficiency as high (30.4%). The ranking of highest and low were selected by 5.1% respectively. On the other hand, lowest ranking was selected by 1.1% only.

Based on the rating of English proficiency, the participants were divided into three groups. The “high reading ability group” consisted of participants who considered their reading ability to be ‘high’ (4 on the scale) or ‘highest’ (5 on the scale), the “average reading ability group” (3 on the scale) and the “ low reading ability group” consisted of those who rated themselves as ‘low’ (2 on the scale) or ‘lowest’ (1 on the scale). The number of participants in each group are presented in Table 4.16.

Table 4.16 Total Participants in Low, Average and High Group

Group	Frequency
Low Group	23
Average Group	219
High Group	133

Table 4.16 reveals the total number of participants in the low, average and high reading ability groups. We can observe that the highest number of participants is in average group (n=219) followed by high group (n=133). In contrast, the low group (n=23) has a very small number of participants. Thus, in order to create a balance between the groups and for the purpose of statistical measures, the low group was not considered. Thus, average and high groups of different disciplines were selected for statistical analysis.

Data was analyzed using independent sample t-test to investigate strategy preferences of average and high group learners. Table 4.17 presents the descriptive statistics of both groups.

Table 4.17: Descriptive Statistics of Average and High Proficiency Learners

	Reading Proficiency	**N**	**Overall Mean**	**Standard Deviation**	**T-test**	**P-value**
Metacognitive	Average	219	3.38	1.14	0.27	0.788
	High	133	3.36	1.12		
Cognitive	Average	219	3.73	1.08	-0.33	0.738
	High	133	3.75	1.04		
Support	Average	219	3.67	1.18	1.11	0.268
	High	133	3.58	1.20		

As we can see in table 4.17, cognitive strategies were the most preferred strategy of average and high group learners. It was ranked as high usage by average group (M=3.73) and high group (M=3.75). Also, support strategies were the second most preferred strategy of average (M=3.67) and high group (M=3.58) learners. In contrast, metacognitive strategies were ranked as moderate use by average (M=3.38) and high group (M=3.38).

4.3.1 Strategy Preferences of Average and High Group Learners

Furthermore, in order to determine strategy preferences of average group and high group, an independent t-test was performed, and the results are presented in table 4.18.

Table 4.18: Strategy Preferences of Average Group and High Group

		Average		High		T	p-value
		Mean	SD	Mean	SD		
META 1	Setting purpose for reading	3.69	0.94	3.70	0.95	-0.071	0.944
META 2	Using prior knowledge	3.54	1.03	3.20	1.11	2.765	0.006
META 3	Previewing text before reading	3.50	1.14	3.55	1.15	-0.381	0.703
META 4	Checking how text contents fits purpose	3.37	1.05	3.20	1.15	1.342	0.181
META 5	Skimming to note text characteristics	3.00	1.18	3.02	1.12	-0.097	0.923
META 6	Determining what to read	3.02	1.19	3.11	1.09	-0.720	0.472

META 7	Using text features (e.g.tables)	3.78	1.04	3.87	0.92	-0.759	0.448
META 8	Using context clues	3.53	1.10	3.55	0.92	-0.190	0.849
META 9	Using typographical aids (e.g.italics)	3.43	1.27	3.44	1.25	-0.064	0.949
META 10	Critically evaluating that is read	2.85	1.12	2.70	1.10	1.185	0.237
META 11	Resolving conflicting information	3.62	1.04	3.60	0.98	0.209	0.834
META 12	Predicting or guessing text meaning	3.26	1.17	3.29	1.20	-0.181	0.856
META 13	Confirming predictions	3.30	1.10	3.46	1.10	-1.324	0.186
COG1	Reading slowly and carefully	3.94	1.10	3.92	1.01	0.159	0.874
COG 2	Trying to stay focused on reading	4.05	.922	3.94	.915	1.094	0.275
COG 3	Adjusting reading rate	3.37	1.11	3.42	1.16	-0.393	0.695
COG 4	Paying close attention to reading	3.89	1.07	4.10	0.97	-1.759	0.080
COG 5	Pausing and thinking about reading	3.39	1.01	3.34	1.06	0.426	0.670
COG 6	Visualizing information read	3.70	1.15	3.82	1.02	-0.949	0.344
COG 7	Re-reading for better understanding	3.89	1.02	3.96	0.95	-0.688	0.492
COG 8	Guessing meaning of unknown words	3.59	1.02	3.50	0.97	0.810	0.418
SUP 1	Taking notes while reading	3.61	1.14	3.54	1.17	0.578	0.564
SUP 2	Reading aloud when text becomes hard	3.36	1.40	3.25	1.47	0.671	0.503
SUP 3	Underlining information in text	4.05	1.08	3.95	1.10	0.858	0.392
SUP 4	Using reference materials	3.66	1.19	3.66	1.22	-0.003	0.998
SUP 5	Paraphrasing for better understanding	3.39	1.15	3.50	1.16	-0.842	0.401
SUP 6	Going back and forth in text	3.24	1.17	3.21	1.11	0.202	0.840

SUP 7	Asking oneself questions	3.62	1.09	3.51	1.08	0.895	0.371
SUP 8	Translating into a native language	4.06	1.05	3.61	1.23	3.459	0.001
SUP 9	Thinking about information in both English and mother tongue	4.01	0.96	4.04	0.99	-0.310	0.757

As we can see in table 4.18, it is interesting to note that average and high proficiency learners had given similar ratings for metacognitive, cognitive and support strategies. However, statistical analysis revealed that there were significant differences between average group and high group as p-values for Meta 2 "*Using prior knowledge*" and Sup 8 "*Translating into a native language*" which were less than 0.05.

4.3.2 Statistical Analysis for Research Question 3

One-way MANOVA was conducted to evaluate if the self-perceived level of proficiency of the learners had an impact on their scores for the three scales of SORS: metacognitive, cognitive and support strategies. Table 4.19 illustrates result of Levene's Test of Equality of Error Variances

Table 4.19 Levene's Test of Equality of Error Variances

Levene's Test of Equality of Error Variances				
	F	df1	df2	Sig.
Cognitive	.730	4	370	.572
Metacognitive	.633	4	370	.640
Support strategies	.554	4	370	.697

As we can see in table 4.19, it was found that the assumption of equality of variances across groups, which is required for post-hoc separate ANOVAs, is not violated for each of the three dependent variables. Also, we can see that p-value of Levene's test is greater than 0.05 for each of the 3 dependent variables, metacognitive (p=0.640), cognitive (p=0.572), and support strategy (p=0.697). In addition, the assumption of multivariate normality may be assumed to be fulfilled as the data is large with 375 participants for each of the dependent variables.

Table 4.20 presents results of multivariate tests. Multivariate tests were analyzed to explore if there was statistically significant difference between reading proficiency of the participants and the three scales of SORS.

Table 4.20 Results of Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.853	710.073[b]	3.000	368.000	.000	.853
	Wilks' Lambda	.147	710.073[b]	3.000	368.000	.000	.853
	Hotelling's Trace	5.789	710.073[b]	3.000	368.000	.000	.853
	Roy's Largest Root	5.789	710.073[b]	3.000	368.000	.000	.853
read.prof	Pillai's Trace	.020	.607	12.000	1110.000	.838	.007
	Wilks' Lambda	.981	.605	12.000	973.928	.839	.007
	Hotelling's Trace	.020	.603	12.000	1100.000	.841	.007
	Roy's Largest Root	.012	1.094[c]	4.000	370.000	.359	.012

The results of multivariate tests in table 4.20 reveal that assumptions of variance-covariance matrices, equality of variances across groups and multivariate normality of the MANOVA are satisfied. Also, multivariate test results show that Wilks' Lambda (p=0.839) is not significant at 0.05 level as the p-value is greater than 0.05. Hence, we can conclude that there are no significant differences between reading proficiency and the three scales of SORS.

4.4 Phase II: Interviews

Twelve students pursuing different specializations, such as, English, biology, IT, engineering and business studies had participated in the semi-structured interviews.

There were seven males and five females. These students were interviewed about their preferences and use of strategies employed by them to ensure better comprehension.

Table 4.21 shows demographic information of the participants. Each student was given a pseudonym. Also, the student's specialization is stated in brackets.

Table 4.21 Demographic Information of the Participants

Pseudonym	**Specialization**	**Gender**
Ali	English (ENG)	Male
Ahmed	English (ENG)	Male
Rahma	Biology (BIO)	Female
Said	Biology (BIO)	Male
Salma	I.T.	Female
Hamid	I.T.	Male
Faris	Engineering (ENGG)	Male
Hiba	Engineering (ENGG)	Female
Mohammed	Engineering (ENGG)	Male
Abdullah	Engineering(ENGG)	Male
Fatma	Business Studies (B.S.)	Female
Maryam	Business Studies (B.S.)	Female

4.4.1 Strategy Preferences Across Disciplines

4.4.1.1 Metacognitive Reading Strategies

The participants were questioned about how they employed various metacognitive strategies. The strategies discussed ranged from preview of text, typographical aids, use of tables, figures, skimming, scanning, background knowledge and the ways students use these strategies.

Preview of Text

Table 4.22 Preview of Text: All Disciplines

Discipline	**Strategy Preferences**
English	focus on title, paragraphs, imagine the topic
Biology	focus on title
I.T.	focus on title, focus on new word, number of paragraphs
Business Studies	focus on length, difficult words, read main idea of paragraphs
Engineering	guess main idea, pay attention to picture

English

Ahmed (ENG) and Ali (ENG) studying English had different approaches to preview of the text given to them. Ali (ENG) mentioned that *"I read the title, or the heading…I see how many paragraphs it has.....or maybe it has a picture*". While Ahmed (ENG) had a different approach about which he stated, "*before I start reading, first, I see the topic and imagine what it talks about".*

Biology

Biology students (Rahma and Said) had different approaches towards preview of the text. Rahma (BIO) preferred to "*look at the title……..just try to pick up some words to get information about what I'm going to read*". On the other hand, Said (BIO) was not in favour of preview of the text. He stated that "*sometimes"* he focussed on the length of text but "*not that much*".

I.T.

I.T. students had different opinions as Salma (I.T.) preferred to *"notice the title…..if it's interesting or not"* whereas Hamid (I.T.) focussed on new words and length of the text; as he posted that, *"I see new information; I notice the number of paragraphs.....and also the new words*".

Business Studies

Business studies students had different opinions. Fatma (B.S.) mentioned "*I will see the length of the text, and then, I will try to see in general if there are any complicated words*". In contrast, Maryam (B.S.) had a different viewpoint and commented that, *"first of all, I read the main idea of each paragraph…second, I will select difficult words because, it helps me*".

Engineering

Engineering students had different opinions. Mohammed (ENGG) explained *"I try to guess the main idea in my mind……then I read important things"*. Faris (ENGG) specified *"I pay attention to the picture"* in the text. He supported his approach by saying that *"you can understand many things from the picture…then while reading, it will be easy to understand".* In contrast, Abdullah (ENGG) and Hiba (ENGG) did not preview text before reading.

Typographical Aids

Table 4.23 Typographical Aids: All Disciplines

Discipline	Preferences
English	important information, helps to make notes
Biology	not helpful
I.T.	highlights important information
Business Studies	highlights important information, easy to understand
Engineering	helps to identify important information

Engineering

Engineering students had different opinions. Mohammed (ENGG) stated that information presented in bold or italic *"helps the student as he knows what to read"*. On the other hand, Abdullah (ENGG) did not pay attention to information in bold or italics.

Business Studies

Fatma (B.S.) commented that, *"if there is something like that, I will definitely know that it's something important; that thing I have to focus on, and to know and understand it more…yes because, it will make us to focus on them because, we see that they are different, so they are important"*. Moreover, Maryam (B.S.) also resonated with the same ideology and mentioned, *"I think sometimes, this bold word will be easier for students to understand"*.

English

Ali (ENG) commented, *"maybe it has important information such as email in italics, we can check it*". Also, Ahmed (ENG) stated that information presented in bold or italics *"helps me to write notes".*

I.T.

Salma (I.T.) explained that, "*when I see information in bold, I think it is more important to know about that word, maybe because it's a difficult word.....or that it gives meaning about some words*". Similarly, Hamid (I.T.) felt that *"as it's in bold…. it's important to see"*.

Biology

Rahma (BIO) pointed out that information highlighted in bold and italic was not helpful "*as everything is important".* Similarly, Said (BIO) said that "*sometimes"* he paid attention to such kind of information, as *"some students are not serious about bold or italic"*.

Use of Tables, Figures and Pictures

Table 4.24 Use of Tables, Figures and Pictures: All Disciplines

Discipline	Preferences
English	Pictures are helpful to understand the text
Biology	Pictures are helpful to understand the text
I.T.	Charts and pictures are helpful to understand the text
Business Studies	Charts, tables and pictures are helpful to understand the text
Engineering	Tables and charts are helpful to summarize or compare

English

Ahmed (ENG) acknowledged, *"if there is a picture within a paragraph, it helps to understand what it talks about"*. Ali (ENG) also had a similar viewpoint as he stated *"when I see the picture, I have some general information about the paragraph"*.

Engineering

Hiba (ENGG) said "*tables and charts help us to summarize the idea in a book or handout; sometimes, you find it difficult to imagine everything and you have pictures, so it's easy to understand and memorize*". Also, Faris (ENGG) maintained that charts or tables help him to "*differentiate about 2 things…….to compare".*

Biology

Said (BIO) gave importance to pictures "*because some teachers don't speak that much so we need to look at the picture*". Similarly, Rahma (BIO) stated that "*when you are looking at the pictures, you are able to connect what you have read and what you are seeing*…".

I.T.

I.T. students (Hamid and Salma) said that there were only tables in their course book, yet they found charts and pictures helpful. Hamid (I.T.) found charts or pictures helpful as *"it helps to understand information quickly*". Salma (I.T.) asserted that "*if they give bar charts or tables, then it will be easy for me to study*".

Business Studies

Fatma (B.S.) commented that charts and tables were helpful *"as most of the time they are numbers, and it will be helpful if we use it on the particular subject".* Maryam (B.S.) had a similar opinion as she said that *"the books have pictures….this kind of reading help students to understand"*.

Skimming and Scanning

Table 4.25: Skimming and Scanning: All Disciplines

Discipline	**Preferences**
English	preferred skimming
Biology	skimming and scanning
I.T.	preferred skimming
Business Studies	preferred skimming
Engineering	skimming and scanning

English

Ali (ENG) asserted that, "*I would read all; maybe if it's not something new for me, I will read only main idea*". Also, Ahmed (ENG) preferred to *"read it all….just to see the most important".*

Business Studies

Maryam **(**B.S.) stated that she *"liked to read the whole thing"* and Fatma (B.S.) preferred to "*read all"* of the information presented in the text.

Engineering

Engineering students had different opinions. Hiba (ENGG) said that "*I read the whole text…but I will skip only if I have less time*". Faris (ENGG) preferred to read *"the beginning of the paragraph"* in order to *"understand the whole paragraph"*. Abdullah (ENGG) felt that "*main idea is very important…I need to read the whole paragraph and understand"* while Mohammed (ENGG) said *"the main idea is sometimes not clear….so you need to read the whole text".*

Biology

Biology students had different opinions. Said (BIO) observed that he preferred to read the "*first few lines"* of each paragraph, but Rahma (BIO) asserted, "*usually, I just take idea of the text"* as she would read the whole text.

I.T.

I.T. students had a similar opinion that Hamid (I.T.) said he would "*read the whole thing*". Similarly, Salma (I.T.) said that, "*I prefer to read the whole thing to know what it is talking about"*.

Background Knowledge

Table 4.26 Background Knowledge: All Disciplines

Discipline	Preferences
English	background knowledge of vocabulary is helpful
Biology	background knowledge from previous courses was helpful
I.T.	background knowledge from previous courses was helpful
Business Studies	Background knowledge from previous courses was helpful to a limited extent
Engineering	background knowledge from previous courses was helpful to a limited extent

Business Studies

Business studies students Fatma (B.S) stated that background knowledge was *"helpful"* and Maryam (B.S.) said that background knowledge of previous courses helped her *"to understand some topics*".

I.T.

When Hamid (I.T.) was questioned about whether background knowledge aided in the comprehension of the current course, he stated that *"yes….Microsoft is easy for me now…as I studied it before"*. Also, Salma (I.T.) acknowledged that knowledge gained from previous courses *"helps me too much"*. She elaborated that "*when I use my computer, it's easy to use some buttons…. but I didn't know about the button".*

Biology

Rahma (BIO) observed that *"once you remember something related to it, you can just assume the meaning".* However, Said (BIO) asserted that the background knowledge "*helps, but not too much…. because school and college are different*".

Engineering

Mohammed (ENGG) pointed out that background knowledge helps "*sometimes with machines and workshop courses*" while Abdullah (ENGG) shared his viewpoint that "*it helps to provide continuity for future studies".* When asked about the relevance of background knowledge, Hiba (ENGG) responded that, "*sometimes, when I read, if it is related to the previous things I have read, I can make a relation between them, I think of what I have read before*".

English

Ali (ENG) ascertained that with help of background information "*vocabulary is easy…..maybe the topic I have read about"*. Similarly, Ahmed (ENG) added that his knowledge of vocabulary helps him to read and understand the text.

4.4.1.2 Cognitive Strategies

The participants were questioned about how they employ various cognitive strategies. The strategies discussed ranged from comprehension of different word and

text, adjusting the speed, strategies for loss of concentration to visualising the information, and the ways students use these strategies.

Comprehension of Different /Difficult Words in a Text

Table 4.27 Comprehension of Different /Difficult Words in a Text: All Disciplines

Discipline	Preferences
English	take help from teacher or friend
Biology	read a number of times
I.T.	translation, context clues
Business Studies	use context clues, take help from teacher
Engineering	translation, use context clues

English

Ahmed (ENG) said that if encountered a difficult word, "*I tell my teacher I don't understand, and he gives me another synonym"*. Besides this, he would translate the word. Ali (ENG) stated that he would translate the word or *"I ask some friend or teacher"*.

Engineering

Hiba (ENGG) had a different approach which she used to comprehend difficult words/text. She stated that "*the difficult words I will underline, then I will go to the translation, after that, I will read it twice and I will understand it*". Mohammed (ENGG) and Abdullah (ENGG) stated that they would translate the word. In contrast, Faris (ENGG)

preferred to use context clues as he would "*read before the word…..after the word…and see what the result can be".*

Biology

Rahma (BIO) asserted that, "*first of all, I just try to understand just by reading the whole sentence. Sometimes, when you don't understand just one word, you get the meaning just by reading the whole sentence*". Said (BIO) had a similar opinion and commented that, "*I read again, one or two times, and then understand*".

I.T.

Hamid (I.T.) said that *"sometimes, I use a translator"*. In other cases, he would ask his teacher. On the other hand, Salma (I.T.) preferred to use context clues so she "*reads the sentence before the word to understand the meaning"*.

Business Studies

Fatma (B.S.) explained that when faced with such difficult text / word, "*I will try to read it more than one time; again and again till I get the information*". On the other hand, Maryam (B.S.) said that *"I will ask the teacher".* In other situations, she would *"write the word and check when I go home"*.

Adjusting the Speed

Table 4.28 Adjusting the Speed: All Disciplines

Discipline	Preferences
English	average
Biology	depends on familiarity of text, fast
I.T.	average, slow
Business Studies	average, depends on familiarity of text
Engineering	slow, depends on familiarity of text

Business Studies

Fatma (B.S.) mentioned that, "*in English, it's in the middle ….not very fast not very slow…sometimes, when I know the text, I read it fast*". A similar perception was shared by Maryam (B.S.), "*my reading speed, depends on the word…if I read the text before, I can read fast*".

Biology

Rahma (BIO) stated that for her, the speed is dependent on the content that is being read, "*it depends on what I'm reading*". Said (BIO) said that, "*if I want to read the paragraph for the first time, I read it quickly*".

I.T.

Salma (I.T.) had a different opinion as she felt that if someone is reading slowly, it might highlight their inability to understand the information, "*some students read slowly*

when they find something difficult". As for her preference, she said that *"I don't like to read fast".* Furthermore, Hamid (I.T.) added another perception, "*When I read slowly, I remember more and understand*".

Engineering

Mohammed (ENGG) and Abdullah (ENGG) had different approach towards reading. In terms of reading speed, Abdullah (ENGG) pointed out that "*of course slow……because if I read very fast, I don't understand anything*". In contrast, Mohammed (ENGG) reasoned that "*it depends on the paragraph, if I am familiar with the language, I read fast…… if it's new, I read slowly*".

English

Ali (ENG) observed that his reading speed was "*maybe in the middle because, I like to focus on what I'm reading"*. Ahmed (ENG) had a similar view as he said that his reading speed was *"not fast…not slow".*

Strategies for Loss of Concentration

Table 4.29 Strategies for Loss of Concentration: All Disciplines

Discipline	**Preferences**
English	read first few sentences
Biology	found it hard to concentrate

I.T.	discuss with teacher
Business Studies	read aloud, focus, draw picture
Engineering	take a break

English

Ahmed (ENG) commented that students lose concentration "*if the topic does not have connection with the student, or student doesn't like the topic; it's too long for them*". Ali (ENG) on the other hand felt that *"if I read the paragraph before coming to class, it's better".* His approach to avoid loss of concentration was that he *"would read the first few sentences of each paragraph"*.

Business Studies

In order to overcome loss of concentration, Fatma (B.S.) said that, "*when I lose my concentration in the reading, I read it aloud to come back*". While Maryam (B.S.) responded that, *"I will try to understand…or draw a picture of the text"*.

Biology

Said (BIO) felt that "*it's not easy to concentrate too much*", and because of new language and words, "*it's difficult to concentrate*". In contrast, Rahma (BIO) was in favour of highlighting information in the text. In order to concentrate, Rahma (BIO) said *"I highlight information…then underline each and every single sentence".*

I.T.

Salma (I.T.) highlighted that, when facing issues with concentration "*I think I will not read it…but if it's important, I should meet my teacher to understand*". In contrast, Hamid (I.T.) stated "*I try to focus more, as I don't want to waste time in class*".

Engineering

While asking Mohammed (ENGG), he ascertained that, "*I take a break for 2 minutes, not reading, just thinking about the topic, and then I continue*". Similarly, Abdullah (ENGG) stated that "*if I feel very tired, maybe I drink something……after that, I feel fresh……then I can focus*". Hiba (ENGG) also endorsed the same approach of taking break when loosing concentration *"if I'm at home, I will go outside and relax";* but in a classroom situation, she re-reads the text as "*it helps to make us understand more*". On the other hand, Faris (ENGG) established another manner by which concentration can be regained, "*sometimes, I'm acting as if I'm reading it to some people…then I try to concentrate; I even read it in a little loud voice to understand the word; to focus more, I imagine myself in front of people, how would they understand me when I'm reading*".

Visualising the Information

Table 4.30 Visualization of Information: All Disciplines

Discipline	Preferences
English	sometimes, if the topic is familiar
Engineering	helpful

Biology	helpful for description
Business Studies	not helpful
I.T.	sometimes

English

Ali (ENG) stated that visualization of information was helpful "*if I know the topic*" while Ahmed (ENG) felt that it was helpful "*sometimes"*.

Engineering

Faris (ENGG) ascertained that imagining the information helps to remember it more by giving an example "*for example, you say there is a washing machine……..the height of the machine is …….it is cylindrical in shape….I can imagine it*". Hiba (ENGG) said that it was helpful "*in some cases if the topic is about machines*". Mohammed (ENGG) felt that it helped him "*as he could imagine and write in more details*". And Abdullah (ENGG) had a similar opinion as he found this strategy "*very helpful"*.

Biology

Rahma (BIO) asserted that, "*sometimes, but most of the time, they are just giving you the name, and then you have to explain every single thing; so you need to imagine how it actually looks like*". Thus, visualisation in the case of Rahma (BIO) aids in the better

explanation of things. Also, Said (BIO) found visualization of information useful "*for some topics, you must describe in detail".*

Business Studies

Fatma (B.S.) and Maryam (B.S.) did not visualize information. Fatma (B.S.) commented that "*as our study is about marketing, we don't need to imagine things*".

I.T.

Salma (I.T.) when asked about the importance of visualisation asserted that, "*I think majority of students do this is because, it's easy for them to remember the stories and imagine*". But Hamid (I.T.) practiced this strategy "*sometimes….when I have to describe part of a computer*".

4.4.1.3 Support Strategies

The participants were questioned about how they employ various support strategies. The strategies discussed ranged from strategies translation to Arabic, taking notes, reading aloud, to highlighting the text and the ways, students use these strategies.

Translation to Arabic

Table 4.31 Translation to Arabic: All Disciplines

Discipline	Preferences
English	prefer translation when information is new
Engineering	translated sometimes, causes problems
Biology	translation aids understanding, sometimes causes problems
Business Studies	translated sometimes, when vocabulary is new
I.T.	translation aids understanding, sometimes causes problems

English

Ahmed (ENG) admitted that, "*yes I do this in the beginning when I don't know anything, I want to learn… I translate to Arabic*". When asked about the reason for translating to Arabic, Ali (ENG) asserted that, "*when the word is very difficult and I can't get the meaning*".

Business Studies

Maryam (B.S.) stated that she translated words into Arabic *"sometimes….when I find it difficult".* When asked about if translated words or sentences, she replied *"words".* On the other hand, Fatma (B.S.) said that if she is unable to guess meaning of the word, then *"I will go to translation"*. As for problems related to translation of words, she said "*You have to be careful. When I translate in Arabic, I find the meaning does not match with the text"*.

I.T.

Salma (I.T.) commented that, "*it's easy for me to understand when I translate words in Arabic*". Similar thought was resonated by Hamid (I.T.), "*sometimes, I have problems when I translate words because, it comes with many meanings*".

Biology

Said (BIO) supported the translation process by stating that, "*yes, I find translation helpful; when I translate to Arabic, I understand what the information is about*". Rahma (BIO) further asserted that, "*our language is different from the English language…so you don't get the exact meaning if you want to translate*"

Engineering

Faris (ENGG) did not encounter any problems while translating words. He commented that, *"sometimes...because actually I learnt a lot about words...so sometimes I translate"*. Mohammed (ENGG) added that *"……..when we translate from, English to Arabic, it does not give exact meaning"*. Abdullah (ENGG) stated that, "*when we translate a word, it gives us lots of options, but I think on which one is the correct word*".

Note-taking

Table 4.32 Note-taking: All Disciplines

Discipline	Preferences
English	notes are summary of text, important information
Engineering	notes of definitions, important vocabulary
Biology	Notes are a summary of the text, important information
Business Studies	do not take notes
I.T.	notes help in remembering important information,

Business Studies

Fatma (B.S.) commented that, "*I do not take notes normally, only sometimes as I save for the definition of words that I don't know the meaning…. I write only the meaning of the word, but I don't write any description for the text or something*". Fatma (B.S.) believed that taking notes leads to better retention of information. In contrast, Maryam (B.S.) did not take notes as she felt *"everything is important".*

Biology

Rahma (BIO) claimed that notes are usually a summary of the document being scrutinised, "*Yes, it's a summary as I write the whole thing*". On the other hand, Said (BIO) said that he would take notes *"if I think something is important".*

Engineering

Mohammed (ENGG) asserted that, "*important words, or sentences, or something I don't understand which I will check later".* Similarly, Abdullah (ENGG) said that he took notes of *"important information*". Also, Faris (ENGG) took notes of *"definitions….important information; for example, comparison between two things….so I know this will help me later on"*. On the other hand, Hiba (ENGG) did not take notes as she said that *"we have only handouts and it summarizes information in the book".*

I.T.

Hamid (I.T.) said that taking notes "*helps me to remember important information*". Salma (I.T.) had a similar view as she would take notes "*when something is important*".

English

English students stated that they took notes while studying. Ali (ENG) took notes of *"important information…maybe vocabulary…..new words to check out later"*. Ahmed (ENG) said that he "*summarised the sentences in the form of notes*". So, before exams, when "*I want to study fast, I see these notes".*

Reading Aloud

Table 4.33 Reading Aloud: All Disciplines

Discipline	Preferences
English	helps in memorization of information
Engineering	helps in memorization of information
Biology	read aloud on some occasions, helps in memorization of information
Business Studies	read aloud while studying for exam, helps in memorization of information
I.T.	helps in memorization of information

Business Studies

Fatma (B.S.) mentioned that, "*Yes when I study for my exams I read aloud and also when I face difficulty, I try to read it aloud, so I can get the information; also when I lose my concentration in the reading I read it aloud to come back*". She further elaborated that reading aloud helps to formulate connections with something previously read. Maryam (B.S.) mentioned that, "*when I have exams, I like to read loudly…to save more*", which roughly translates to retention of the information.

Biology

Rahma (BIO) claimed that reading aloud was pursued "*only sometimes…when I'm feeling the words I can't think"*. Also, she added that in some cases *"sometimes…when I feel sleepy*" as it helped her to concentrate. Another perspective of reading aloud was posited by Said (BIO) who claimed that, "*I use this because, it helps me too much…I know everything*", signifying that it helps in the memorisation of the information.

I.T.

Salma (I.T.) asserted that, "*yes. I like to read in front of a mirror or someone, it helps to read aloud to remember things*". Ahmed (I.T.) emphasized that, "*Yes, when I need to understand the information, it helps to remember; it's easy, but if you are loud, it's easier to understand and save*".

Engineering

Mohammed (ENGG.) when asked about reading aloud, commented that, *"it helps as you can focus on all words".* He added that the technique helped him in memorization of the information as "*I remember I read this word in some book*". Faris (ENGG.) acknowledged the same viewpoint, "*Yes, because when we read it loudly, we can remember that I read this phrase,…..it helps me*". The student further signified that when reading quietly, students might skip certain lines and thus, not understand the concept in its full capacity.

English

Ahmed (ENG) stated that reading aloud is helpful as *"it helps to remember what my teacher said".* Similarly, Ali (ENG) also found this technique helpful in remembering information.

4.4.2 Gender Preferences Across Disciplines

4.4.2.1. Metacognitive Reading Strategies

Male and female students were interviewed about metacognitive reading strategies which ranged from preview of text, typographical aids, use of tables, figures, skimming and scanning to background knowledge.

Preview of text

English

Both English students were males, and they had different approach towards previewing of text before reading it. Ali (ENG) said that *"I read the title or the heading…I see how many paragraphs it has.....or maybe it has a picture*". On the other hand, Ahmed (ENG) had a different approach about which he stated that *"before I start reading, first I see the topic and imagine what it talks about"*.

I.T.

I.T male and female students were in favour of preview of text before reading it. Hamid (I.T.) commented that, *"I see new words.....new information; I notice the number of paragraphs.....and also the new words*". Salma (I.T.) claimed that "*I notice the title, if it's interesting….then I look at the paragraphs*".

Biology

Biology male student did not give attention to the length of the text before reading. Said (BIO) stated that "*sometimes"* he focussed on the length of text, but "*not that much*". But female student Rahma (BIO), was in favour of it. Rahma (BIO) preferred to "*look at the title……..just to try to pick up some words to get information about what I'm going to read*".

Engineering

Engineering female student Hiba (ENGG) stated that she focussed on difficult words, while male student Faris (ENGG) focussed on picture and length of the text. Faris (ENGG) stated that *"I pay attention to the picture"* in the text. He supported his approach by saying *that "you can understand many things from the picture…then while reading, it will be easy to understand".*

Business Studies

Both business studies students were females, and they had different opinions. Fatma (B.S.) mentioned that "*I will see the length of the text and then I will try to see in general if there are any complicated words*". In contrast, Maryam (B.S.) had a different viewpoint and commented that, *"first of all, I read the main idea of each paragraph…second, I will select difficult words because it helps me*".

Typographical Aids

English

Both English students were males, and had different views regarding this strategy. Ali (ENG) paid attention to information in bold or italic as he stated, *"maybe it has important information such as email in italics, we can check it*". On the other hand, Ahmed (ENG) stated that information presented in bold or italics *"helps me to write notes".*

Engineering

As for engineering students, Faris (ENGG) stated that information given in bold or italic "*helps us to understand that this paragraph will focus on this information".* And the female student Hiba (ENGG) commented that "*information in bold or italic looks attractive*" and that she "*will pay attention to the it".*

Business Studies

Both business studies students were females. One female student Fatma (B.S.) said that if she saw something in bold or italic, she would "focus *on it to know more and understand it*". Also, Maryam (B.S.) had a similar opinion that *"I think sometimes, this bold word will be easier for students to understand"*.

I.T.

I.T. male and female students had similar opinions as both considered information presented in bold as "*important to know*". Hamid (I.T.) felt that *"as it's in bold…. it's important to see"*. Similarly, Salma (I.T.) declared that, "*when I see information in bold, I think that it is more important to know about that word, maybe because it's a difficult word.....or that it gives meaning about some words*".

Biology

Biology male and female students did not give importance to information in bold or italic. Said (BIO) said that "*sometimes"* he paid attention to such kind of information as *"some students are not serious about bold or italic"*. Also, Rahma (BIO) stated that information highlighted in bold and italic was not helpful "*as everything is important".*

Use of Tables, Figures and Pictures

I.T.

I.T. male and female students were in favour of tables, pictures in their books. Male student Hamid (I.T.) said that tables helped him "*to understand information quickly*" while female student Salma (I.T.) asserted that "*if they give bar charts or tables, then it will be easy for me to study*".

Business Studies

Business studies student Maryam (B.S.) mentioned that *"if the books have pictures….this kind of reading help students to understand"*. On the other hand, Fatma (B.S.) claimed that information given in a chart or table helped them in "*noting and organizing the information, as most of the time, they are numbers, and it will be helpful if we use it on the particular subject"*.

Biology

Biology students gave importance to the pictures in the text. Female student Rahma (BIO) stated that "*when you are looking at the pictures, you are able to connect what you have read and what you are seeing*…". Similarly, male student Said (BIO) felt that pictures helped him to *"understand*" a text as there is *"too much detail about the picture".* He added that "because *some teachers don't speak that much…… so we need to look at the picture*".

Engineering

Engineering male and female students preferred charts and tables in comparison to pictures as they helped to *"differentiate about 2 or more things…..to compare"* (Faris ENGG). Hiba (ENGG) said that "*tables and charts help us to summarize the idea in book or handout; sometimes, you find it difficult to imagine everything, and you have pictures, so it's easy to understand and memorize*".

English

Ahmed (ENG) explained that *"if there is a picture within a paragraph, it helps …..to understand what it talks about"*. Ali (ENG) also had a similar viewpoint as he stated that *"when I see the picture, I have some general information about the paragraph"*. Thus, pictures help students to predict the content of the text.

Skimming and Scanning

Engineering

Engineering male and female students had different opinions. Hiba (ENGG) said that "*I read the whole text…but I will skip only if I have less time*". Faris (ENGG) preferred to read *"the beginning of the paragraph"* in order to *"understand the whole paragraph"*.

Biology

Female student Rahma (BIO) preferred skimming as she said that "*usually, I just take the idea of the text"*. Male student Said (BIO) preferred scanning for main idea of the paragraphs. He commented that he preferred to read the "*first few lines"* of each paragraph.

English

English students; both males preferred skimming. Ali (ENG) asserted that, "*I would read all; maybe if it's not something new for me, I will read only main idea*". Also, Ahmed (ENG) preferred to *"to read it all….just to see the most important".*

Business Studies

Business studies female students had a similar opinion. Maryam **(**B.S.) stated that she *"liked to read the whole thing"*. Similarly, Fatma (B.S.) preferred to "read *all"* of the information presented in the text.

I.T.

I.T. male and female students preferred skimming. Hamid (I.T.) pointed out that he would "*read the whole thing*". In addition, Salma (I.T.) asserted that "*I prefer to read the whole thing to know what it is talking about"*.

Background knowledge

Engineering

Engineering male and female students stated that their background knowledge of the previous courses enabled them to "*make a relation*" with what they have studied before. Hiba (ENGG) asserted that, "*sometimes, when I read, if it is related to the previous*

things I have read, I can make a relation between them, I think of what I have read before". Faris (ENGG) explained by giving an example "*in physics, they taught us force, gravity…and we are studying it in applied mechanic…because all courses are connected"*.

English

English students, both male and female said that background knowledge of previous courses helps them to develop their reading skills. Ali (ENG) ascertained that with help of background information, "*vocabulary is easy…..maybe I have read about the topic"*. Similarly, Ahmed (ENG) added that his knowledge of vocabulary helps him to read and understand the text.

Biology

Biology male and female students commented that their background knowledge was helpful to a certain extent. Said (BIO) felt that the background knowledge "*helps but not too much….because school and college are different*". On the other hand, Rahma (BIO) indicated that *"once you remember something related to it, you can just assume the meaning".*

Business Studies

Business studies female students felt that knowledge of previous courses was not very helpful. Fatma (B.S) stated that background knowledge was *"helpful to a certain extent"* . Maryam (B.S.) added that background knowledge of previous courses helped her *"to understand some topics*".

I.T.

I.T. male and female students said that their background knowledge of previous courses was helpful. When Hamid (I.T.) was questioned about whether background knowledge aided in the comprehension of the current course, he stated that *"yes…. Microsoft is easy for me now…as I studied it before"*. Also, Salma (I.T.) said that knowledge gained from previous courses *"helps me too much"*. She elaborated, "*when I use my computer, it's easy to use some buttons….but I didn't know about the button".*

4.4.2.2 Cognitive Strategies

Male and female students were interviewed about cognitive strategies, which ranged from comprehension of different /difficult words in a text, adjusting the speed, strategies for loss of concentration to visualising the information.

Comprehension of different /difficult words in a text

Biology

Biology male student and female student stated that they would re-read the text a number of times to understand the meaning of different words. Rahma (BIO) asserted that, "*first of all, I try to understand just by reading the whole sentence. Sometimes, when you don't understand just one word, you get the meaning just by reading the whole*". Said (BIO) had a similar opinion and commented that, "*I read again, one or two times, and then understand*".

English

Both English students were males. They stated that they would search for a synonym, translate the word, or ask someone to find the meaning of the difficult word. Ahmed (ENG) said that if he encountered a difficult word, "*I tell my teacher I don't understand, and he gives me another synonym"*. Besides this, he would translate the word. Similarly, Ali (ENG) stated that he would translate the word, or *"I ask some friend or teacher"*.

Engineering

Hiba (ENGG) had a different approach, which she used to comprehend difficult words/text. She illustrated that "*I will underline the difficult words, then I will go to the translation, after that, I will read it twice and I will understand it*". Mohammed (ENGG) and

Abdullah (ENGG) stated that they would translate the word. In contrast, Faris (ENGG) preferred to use context clues as he would "*read before the word…..after the word…and see what the result can be?"*

I.T.

I.T. male and female students had different opinion about guessing meanings of different words. Hamid (I.T.) responded *"sometimes, I use a translator"*. In other cases, he would ask his teacher. On the other hand, Salma (I.T.) preferred to use context clues, so she "*read the sentence before the word to understand the meaning"*.

Business Studies

Fatma (B.S.) mentioned that when faced with such difficult text / word, "*I will try to read it more than one time; again, and again till I get the information*". On the other hand, Maryam (B.S.) said *"I will ask the teacher".* In other situations, she would *"write the word and check when I go home"*.

Adjusting the Speed

English

Both male students rated their reading speed as average. Ali (ENG) said that his reading speed was "*maybe in the middle because, I like to focus on what I'm reading"*.

Ahmed (ENG) had a similar view, as he said that his reading speed was *"not fast…not slow".*

I.T.

I.T. female student Salma (I.T.) stated that her reading speed was *"average"*. She said *"I don't like to read fast".* Furthermore, another perception was added by Hamid (I.T.), "*When I read slowly, I remember more and understand*".

Biology

Biology male and female students had different approaches towards reading. Rahma (BIO) stated that for her, the speed is dependent on the content that is being read, "*it depends on what I'm reading*". Said (BIO) said that, "*if I want to read the paragraph for the first time, I read it quickly*". He added that his reading speed was *"fast"* as he preferred to skim the text. In contrast, Rahma (BIO) commented that she would read slowly as there are technical words in the text.

Business Studies

Business studies female students stated that their reading speed depended on the familiarity of the text. Fatma (B.S.) mentioned that, "*in English, it's in the middle …. not very fast, not very slow…sometimes, when I know the text more than one time, I read it*

fast". A similar perception was shared by Maryam (B.S.), "*my reading speed, depends on the word…if I read the text before, I can read fast*".

Engineering

Engineering male and female students stated that their reading speed was slow. Abdullah (ENGG) pointed out that "*of course slow……because if I read very fast, I don't understand anything*". Faris (ENGG) said that "I read slow". Also, Hiba (ENGG) stated that *"when I read, I will read it slowly…..to understand the text. Then my speed will increase"*. In contrast, Mohammed (ENGG) reasoned that "*it depends on the paragraph, if I am familiar with the language, I read fast…… if it's new, I read slowly*".

Strategies for Loss of Concentration

Engineering

When inquired about this strategy, engineering male and female students mentioned that they preferred to take a break from reading in order to avoid loss of concentration. While asking Mohammed (ENGG), he ascertained that, "*I take a break for 2 minutes, not reading; just thinking about the topic and then I continue*". Similarly, Abdullah (ENGG) stated that "*if I feel very tired, maybe I drink something……after that, I feel fresh……then I can focus*". Hiba (ENGG) also mentioned the same approach of taking break when losing concentration *"if I'm at home, I will go outside and relax"*, but in a classroom situation, she re-reads the text as "*it helps to make us understand more*".

Faris (ENGG) established another manner by which concentration can be regained, "*sometimes I'm acting as if I'm reading it to some people…then I try to concentrate; I even read it in a little loud voice to understand the word to focus more, I imagine myself in front of people, how would they understand me when I'm reading*".

English

Both English students were males, but they had different approaches. Ahmed (ENG) commented that students lose concentration "*if the topic does not have connection with the student, or the student doesn't like the topic; it's too long for them*". Ali (ENG) on the other hand, felt that *"if I read the paragraph before coming to class, its better".* His approach to avoid loss of concentration was that he *"would read the first few sentences of each paragraph"*.

Biology

Biology male student preferred to focus and read the text a number of times. Said (BIO) felt that "*it's not easy to concentrate too much*", and because of new language and words "*it's difficult to concentrate*". In contrast, Rahma (BIO) was in favour of highlighting information in the text. In order to concentrate, Rahma (BIO) said that *"I highlight information…then underline each and every single sentence".*

Business Studies

Business studies female student Maryam (B.S.) said that *"I will try to understand…or draw a picture of the text"*. On the other hand, female student Fatma (B.S.) commented that, "*when I lose my concentration in the reading …….I read it aloud to come back*" and focus on the text.

I.T.

I.T. male and female students had different opinions about the strategy. Salma (I.T.) highlighted that when facing issues with concentration "*I think I will not read it…but if it's important, I should meet my teacher to understand*". On the other hand, Hamid (I.T.), while facing concentration issues stated that "*I try to focus more as I don't want to waste time in class*".

Visualising the Information

Business Studies

Business studies female students Fatma (B.S.) and Maryam (B.S.) stated that they did not use visualize information. Fatma (B.S.) added that "*as our study is about marketing, ……we don't need to imagine things*".

Biology

Biology male and female students practiced visualization of information as they found it helpful. Rahma (BIO) asserted that, "*sometimes, but most of the time they are just giving you the name, and then you have to explain every single thing; so you need to imagine how it actually looks like*". Thus, visualisation in the case of Rahma (BIO) aids in the better explanation of things. Also, Said (BIO) found visualization of information is useful "*for some topics, you must describe in detail".*

Engineering

Engineering male and female students gave importance to visualizing information because often, they are given the name of an equipment, and are asked to write a description of it. Faris (ENGG) acknowledged that imagining the information helps to remember it more by giving an example "*for example, you say there is a washing machine……..the height of the machine is …….it is cylindrical in shape….I can imagine it*". Similarly, female student Hiba (ENGG) said that it was helpful "*in some cases if the topic is about machines*". Also, Mohammed (ENGG) felt that it helped him "*as he could imagine and write in more details*". And Abdullah (ENGG) had a similar opinion as he found this strategy "*very helpful"*.

I.T.

I.T. male and female students found visualization of information as a helpful technique. Salma (I.T.) when asked about the importance of visualisation asserted that, "*I think majority of students do this because, it's easy for them to remember the stories and imagine*". But Hamid (I.T.) practiced this strategy "*sometimes….when I have to describe part of a computer*".

English

English students were males, and had a different opinion. In their view, visualising information was not helpful to them unless they had some background information of the topic. Ali (ENG) admitted that visualization of information was helpful "*if I know the topic*". While Ahmed (ENG) claimed that it was helpful "*sometimes"*.

4.4.2.3 Support Strategies

Male and female students were interviewed about various support reading strategies which ranged from translation to Arabic, taking notes, reading aloud, and highlighting the text.

Translation to Arabic

Engineering

Engineering male students had different opinions about translation of words to Arabic. Faris (ENGG) commented that he translated words *"sometimes...because actually I learnt a lot about words...so sometimes I translate"*. Other students gave their opinion about problems related to translation. Mohammed (ENGG) added that *"when we translate from English to Arabic, it does not give exact meaning"*. Abdullah (ENGG) stated that, "*when we translate a word, it gives us lots of options, but I think of which one is the correct word*". Female student Hiba (ENGG), had a similar opinion as she said that "*I have to experiment with translation, as sometimes, it gives more words as compared to one word…..according to the word, I take the best one related to that".*

Business Studies

Business studies female students had similar opinions about translating words into Arabic. Maryam (B.S.) stated that she translated words into Arabic *"sometimes….when I find it difficult".* When asked about if translated words or sentences, she replied *"words".* On the other hand, Fatma (B.S.) said that if she is unable to guess meaning of the word, then *"I will go to translation"*. As for problems related to translation of words, she felt that "*you have to be careful. When I translate in Arabic, I find the meaning does not match with the text"*.

English

English students, both males preferred to translate when the word is difficult. Ahmed (ENG) admitted that, "*yes I do this in the beginning when I don't know anything, I want to learn… I translate to Arabic*". When asked about the reason for translating to Arabic, Ali (ENG) asserted that, "*when the word is very difficult, and I can't get the meaning*".

Biology

Biology male and female students had different opinions. Said (BIO) supported the translation process by stating that, "*yes, I find translation helpful; when I translate in Arabic, I understand what the information is about*". In contrast, Rahma (BIO) pointed out that, "*our language is different from the English language…so you don't get the exact meaning if you want to translate*".

I.T.

I.T. male and female students had different opinions about translation. Salma (I.T.) commented that, "*it's easy for me to understand when I translate words in Arabic*". But male student Hamid (I.T.) stated that, "*sometimes I have problems when I translate words because, they come with many meanings*".

Taking Notes

Biology

Biology male and female students had different opinion about taking notes. Female student Rahma (BIO) was in favour of taking notes and claimed that notes are usually a summary of the document being scrutinised, "*Yes, it's a summary as I write the whole thing*". On the other hand, male student Said (BIO) said that he would take notes *"if I think something is important".*

Business Studies

Business studies female students were not in favour of taking notes. Fatma (B.S.) asserted that, "*I do not take notes normally, only sometimes as I save for the definition of the word that I don't know the meaning…. I write only the meaning of the word, but I don't write any description of the text or something*". Fatma (B.S.) believed that taking notes leads to better retention of information. But, Maryam (B.S.) did not take notes as she felt *"everything is important".*

English

English students, both males were in favour of note taking. Ali (ENG) took notes of *"important information….maybe vocabulary…..new words to check out later"*. Also,

Ahmed (ENG) said that he "*summarised the sentences in the form of notes*". So, before exams, when "*I want to study fast, I see these notes".*

I.T.

I.T. male and female students were in favour of taking notes. Hamid (I.T.) said that taking notes "*helps me to remember important information*". Salma (I.T.) had a similar view as she would take notes "when *something is important*".

Engineering

Engineering male students were in favour of taking notes. Mohammed (ENGG) asserted that he took notes of "*important words, or sentences, or something I don't understand which I will check latre".* Similarly, Abdullah (ENGG) said that he took notes of *"important information*". Faris (ENGG) took notes of *"definitions…. important information; for example, comparison between two things….so I know this will help me later on"*. But, female student Hiba (ENGG) did not take notes as she said that *"we have only handouts and it summarizes information in the book".*

Reading Aloud

Engineering

Engineering male and female students preferred to read aloud as it helped them to *"remember"*. Mohammed (ENGG.) when asked about the reading aloud, commented that, *"it helps as you can focus on all words".* He added that the technique helped him in memorization of the information as "*I remember I read this word in some book*". Faris (ENGG.) acknowledged the same viewpoint, "*Yes, because when we read it loudly, we can remember that I read this phrase,…..it helps me*". Female student Hiba (ENGG) felt that reading aloud was helpful as she was able "to remember many things…focus on the topic".

I.T.

I.T. male and female students were in favour of reading aloud. Salma (I.T.) asserted that, "*yes. I like to read in front of a mirror or someone, it helps to read aloud to remember things*". Ahmed (I.T.) admitted that, "*Yes, when I need to understand the information, it helps me to remember; it's easy because if you are loud, it's easier to understand and save*".

English

English students, both male students were in favour of reading aloud. Ahmed (ENG) stated that reading aloud is helpful as *"it helps to remember what my teacher said".* Similarly, Ali (ENG) also found this technique helpful in remembering information.

Business Studies

Business studies female students were in favour of reading aloud as it helped them to memorize information. Fatma (B.S.) mentioned that, "*Yes when I study for my exams, I read aloud; and also when I face difficulty, I try to read it aloud, so I can get the information; also when I lose my concentration in the reading I read it aloud to come back*". She further elaborated that reading aloud helps to formulate connections with something previously read. Also, Maryam (B.S.) acknowledged that, "*when I have exam I like to read loudly…to save more*", which roughly translates to retention of the information.

Biology

Biology female student did not read aloud frequently. Rahma (BIO) explained that reading aloud was pursued "*only sometimes…when I'm feeling the words I can't think"*. Also, she added that in some cases *"sometimes*…*when I feel sleepy*" as it helped her to

concentrate. In contrast, the male student was in favour of this strategy. Said (BIO) claimed that, "*I use this because it helps me too much…I know everything*", signifying that it helps in the memorisation of the information.

Underline or Highlight the Text

Business Studies

Business studies female students were in favour of underlining or highlighting information in the text. Fatma (B.S.) asserted that highlighting is used to classify, "*the meaning of something, the definition or the formula if we have……. also, if we have some important points on something like dates, time; these are the things that I have to remember, so when I come back to my book it will help me*". Thus, for Fatma (B.S.), it is a process that marks the information as significant. When Maryam (B.S.) was asked about the highlighting or underlining information, she stated that, "*sometimes, some information*" is highlighted and she underlined information as it "*makes it easier for me to understand, so I underline it*".

Biology

Biology male and female students had different opinions about highlighting or underlining information. Female student Rahma (BIO) mentioned that, "*I highlight each and every single word*". But male student Said (BIO) stated that, "*If I think something is important, I will underline*".

I.T.

I.T. male and female students practiced the strategy of highlighting or underlining information. When asked about the reasons for highlighting or underlining, Hamid (I.T.) asserted that underlining is used to highlight, "*important words, new words*". Also, Salma (I.T.) said that she highlighted *"an example, or name of someone….and some points I think are important such as advantages and disadvantages".*

Engineering

Engineering male and female students were in favour of underlining or highlighting information. Female student Hiba (ENGG.) emphasized that, "*I would underline the key words*". Male students gave different reasons for highlighting or underlining information. Abdullah (ENGG) asserted that only those things are highlighted, "*things I don't understand, to check after class*", so that, "*I don't read everything again, I read whatever I have underlined as this information is very important*". While Mohammed (ENGG) said that, "*I underline important things, difficult words*" because, "*it helps me as I know what's important……. what I need to focus on, especially new vocabulary, which I have highlighted…. if I have less time, like before exam I know what to focus on*". Faris (ENGG) moreover, added that, "*I underline definitions, important information; for example, comparison between two things, so I know this will help me later on*".

English

English male students were in favour of highlighting information. Ali (ENG) said that he highlighted *"important information in a text".* Ahmed (ENG) stated that he highlighted *"difficult words or information which comes in the exam"* so that *"when I read text again, I know this is important to see and understand"*.

4.4.3 Learners' Self- perceived Level of Language Proficiency Across Disciplines

Table 4.34 below provides details of learners' self-perceived level of proficiency of the participants.

Table 4.34 Learners' Self-perceived Level of Proficiency

Pseudonym	Specialization	English Proficiency
Ali	English (ENG)	Average
Ahmed	English (ENG)	Average
Rahma	Biology (BIO)	Average
Said	Biology (BIO)	High
Salma	I.T.	Highest
Hamid	I.T.	Average
Faris	Engineering (ENGG)	Average
Hiba	Engineering (ENGG)	Low
Mohammed	Engineering (ENGG)	Average
Abdullah	Engineering (ENGG)	Average
Fatma	Business Studies (B.S.)	Average
Maryam	Business Studies (B.S.)	Average

As we can see from table 4.37, out of twelve students, nine students rated their English proficiency as average. Two students had rated their level of proficiency as high and highest. However, only one student had rated his / her proficiency as low.

4.4.3.1 Metacognitive Strategies: All Disciplines (Average Group):

As seen in table 4.37, nine students had rated their English proficiency as average. These students belonged to English, biology, I.T., engineering and business studies departments. They were interviewed about various metacognitive strategies, which ranged from preview of text, typographical aids, use of tables, skimming and scanning to background knowledge.

English

There were two students from English discipline. When questioned about preview of text, Ali (ENG) mentioned that *"I read the title or the heading…I see how many paragraphs it has.....or maybe it has a picture*". In contrast, Ahmed (ENG) had a different approach about which he claimed, "*before I start reading, first, I see the topic and imagine what it talks about".*

Both students stated that they found typographical aids such as information in bold or italic helpful. Ali (ENG) commented, *"maybe it has important information such as email in italics, we can check it*". On the other hand, Ahmed (ENG) stated that information presented in bold or italics *"helps me to write notes".*

Also, the students were in favour of pictures in a text. Ahmed (ENG) said *"if there is a picture with paragraph, it helps to understand what it talks about"*. Ali (ENG) also had a similar viewpoint as he stated, *"when I see the picture, I have some general information about the paragraph"*.

Furthermore, the students had different preferences towards skimming and scanning. Ali (ENG) claimed that, "*I would read all; maybe if it's not something new for me, I will read only the main idea*". On the other hand, Ahmed (ENG) preferred to *"to read it all…. just to see the most important".*

Also, the students stated that their background knowledge helped them in reading comprehension. Ali (ENG) ascertained that with help of background information, "*vocabulary is easy…..maybe the topic I have read about it"*. Similarly, Ahmed (ENG) added that his knowledge of vocabulary helps him to read and understand the text.

Biology

Rahma (BIO) was in favour of preview of text as she preferred to "*look at the title…….and just try to pick up some words to get information about what I'm going to read*". As for typographical aids such as information in bold or italic*,* Rahma (BIO) felt that this type of information was not helpful "*as everything is important".*

She felt that pictures in a text are helpful as "*when you are looking at the pictures, you are able to connect what you have read and what you are seeing*". When asked about her preferences towards skimming and scanning, Rahma (BIO) asserted, "*usually, I just take the idea of the text"* as she would read the whole text.

According to Rahma (BIO), background knowledge of previous courses was an asset as *"once you remember something related to it, you can just assume the meaning".*

I.T.

Hamid (I.T.) stated that before reading, he focussed on new words and length of the text as he posited that, *"I see new information; I notice the number of paragraphs.....and also the new words*". As for typographical aids such as information in bold or italics, Hamid (I.T.) considered it important as he felt that *"as it's in bold…. it's important to see".* Also, he felt that tables, figures and pictures in a text are helpful as *"it helps to understand information quickly*". When asked about his preferences towards skimming and scanning, Hamid (I.T.) said that he would "*read the whole thing*". Also, he believed that background knowledge aided in the comprehension of the current course as he stated that *"yes…. Microsoft is easy for me now…as I studied it before"*.

Engineering

There were three students representing engineering in the average group: Faris, Mohammed and Abdullah. All students had different approaches to preview of text. Mohammed (ENGG) stated that *"I try to guess the main idea in my mind…. then I read important things"*. On the other hand, Faris (ENGG) said that *"I pay attention to the picture"* in the text. He supported his approach by saying *that "you can understand many things from the picture…then while reading, it will be easy to understand".* In contrast, Abdullah (ENGG) did not preview text before reading.

Also, all students had different views towards typographical aids. Mohammed (ENGG) pointed out that information presented in bold or italic *"helps the student as he knows what to read"*. Faris (ENGG) commented, "*it helps us to understand that this paragraph will focus on this information"*. On the other hand, Abdullah (ENGG) did not pay attention to information in bold or italics.

The students spoke in favour of use of tables, figures and pictures in a text. Faris (ENGG) mentioned that charts or tables help him to "*differentiate about 2 things…….to compare.".* On the other hand, Mohammed (ENGG) was in favour of charts or tables as he mentioned that, "*when we read this, we see words and numbers, it's organized…so it is easier to read*".

The students practiced skimming and scanning. Mohammed (ENGG) said that *"the main idea is sometimes not clear….so you need to read the whole text".* Abdullah (ENGG) felt that "the *main idea is very important…I need to read the whole paragraph and understand"*. However, Faris (ENGG) preferred to read *"the beginning of the paragraph"* in order to *"understand the whole paragraph"*.

All students spoke in favour of advantage of background knowledge in reading comprehension. Mohammed (ENGG) pointed out that background knowledge helps "*sometimes with machines and workshop courses*" while Abdullah (ENGG) shared his viewpoint that "*it helps to provide continuity for future studies".* Faris explained that background knowledge was very helpful *"because all courses are connected……physics is connected to maths…same thing for chemistry".*

Business Studies

Business studies students had different approaches to preview of text. Fatma (B.S.) commented, "*I will see the length of the text, and then I will try to see in general if there are any complicated words*". Maryam (B.S.) had a different viewpoint and commented that, *"first of all, I read the main idea of each paragraph…secondly, I will select difficult words because it helps me*".

The students felt that information presented in bold or italics was helpful. Fatma (B.S.) observed that, *"if there is something like that, I will definitely know that it's something important; I have to focus on that thing to know and understand it more"*. Moreover, Maryam (B.S.) also resonated with the same ideology and mentioned that, *"I think sometimes, these bold words will be easier for students to understand"*.

Regarding information presented in pictures, charts and tables, Fatma (B.S.) commented that this type of information was helpful *"as most of the time, they are numbers, and it will be helpful if we use it on the particular subject".* Maryam (B.S.) had a similar opinion as she said that *"if the books have pictures…. this kind of reading helps students to understand"*.

Both students were in favour of scanning information given in the text. Maryam **(**B.S.) stated that she *"liked to read the whole thing"* and Fatma (B.S.) preferred to "*read all"* of the information presented in the text.

4.4.3.2 Cognitive Strategies: All Disciplines (Average Group)

The students were interviewed about various cognitive strategies, which ranged from comprehension of different / difficult words, adjusting the speed, strategies for loss of concentration and visualizing the information.

English

Ahmed (ENG) said that if he encountered a difficult word, "*I tell my teacher I don't understand, and he gives me another synonym"*. Besides this, he would translate the word. A similar approach was used by Ali (ENG) who stated that he would "*translate the word*" or *"I ask some friend or teacher"*.

Regarding reading speed, both students had similar views. Ali (ENG) said that his reading speed was "*maybe in the middle because, I like to focus on what I'm reading"*. Ahmed (ENG) had a similar view as he said that his reading speed was *"not fast…not slow".*

Both students experienced loss of concentration while reading. Ahmed (ENG) commented that students lose concentration "*if the topic does not have connection with the student, or student doesn't like the topic; it's too long for them*". Ali (ENG) on the other hand felt that *"if I read the paragraph before coming to class, its better".* His approach to avoid loss of concentration was that he *"would read the first few sentences of each paragraph"*.

As for visualization of information, the students found it a useful strategy to a limited extent. Ali (ENG) said that visualization of information was helpful "*if I know the topic*"; while Ahmed (ENG) said that it was helpful "*sometimes"*.

Biology

When encountered with a difficult word in the text, Rahma (BIO) asserted that, "*first of all, I just try to understand just by reading the whole sentence, sometimes when you don't understand just one word, you get the meaning just by reading the whole sentence*".

As for reading speed, Rahma (BIO) stated that for her, the speed is dependent on the content that is being read, "*it depends on what I'm reading*". In order to avoid loss of concentration, Rahma (BIO) stated that she "highlighted *information and then underlined each and every single sentence".*

Rahma (BIO) considered visualization of Information. She asserted that, "*most of the time, they are just giving you the name, and then you have to explain every single thing; so you need to imagine how it actually looks like*".

I.T.

When asked about strategy / strategies used to comprehend difficult words in a text, Hamid (I.T.) stated that *"sometimes I use a translator"*. As for reading speed, Hamid (I.T.) said that "*when I read slowly, I remember more and understand*". Thus, he preferred to read slowly.

Regarding strategies used to avoid loss of concentration, Hamid (I.T.) stated that "*I try to focus more as I don't want to waste time in class*". As for visualization of information presented in text, Hamid (I.T.) practiced this strategy "*sometimes…. when I have to describe part of a computer*".

Engineering

There were three students representing engineering discipline. When asked about the approach they took to comprehend difficult words in a text, Mohammed (ENGG) and Abdullah (ENGG) stated that they would translate the word. In contrast, Faris (ENGG) preferred to use context clues as he would "*read before the word…. after the word…and see what the result can be".*

All students had different reading speed. Faris (ENGG) said that *"I read slow".* Abdullah (ENGG) pointed out that "*of course slow……because if I read very fast, I don't understand anything*". In contrast, Mohammed (ENGG) reasoned that "*it depends on the paragraph, if I am familiar with the language, I read fast…… if it's new, I read slowly*".

When asked about strategies, which they took to avoid loss of concentration, Mohammed (ENGG), ascertained that, "*I take a break for 2 minutes, not reading, just thinking about the topic and then I continue*". Similarly, Abdullah (ENGG) claimed that "*if*

I feel very tired, maybe I drink something……after that I feel fresh……then I can focus". On the other hand, Faris (ENGG) established another manner by which concentration can be regained by using his imagination as he said that "*sometimes I'm acting as if I'm reading it to some people…then I try to concentrate".*

All students considered visualization of information useful. Faris (ENGG) ascertained that imagining the information helps to remember it more by giving an example "*for example, you say there is a washing machine……..the height of the machine is …….it is cylindrical in shape….I can imagine it*". Also, Mohammed (ENGG) felt that visualization helped him "*as he could imagine and write in more details*". And Abdullah (ENGG) had a similar opinion as he found this strategy "*very helpful"*.

Business Studies

Fatma (B.S.) said that when faced with a difficult text / word, "*I will try to read it more than one time; again and again till I get the information*". On the other hand, Maryam (B.S.) said that *"I will ask the teacher".* In other situations, she would *"write the word and check when I go home"*.

Both students had different speeds. Fatma (B.S.) mentioned that, "*in English, it's in the middle …. not very fast not very slow…sometimes, when I know the text, I read it*

fast". A similar perception was shared by Maryam (B.S.), "*my reading speed, depends on the word…if I read the text before, I can read fast*".

In order to overcome loss of concentration, Fatma (B.S.) said that, "*when I lose my concentration in the reading I read it aloud to come back*" while Maryam (B.S.) said that *" I will try to understand…or draw a picture of the text"*.

4.4.3.3 Support Strategies: All Disciplines (Average Group)

The students were interviewed about support strategies which ranged from translation to Arabic, taking notes, reading aloud, and highlighting the text.

English

The students were in favour of translation to Arabic. Ahmed (ENG) admitted that, "*yes I do this in the beginning when I don't know anything, I want to learn… I translate to Arabic*". When asked about the reason for translating to Arabic, Ali (ENG) asserted that, "*when the word is very difficult and I can't get the meaning*".

Both students practiced note taking. Ali (ENG) took notes of *"important information…. maybe vocabulary…. new words to check out later"*. On the other hand, Ahmed (ENG) said that he "*summarised the sentences in the form of notes*". So, before exams, when "*I want to study fast, I see these notes".*

Another strategy, which was considered useful by the students, was reading aloud. Ahmed (ENG) stated that reading aloud is helpful as *"it helps to remember what my teacher said".* Similarly, Ali (ENG) also found this technique "*helpful"* in remembering information.

The students also considered highlighting information in a text useful. Ali (ENG) said that he highlighted *"important information in a text".* In addition, Ahmed (ENG) stated that he highlighted *"difficult words or information which comes in the exam"* so that *"when I read the text again, I know this is important to see and understand"*.

Biology

Translation to Arabic was not considered a useful strategy. Rahma (BIO) asserted that, "*our language is different from the English language…so you don't get the exact meaning if you want to translate*".

The student took notes while reading. Rahma (BIO) claimed that notes are usually a summary of the document being scrutinised, "*Yes, it's a summary as I write the whole thing*".

Reading aloud was strategy, which was practiced occasionally by the student. Rahma (BIO) mentioned that reading aloud was pursued "*only sometimes…when I'm*

feeling the words I can't think". Also, she added that in some cases *"sometimes…when I feel sleepy*" as it helped her to concentrate.

Highlighting information in the text was also considered beneficial. Rahma (BIO) mentioned that, "*I highlight each and every single word*".

I.T.

Hamid (I.T.) was not in favour of translation to Arabic because "*sometimes I have problems when I translate words because, they come with many meanings*". He was in favour of note taking as it helped him "*to remember important information*".

Reading aloud was a useful strategy as it helped in memorization. Hamid (I.T.) concluded that, "*Yes, when I need to understand the information, it helps to remember; it's easy……..because if you are loud, it's easier to understand and save*". He added that he underlined information highlight, "*important words, and new words*".

Engineering

There were three students in this discipline. All of them had different views regarding translation. Faris (ENGG) said that he translated *"sometimes because, actually I learnt a lot about words...so sometimes I translate"*. Other students raised problems related to

translation. Mohammed (ENGG) told, *"when we translate from English to Arabic, it does not give exact meaning"*. Similarly, Abdullah (ENGG) stated that, "*when we translate a word, it gives us lots of options, but I think of which one is the correct word*".

All the students spoke in favour of taking notes. When asked about the kind of information written in notes, Mohammed (ENGG) asserted that, "*important words, or sentences, or something I don't understand which I will check later".* Similarly, Abdullah (ENGG) said that he took notes of *"important information*". Faris (ENGG) took notes of *"definitions…. important information for example comparison between two things….so I know this will help me later on"*.

Mohammed (ENGG.) when asked about the reading aloud, commented that, *"it helps as you can focus on all words".* He added that the technique helped him in memorization of the information as "*I remember I read this word in some book*". Faris (ENGG.) acknowledged the same viewpoint, "*Yes, because when we read it loudly, we can remember that I read this phrase...it helps me*". However, Abdullah (ENGG) said that *"reading loudly…you can speak the word",* which meant it helps in pronunciation.

Abdullah (ENGG) asserted that only those things are highlighted, "*things I don't understand, to check after class*", so that, "*I don't read everything again, I read whatever I have underlined as this information is very important*". While Mohammed (ENGG) said

that, "*I underline important things, difficult words*" because, "*it helps me as I know what's important, …….what I need to focus on, especially new vocabulary which I have highlighted,…. if I have less time, like before exams, I know what to focus on*". Faris (ENGG) moreover, asserted that, "*I underline definitions, important information; for example, comparison between two things, so I know this will help me later on*".

Business Studies

When asked about translation to Arabic Maryam (B.S.) stated that she translated words into Arabic *"sometimes….when I find it difficult".* On the other hand, Fatma (B.S.) said that if she is unable to guess the meaning of the word, then *"I will go to translation"*.

Both students had different views towards note taking. Fatma (B.S.) asserted that, "*I do not take notes normally, only sometimes, as I save for the definition of a word that I don't know*". Fatma (B.S.) believed that taking notes leads to better retention of information. In contrast, Maryam (B.S.) did not take notes as she felt *"everything is important".*

Reading aloud was considered a useful strategy by the students. Fatma (B.S.) mentioned that, "*Yes when I study for my exams, I read aloud; and also, when I face difficulty, I try to read it aloud, so I can get the information; also, when I lose my*

concentration in the reading, I read it aloud to come back". She further elaborated that reading aloud helps to formulate connections with something previously read. Maryam (B.S.) mentioned that, "*when I have an exam, I like to read loudly…to save more*", which roughly translates to retention of the information.

When questioned about the reasons highlighting of information, Fatma (B.S.) asserted that highlighting is used to classify, "*the meaning of something, the definition or the formula if we have,……. also if we have some important points on something like dates, time; the things that I have to remember so when I come back to my book it will take me*". Thus, for Fatma (B.S.), it is a process that marks the information as significant. On the other hand, Maryam (B.S.) stated that she practiced this strategy, "*sometimes, ……some information*" is highlighted as the process to "*makes it easier for me to understand, so I underline it* ".

4.4.3.4 Metacognitive Strategies: Low, High and Highest Proficiency Students

Out of twelve students who had participated in the interviews, there were only three students who rated their level of proficiency as high (Bio), highest (I.T.), and low (engineering). Table 4.35 presents metacognitive strategy preferences of these students.

Table 4.35 Metacognitive Strategy Preferences of Low, High and Highest Proficiency Students

	I.T. (highest)	**Bio (high)**	**Engineering (low)**
Preview of Text	preferred to *"notice the title…..if it's interesting or not"*	"*sometimes"* focused on the length of text	did not preview text
Typographical Aids	"*when I see information in bold, I think that it is more important to know about that word"*	"*sometimes"* paid attention to such kind of information	information presented in bold or italics "*looks attractive so we will pay attention it*"
Tables, Figures and Pictures	"*if they give bar chart or table, then it will be easy for me to study*".	" *because some teachers don't speak that much so we need to look at the picture*".	"*tables and charts helps us to summarize the idea in book or handout"*
Skimming and Scanning	*"I prefer to read the whole thing to know what it is talking "*	" *first few lines"* of each paragraph	" *I read the whole text…but I will skip only if I have less time*".
Background Knowledge	knowledge gained from previous courses *" helps me too much"*	background knowledge "*helps but not too much….*	"*sometimes, what I read, it is related to the previous things I have read, I can make a relation between them, I think of what I have read before*".

As we can see in the table 4.35 above, metacognitive strategy preferences of students with different proficiencies had similarities and differences. All students were in favor of " *tables, figures and pictures*" and " *skimming and scanning*". However, there were differences in opinions for *"preview of text*", "*typographical aids*" and "*background knowledge*". These findings will be discussed in detail in the next chapter.

4.4.3.5 *Cognitive Strategies: Low, High and Highest Proficiency Students*

Table 4.36 presents cognitive strategy preferences of low, high and highest proficiency students.

Table 4.36 Cognitive Strategy Preferences of Low, High and Highest Proficiency Students

	I.T. (highest)	**Bio (high)**	**Engineering (low)**
Comprehension of Different / Difficult Words in a Text	preferred to use context clues so she "*read the sentence before the word to understand the meaning"*.	"*I read again, one or two time, and then understand*".	"*the difficult words I will underline then I will go to the translation, after that I will read it twice and I will understand it*".
Adjusting Reading Speed	*" I don't like to read fast".*	*if I want to read the paragraph for the first time, I read it quickly*"	" *when I read, I will read it slowly….to understand the text*".
Strategies for Loss of Concentration	"*I think I will not read it…but if it's important, I should meet my teacher to understand*"	"*it's difficult to concentrate*"	re-read the text as "*it helps to make us understand more*"
Visualization of Information	*"I think majority of students do this because it's easy for them to remember"*	useful " *for some topics, you must describe in detail".*	it was helpful " *in some cases if the topic is about machines*"

Cognitive strategy preferences of students with different reading proficiencies in table 4.36 reveals that the students had similar preferences for "comprehension *of different / difficult words in a text*" and "*adjusting reading speed*". However, there were differences in opinions of students for "*strategies for loss of concentration*" and "*visualization of information*". These findings will be discussed in detail in the next chapter.

4.4.3.6 Support Strategies: Low, High and Highest Proficiency Students

Table 4.37 presents support strategy preferences of low, high and highest proficiency students

Table 4.37 Support Strategy Preferences of Low, High and Highest Proficiency Students

	I.T. (highest)	**Bio (high)**	**Engineering (low)**
Translation to Arabic	"*it's easy for me to understand when I translate words in Arabic*"	"*yes, I find translation helpful; when I translate in Arabic, I understand what the information is about*"	" *our language is different from English language…so you don't get exact meaning if you want to translate*"
Taking Notes	" *when something is important*".	" if I think something is important"	did not take notes as *"we have only handouts and it summarizes information in the book".*
Reading Aloud	*Yes. I like to read in front of mirror or someone, it helps to read aloud to remember things*"	reading aloud helps in the memorization of the information	" *only sometimes….when Im feeling the words, I can't think….or when I feel sleepy*"
Underline or Highlight the Text	she highlighted *"example or name of someone….some points I think are important such as advantages and disadvantages".*	"*if I think something is important, I will underline*".	"*I would underline the key words*".

From table 4.37 above we can see that support strategy preferences of students with different reading proficiencies had similarities for "*reading aloud*" and "*underline or highlight the text*". However, there were differences for "translation *to Arabic*" and "*taking notes*". These findings will be discussed in detail in the next chapter.

Chapter 5
Discussion & Conclusion

This chapter presents discussion based on the results and findings of the three research questions, which examined the relationships among strategy preferences and discipline, gender and learners' self-perceived language proficiency. Based on the discussion, the pedagogical implications, and suggestions for future research are presented. The chapter ends with limitations and conclusion.

5.1 Introduction

The aim of this study was to investigate Omani EFL learners' awareness and use of cognitive, and metacognitive strategies in a higher educational institution in Oman. The participants of this study were undergraduate learners studying engineering, business studies, I.T., English and biology. Data were collected using Survey of Reading Strategies (SORS) questionnaire and semi-structured interviews. In order to understand the strategy preferences of learners in different disciplines, the three research questions were:

1. Which categories of reading strategies namely cognitive, metacognitive and support strategies do students of different disciplines use?
2. Does gender affect the use of cognitive, metacognitive and support strategies of students of different disciplines?

3. Does learners' self-perceived level of language proficiency affect the use of cognitive, metacognitive and support strategies of students of different disciplines?

5.2 Discussion: Answering the Research Questions

5.2.1 Research Question 1: *Which categories of reading strategies namely cognitive, metacognitive and support strategies do students of different disciplines use?*

In terms of order of preferences for the three categories of SORS, the most frequently used category of reading strategies was cognitive strategies (M=3.75, SD =.58), followed by support strategies (M=3.63, SD =.63) and metacognitive strategies (M=3.37, SD=.50). The findings reveal Omani students' high preference for cognitive strategies. Mokhtari and Sheorey (2002) describe cognitive strategies as "actions and procedures that readers use while working directly with the text" (p.4). Survey results reveal that cognitive strategies such as *"trying to stay focused on reading"*, *"reading slowly*" and "*carefully paying close attention to reading*" were the most preferred strategies of Omani learners.

As an English language instructor, I have observed that Omani EFL learners read at a slower rate, which could be because they focus more on the vocabulary in the text. Findings from this study reveal that Omani learners prefer to use cognitive strategies such as "*paying close attention to reading*", *"reading slowly and carefully*" and "*trying to stay*

focused on reading" when they are reading a text. As a result, they prefer to read slowly and focus on the text. Researchers have found that second language readers whose L1 has a different orthographic system than that of the L2 have been found to spend more time on decoding words rather than comprehension of the text (Al Samdani, 2019).

As compared to cognitive strategies, support strategies were ranked as high usage while metacognitive strategies were ranked as moderate usage. The reason for the difference between support strategies and metacognitive strategies could be that Omani learners found support strategies more useful in order to comprehend a text. Quantitative data analysis revealed Omani learners preferred support strategies such as "*underlining information in text*", and "*thinking about information in both English and mother tongue"*. From my experience as an English language lecturer in Oman and after conducting interviews with students, I have also observed that Omani EFL learners are dependent on one support strategy which is "*translation into Arabic*" in order to study English. This can be seen from the fact that although learners are taught English in school and Foundation program, yet they are not confident about using English and depend on translation for understanding texts in their specializations. Another reason why students depend on translation could be because schoolteachers in Oman use Arabic extensively in English classrooms (Al-Hinai, 2006).

The reason why metacognitive strategies were least preferred by Omani students could be because Omani students find metacognitive strategies such as "*analyzing and*

evaluating what is read", "*confirming predictions*", "*checking how text content fits purpose*" more challenging as compared to cognitive and support strategies. From my experience as an English language lecturer, I have also observed that metacognitive strategies such as "*analyzing and evaluating what is read*" are not taught to the students in the foundation program. These strategies are demanding and thus require additional training for students to know how and when to use them. Therefore, it can be assumed that students were not familiar with them and presumably were not aware of how to use them.

5.2.2 Research Question 2*: Does gender affect the use of cognitive, metacognitive and support strategies of students of different disciplines?*

The second research question explored the impact of gender on strategy preferences of students of biology, English, I.T., business studies and engineering disciplines. The findings of this study reveal that gender did not have a significant impact on strategy use of learners as both male and female students had rated similar preferences for cognitive and metacognitive strategies. One possible reason for the similarity in results could be that these learners had received similar strategy training in the Foundation program in the college. In this college, all the participants study in the Foundation program before joining their specialization courses. Thus, it can be assumed that strategy training in the Foundation program raised their knowledge and awareness of different types of reading strategies. However, a significant difference was seen between male and female students for support strategy preferences as females had ranked support strategies as high use while male students had ranked support strategies

as moderate use. One reason for this difference could be because Omani female students reading proficiency is higher than Omani male students (Alami, 2016). As a result, they gave more importance to support strategies. Another reason for the difference could be the fact that females tend to use more reading strategies than males as observed by previous studies conducted in similar EFL settings such as Poole, 2010; Park, 2010; and Alami, 2016.

To conclude, quantitative data results reveals that many male and female students have ranked various strategies as moderate or high use. Thus, as students are identifying reading strategies through an inventory such SORS, it reveals that students have awareness about these strategies. Furthermore, data from transcripts shows that male and female students were not only aware of but also used various reading strategies.

5.2.3 Research Question 3*: Does learners' self-perceived level of language proficiency affect the use of cognitive, metacognitive and support strategies in reading comprehension of students of different disciplines?*

The last research question investigated the impact of learners' self-perceived level of proficiency on the use of cognitive, metacognitive and support strategies. Based on learners' self-perceived proficiency, the participants were divided into three groups: low group, average group and high group. Statistical tests revealed that there were no significant differences between reading proficiency of the participants on the three scales

of SORS. One possible reason why there were no significant differences between the three groups was because majority of students belonged to average group and high group. So, these students reading proficiency in English was average and high level. Thus, they had knowledge of different reading strategies.

Thematic analysis of interviews revealed interesting findings for learners who had rated their English language proficiency as high, highest and low. Overall, students of different proficiencies had similar preferences for the various cognitive, metacognitive and support strategies about which they were interviewed. However, there were some differences too. One interesting difference was seen for cognitive strategy "*Guessing meaning of unknown words"*. When encountered with a difficult word, low proficiency students preferred to translate the word while high and highest proficiency learners re-read the text or used context clues to infer the meaning of the word. This reveals that students who had rated their English language proficiency as high, and highest were confident about their language skills, so they were not dependent on translation. Therefore, they preferred to re-read the text or use context clues to guess meaning of the word. In contrast, low proficiency student preferred to translate in order to understand the meaning of the word.

Another interesting finding was about support strategy "*Taking notes while reading*" in which students with high and highest proficiency were in favor of taking notes while student with low proficiency was not in favor of the same. In my view, the reason

for this difference could be related to several reasons such as student preferences towards certain strategies, motivation, or specialization (Oxford & Nyikos,1989) rather than their language proficiency. Finally, one common finding in all the interviews was Omani learners of all proficiencies were in favor of "*Translation to Arabic*". Thus, it can be inferred that Omani EFL learners rely on translation in order to understand the English text.

The difference between the findings of qualitative and quantitative data could be because of the number of students who interviewed were few as compared to the number of students who took part in the survey. Also, the students who participated in the interviews had their preferences towards certain strategies as seen from the responses for various strategies.

To conclude, it is difficult to compare the findings of this study with the results of some of the previous studies. This is because when we look at studies conducted in the past, we can note that majority of studies were conducted with participants being divided into high group and low groups based on their language proficiency (Sheorey, Kamimura & Freiermuth, 2008; Block, 1992; Zhang, 2001; Sheorey & Mokhtari ,2001; Malcolm,2009). In my view, studies need to be conducted focusing on the strategy preferences of average learners too as they are equally important as compared to high group and low group learners. Therefore, we need more studies like this that focus on the average learners.

5.3 Pedagogical Implications and Future Research

Based on the findings summarized above several implications and recommendations for future research can be drawn about the cognitive, metacognitive and support strategies used by learners of different disciplines.

5.3.1 Discipline and Students' Use of Cognitive, Metacognitive and Support Strategies

The study identified an important finding about Omani EFL students that cognitive strategies are the most preferred learning strategies among students of biology, engineering, business studies, I.T. and English. Support strategies were the second most preferred category while metacognitive strategies were least preferred by Omani students of different disciplines. The results go hand in hand with the existing literature that has revealed that cognitive strategies are the most preferred strategy of Omani learners (Awadh, 2003; Al Seyabi & Tuzlukova, 2015). Yet, the importance of metacognitive strategies cannot be underestimated. Metacognitive strategies go beyond the cognitive mechanism and provide learners with an opportunity to manage their own learning through: planning, monitoring and evaluating. Researchers have spoken about the positive effects of applying metacognitive strategies in the reading process (Carrell, 1995; Chamot, 2005; Wenden, 2001). Hence, there is a need to help Omani students develop their metacognitive awareness which will enable them to deal with different problems encountered while reading a text.

Another pedagogical implication that emerges from this context is that it is also important that teachers promote strategic reading among EFL learners. The advantage of strategic reading is that readers can detect problems while reading and find alternative solution to fulfil their goals. In this way, cognitive monitoring and repair become an important element of strategic reading. Researchers observe that " an action is strategic as long as it is intentionally chosen from a set of alternative actions on behalf of the reader to attain a specific goal" (Paris et al.,1983; Pressley, Goodchild, Fleet, Zajchowski & Evans, 1989 as cited in Manoli & Papadopoulou, 2012, p.820). Afflerbach et al. (2008) note that strategic readers gain confidence, as they are aware of their ability to monitor and develop their reading which will eventually enable them to succeed. Therefore, in order to make EFL learners independent and successful, it is necessary to teach them how to read strategically.

5.3.2 Gender and Students' Use of Cognitive, Metacognitive and Support Strategies

The second research question which aims to explore strategy preferences of male and female students across disciplines revealed significant findings for this study. Statistical tests revealed interesting results about male and female students of different disciplines. First, cognitive strategies were ranked as high use by males and females in all disciplines. This was followed by metacognitive strategies which were ranked as moderate use by both genders. However, differences were seen for support strategies which were ranked by females as high use and male students as moderate use. In addition, qualitative data analysis revealed that male and female students of different disciplines had their preferences for various strategies.

Based on these findings, the implications of this study can help EFL teachers to gain a realistic understanding of how Omani male and female learners approach a text and the types of strategies they use. It is also recommended that there is a need for more studies to be conducted in Oman to explore strategy preferences of male and female students studying different disciplines. Thus, results of several studies Oman based studies will help to analyze similarities and differences between genders and provide a generalized view.

As Kamran (2013) observes that impact of gender on language use has been a topic of innumerable studies for a long time. In addition, the assumption of female superiority in language learning continues to be a controversial debate. Therefore, some researchers like Ehrman and Oxford (1995) state that male and female learners should be given equal opportunity to learn and develop their skills and not be “pushed into gender-steroetypes set of strategies” (p.379).

5.3.3 Learners’ Self-Perceived Level of Language Proficiency and Use of Cognitive, Metacognitive and Support Strategies

The last research question explored if learners’ self-perceived language proficiency had an impact on their choice of cognitive, metacognitive and support strategies. The implication of the findings of this study reveal that there is a strong relationship between learners’ self-perceived reading ability and their usage of reading strategies. In this study,

both average and high group learners displayed awareness and use of various types of strategies.

In addition, learners of different proficiencies most preferred strategy categories were cognitive strategies and support strategies. On the other hand, metacognitive strategies were rated as moderate use. Based on the findings and implications, the following recommendations can be made for the current study. The importance of metacognitive strategies for EFL learners is an area which needs more focus and attention. Curriculum designers should take the findings of this study into consideration and integrate metacognitive reading instruction in the Foundation and Post-Foundation programs for students of all specializations. As Sheorey and Mokhtari (2001) observe that “teaching students to become constructively responsive readers can be a powerful way to promote skillful academic reading , which will, in turn enhance academic achievement” (p.446). In order to do this, it is important to assess the needs of the learners and plan the courses. In order to do this, the management of the institutions needs to recruit trainers who can guide teachers about the instruction of different metacognitive strategies.

5.4 Limitations of the Study

There were some limitations of the study which might have affected the results. One of the main limitations of the study which emerges is that it was carried out on a group of learners in one higher education institution in Oman. Thus, conducting the same study in

other higher education institutions in Oman would make it possible to generalize the findings of this study.

The second limitation is reliability of the responses in the questionnaire. The students had reported using some strategies yet it is difficult to determine whether they actually use these strategies while reading.

Third, the participants were asked to rate their self-perceived language proficiency. There is a possibility that the learners' self- perceived language proficiency was not accurate. Future researchers can use reading tests focusing on specific strategies such as metacognitive strategies to evaluate the students.

Forth, another limitation of the study is related to the subjects for the interviews. The interview process was conducted with only few subjects, due to which only two subjects were selected from each discipline. Studies conducted in future can increase the number of participants to provide a more in-depth analysis of the preferences of Arab learners.

Fifth, with reference to gender, the number of female students outnumbered male students in all specializations.

Sixth, the participants of the study were students belonging to different specializations and the study focused on the strategies used by these learners while reading English for academic purposes. In future, studies can be conducted to explore strategies used by learners while reading texts related to their specialization. For example, studies can be conducted to explore strategy preferences of engineering students' vs humanities students' while reading subject-specific texts.

5.5 Conclusion

This study has made a significant contribution towards an understanding of cognitive and metacognitive reading strategy awareness and use of Omani EFL learners studying biology, business studies, information technology, engineering and English in a higher education institution in Oman. Based on the findings, this study draws the following conclusions: 1) Omani learners studying different disciplines are aware of, and use various cognitive, metacognitive, and support strategies. 2) There are no significant differences between male and female Omani learners as both had awareness and used various strategies. 3) Omani learners had rated their language proficiency as average and high, yet there were no differences in strategy preferences of both groups.

Although the study has its limitations, yet the findings provide invaluable insight about strategy preferences of Omani learners in various disciplines in Oman. Further studies in this field will strengthen these findings and prove advantageous for learners and teachers.

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Appendix 1

UNIVERSITY OF EXETER

GRADUATE SCHOOL OF EDUCATION

St Luke's Campus
Heavitree Road
Exeter UK EX1 2LU

http://socialsciences.exeter.ac.uk/education/

CERTIFICATE OF ETHICAL APPROVAL

Title of Project: Investigating EFL Learners' Awareness and Use of Cognitive and Metacognitive Reading Comprehension Strategies – A Study of Cross Disciplines in Higher Education Institutions in Oman

Researcher(s) name: Ruhina Ahmed

Supervisor(s): Esmaeel Abdollahzadeh
Philip Durrant

This project has been approved for the period

From: 01/01/2017
To: 01/06/2017

Ethics Committee approval reference:

D/16/17/17

Signature: Date: 16/12/2016
(Dr Philip Durrant, Chair, Graduate School of Education Ethics Committee)

Appendix 2

UNIVERSITY OF EXETER

CONSENT FORM FOR RESEARCH

Title of Research Project

Investigating EFL Learners' Awareness and Use of Cognitive and Metacognitive Reading Comprehension Strategies – A Study of Cross Disciplines in Higher Education Institutions in Oman

Details of Project

My name is Ruhina Ahmed and I am a Doctorate in Education (EdD) at University of Exeter and this research form is part of my EdD.

This research project aims to explore the cognitive and metacognitive reading strategies of students in various disciplines in a higher educational institution in Oman. Reading is an important skill for learners at undergraduate level as they are exposed to different sources. As an English language instructor, I have observed that many ESL/EFL students belonging to various disciplines encounter difficulties with English reading comprehension in spite of learning English language at school and Foundation level too.

This study aims to gain an understanding of how the students cope with the challenges posed by reading in a college setting. Therefore, it aims to examine the cognitive and metacognitive awareness and use of reading strategies of EFL learners studying various disciplines.

Contact Details
For further information about the research /interview data, please contact:

Name: Ruhina Ahmed

Postal address:
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St Luke's Campus
Heavitree Road
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Devon
EX1 2LU
United Kingdom

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If you have concerns/questions about the research you would like to discuss with someone else at the University, please contact my supervisor:
Name: Dr Esmaeel Abdullohzadeh
Postal address:
Baring Court
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Revised December 2014

UNIVERSITY OF EXETER

CONSENT FORM FOR RESEARCH

Telephone: +44 (0) 1392 724716
Email: E.Abdollahzadeh@exeter.ac.uk

Consent

I have been fully informed about the aims and purposes of the project.

I understand that:

- there is no compulsion for me to participate in this research project and, if I do choose to participate, I may withdraw at any stage;
- I have the right to refuse permission for the publication of any information about me;
- any information which I give will be used solely for the purposes of this research project, which may include publications or academic conference or seminar presentations;
- all information I give will be treated as confidential;
- the researcher will make every effort to preserve my anonymity.

…… ……
(Signature of participant) (Date)

…… ……

(Printed name of participant) (Email address of participant if they have requested to view a copy of the interview transcript).

…… ……

(Printed name of researcher) (Signature of researcher)

One copy of this form will be kept by the participant; a second copy will be kept by the researcher. Your contact details are kept separately from your interview data.

Data Protection Notice

"Data Protection Notice - The information you provide will be used for research purposes and your personal data will be processed in accordance with current data protection legislation and the University's notification lodged at the Information Commissioner's Office. Your personal data will be treated in the strictest confidence and will not be disclosed to any unauthorised third parties. The results of the research will be published in anonymised form."

Appendix 3

Re: Survey of Reading Strategies (SORS)

Kouider Mokhtari <kmokhtari@uttyler.edu>

Sun 1/24/2016 11:54 PM

To Ahmed, Ruhina <ra299@exeter.ac.uk>;

Hi Ruhina—

Thanks for your interest I using SORS in your research. As authors, we are pleased to grant you permission to do so, as long as you use it as-is. If you intend to modify the instrument in any significant way, you may need to also request permission to modify from the copyright holder.

Best of luck in your research.

Kouider

From: "Ahmed, Ruhina" <ra299@exeter.ac.uk>
Date: Sunday, January 24, 2016 at 12:56 PM
To: Kouider Mokhtari <kmokhtari@uttyler.edu>
Subject: Survey of Reading Strategies (SORS)

Dear Sir,

Hi. My name is Ruhina Ahmed and I'm writing from Oman. I'm a doctoral student enrolled in Doctorate in Education (EDD) at University of Exeter.

My thesis aims to explore cognitive and metacognitive reading strategy awareness of Omani EFL students studying various disciplines. I have read many of your publications, including Assessing Students' Metacognitive Awareness of Reading Strategies (2002) and Measuring ESL Students' Awareness of Reading Strategies (2002). I have found them very beneficial, especially for my study.

Currently, I'm in my data collection stage and I would like to use your instrument "Survey of Reading Strategies" (SORS) for my research. I believe that SORS will be effective in exploring the cognitive and metacognitive reading strategy awareness of EFL students in Oman. Would you grant me permission to use SORS for my thesis? I would appreciate it very much.

Looking forward to hearing from you.

Best Regards
Ruhina Ahmed

Appendix 4

3.6.3.1 Interview Schedule

Date: _____

Time of the Interview: _____

Interviewer: _____

Interviewee: _____

Procedure 1 : *Introduction of the Interviewer*

Thank you for agreeing to be interviewed for my research project.

My name is Ruhina Ahmed and I am a doctoral student at University of Exeter and this research is part of my doctorate program. I would like to give you some details connected with this study.

a) **Purpose of the study**: This study aims to gain an understanding of how the students cope with the challenges posed by reading in a college setting. Therefore, it aims to explore the cognitive and metacognitive reading strategies of students in various disciplines in a higher educational institution in Oman.

b) **Data being collected:** Surveys and interviews
c) **Participant's right:** Voluntary participation, confidentiality, and use of a pseudonym in the project
d) **Length of the interview:** Approximately 40 minutes and it will be recorded.

Procedure 2: *Ask the interviewee to sign the consent form.*

Procedure 3: Please fill this form.

Procedure 4: *Ask the interviewee for permission to record the interview. Turn on the recorder and test it.*

Procedure 5:

Ask interview question 1

What kind of academic materials do you read in English for your courses?

Sub-question: Could you give me some examples of texts?

METACOGNITIVE STRATEGIES

Procedure 6:
Ask interview question 2

- What do you do before you start reading a text?
- Some students prefer to review the length and organization. What is your opinion regarding it?

Procedure 7:
Ask interview question 3

- To what extent does typographical features like words in boldface and italics enable you to read effectively?

Procedure 8:
Ask interview question 4

- To what extent do tables, figures and pictures in the text help you in understanding a text?

Procedure 9:
Ask interview question 5
While reading, do you read the full text or skip certain parts? Why do you do this? Can you give reasons for your choice?

Procedure 10:
Ask interview question 6
While reading, students come across new information and vocabulary. How do you check your understanding of new information in the text? To what extent does your background knowledge enable you to understand a text?

COGNITIVE STRATEGIES

Procedure 11:
Ask interview question 7

- While reading, if you do not understand what a word means, what do you do?
- How would you check if your guesses are right or wrong?

Procedure 12:
Ask interview question 8

- What do you do when you come across a text which is difficult or challenging?

Procedure 13:
Ask interview question 9

- Often students lose concentration while reading a text. What do you do to avoid this problem?

Procedure 14:
Ask interview question 10

Students have different reading speed as some read fast while other read slow. Do you read fast or slow? Can you give me reasons for your choice

SUPPORT STRATEGIES

Procedure 15:
Ask interview question 11

- How often do you translate words in Arabic? How helpful is this approach?

Procedure 16:
Ask interview question 12

- In your opinion, how does underlining or circling information in the text help the reader. Why do students do it?

Procedure 17:
Ask interview question 13

- As English is a foreign language, while reading do you think about the information in your native language? To what extent does it help you?
- What problems you encounter while practicing this technique?

Procedure 18:
Ask interview question 14

At times, students prefer to read a text aloud. In your opinion, does reading aloud a text helps you to remember information easily?

Procedure 19:
Ask interview question 15

- Some students tend to visualize the information they read in order to remember it. In your opinion, how helpful is this technique?
- What kind of information would you visualize?

Appendix 5

SURVEY OF READING STRATEGIES (SORS)

The purpose of this survey is to collect information about the various techniques you use when you read **academic materials in English** (e.g. reading textbooks for homework or examinations, reading journal articles, etc.)

All items below refer to your reading of **college-related academic materials** (**such as textbooks**, not newspapers or magazines). Each statement is followed by 5 numbers, 1, 2,3,4,5, and each number means the following:

- **'1'** means that **'I never or almost never do** this'.
- **'2'** means that 'I do this **only occasionally'**.
- **'3'** means that 'I **sometimes** do this'. (About **50%** of the time.)
- **'4'** means that 'I **usually** do this'.
- **'5'** means that 'I **always or almost always** do this.'

After reading each statement, **circle the number** (1, 2, 3, 4, or 5). Note that there are **no right or wrong responses** to any items on the survey.

Statement	Never				Always
1. I have a purpose in mind when I read.	1	2	3	4	5
2. I take notes while reading to help me understand what I read.	1	2	3	4	5
3. I think about what I know to help me understand what I read.	1	2	3	4	5
4. I take an overall view of the text to see what it is about before reading it.	1	2	3	4	5
5. When text becomes difficult, I read aloud to help me understand what I read.	1	2	3	4	5
6. I think about whether the content of the text fits my reading purpose.	1	2	3	4	5
7. I read slowly and carefully to make sure I understand what I am reading.	1	2	3	4	5
8. I review the text first by noting its characteristics like length and organization.	1	2	3	4	5
9. I try to get back on track when I lose concentration.	1	2	3	4	5
10. I underline or circle information in the text to help me remember it.	1	2	3	4	5
11. I adjust my reading speed according to what I am reading.	1	2	3	4	5
12. When reading, I decide what to read closely and what to ignore.	1	2	3	4	5
13. I use reference materials (e.g. a dictionary) to help me understand what I am reading.	1	2	3	4	5

Appendix 6

استبيان عن استراتيجيات مهارة القراء

يهدف هذا الاستبيان الى جمع بيانات تتعلق بالأساليب والطرق التي تستخدمها عندما تقوم بقراءة المواد الأكاديمية باللغة الانجليزية (مثال: قراءة الكتب الدراسية من أجل الأمتحانات أو حل الفروض المنزلية أو قراءة مقالات المجلات الدورية .... الخ)

جميع المواضيع أدناه تتعلق بأساليب قرائتك للمواد الاكاديمية التي تدرسها بالكلية أو الجامعة مثل الكتب الدراسية وليس الصحف أو المجلات).
كل افادة أدناها متبوعة بخمسة أرقام ، 1، 2، 3 ، 4 و 5 وكل رقم يشير الى ما يلي:

الرقم 1 يعني : "لا أفعل ذلك مطلقا"
الرقم 2 يعني: " أفعل ذلك بين الحين والآخر أو نادرا
الرقم 3 يعني: " أفعل ذلك أحيانا" (تقريبا بنسبة 50%)
الرقم 4 يعني: " أفعل ذلك عادة او في أغلب الأحيان"
الرقم 5 يعني: " أفعل ذلك دائما أو تقريبا بشكل دائم"

بعد قراءة كل افادة، ضع دائرة حول الرقم (1، 2، 3، 4 أو 5) الذي ينطبق عليك. لاحظ أنه لا يوجد أجابة صحيحة أو خاطئة لهذا الاستبيان.

الافادة	مطلقا	نادرا	أحيانا	غالبا	دائما
1. عندما اقرا اقرا لغرض معين	1	2	3	4	5
2. أقوم بتدوين الملاحظات أثناء القراءة لتساعدني على فهم ما أقرأ.	1	2	3	4	5
3. أستعرض ما أعرفه مسبقا لكي يساعدني على فهم ما أقرأ.	1	2	3	4	5
4. أقوم بأخذ نظرة عامة عن النص لمعرفة الموضوع قبل القراءة.	1	2	3	4	5
5. أقرأ النص بصوت عالي عندما يكون صعبا وذلك لكي أفهم ما أقرأ.	1	2	3	4	5
6. أفكر فيما اذا كان محتوى النص يتماشى مع هدفي من القراءة.	1	2	3	4	5
7. أقرأ ببطء وتمهل حتى أتأكد من فهم ما أقوم بقرائته.	1	2	3	4	5
8. أقوم أولا بمعاينة النص لمعرفة خصائصه كالطول والتنظيم.	1	2	3	4	5
9. أحاول العودة الى مسار القراءة عندما أفقد التركيز.	1	2	3	4	5
10. أقوم بتحديد المعلومة في النص لكي أتذكرها لاحقا	1	2	3	4	5
11. أقوم بضبط سرعتي في القراءة حسب النص الذي اقرأه.	1	2	3	4	5
12. أثناء القراءة أحدد ما اريد أن أقرأه وأترك الباقي.	1	2	3	4	5
13. أستخدم الأدوات المرجعية كالقاموس لفهم ما أقرأ.	1	2	3	4	5
14. أقوم بالتركيز أكثر في القراءة عندما يصبح النص صعبا.	1	2	3	4	5
15. أستعين بالجداول والصور والأرقام في النص لزيادة فهمي لما أقرأ.	1	2	3	4	5
16. أتوقف من وقت لآخر أثناء القراءة لأفكر فيما أقرأ.	1	2	3	4	5
17. أعتمد على السياق (التلميحات) لمساعدتي على فهم ما أقرأ.	1	2	3	4	5
18. أقوم باعادة صياغة النص لفهمه بطريقة أفضل.	1	2	3	4	5
19. أحاول تخيل أو تصور المعلومات التي أقرأها من أجل تذكرها لاحقا.	1	2	3	4	5
20. أستخدم خصائص مطبعية كالخط السميك أوالمائل لتحديد الأفكار المهمة .	1	2	3	4	5
21. أقوم بتحليل وتقييم االمعلومات الواردة في النص بشكل نقدي.	1	2	3	4	5
22. أنتقل في النص ذهابا وايابا للتعرف على ترابط الأفكار فيه.	1	2	3	4	5
23. أقوم بالتحقق من فهمي عندما أصادف معلومة جديدة.	1	2	3	4	5
24. أحاول تخمين موضوع النص أثناء القراءة.	1	2	3	4	5
25. أقوم باعادة قراءة الاجزاء الصعبة في النص لزيادة فهمي لها.	1	2	3	4	5
26. أقوم بطرح الأسئلة التي أرغب في الحصول على أجابات لها على نفسي.	1	2	3	4	5
27. أتحقق ان كان تخميني عن النص صحيحا أم خاطئا.	1	2	3	4	5
28. عند القراءة، أقوم بتخمين معاني الكلمات أو العبارات الجديدة.	1	2	3	4	5
29. عند القراءة اقوم بترجمة ما أقرأ الى لغتي الام.	1	2	3	4	5
30. أثناء القراءة، استوعب ما أقرأ من خلال لغتي الأم وكذالك اللغة الانجليزية.	1	2	3	4	5