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Investigating Iraqi EFL University Students' Use of Reading Strategies

ABSTRACT

Reading strategies are deliberate, goal-directed techniques that readers employ to enhance their understanding, interpretation, and retention of written texts. These strategies enhance reading comprehension and are particularly essential for second language learners. This research aims to investigate the reading strategies adopted by Iraqi EFL university students and assess their effectiveness at improving comprehension. This research seeks to establish how students read academic texts, what types of strategies they use, and what difficulties they encounter in doing so. Research also seeks to explore the relationship between the degree of language skill in students and their strategic reading behavior. The research seeks to shed light on further comprehension of what strategies are most used and how they affect reading performance in the Iraqi situation. The sample of this study consists of 60 fourth-year undergraduate EFL university students between the ages of 21 and 24 years studying the English language at Tikrit University in the academic year 2024–2025. The study instrument used to gather data was a questionnaire developed by Hui-Fang Shang 2010. The results of the current study reveal that Iraqi EFL students actively use a wide range of strategies to aid their reading comprehension, and Students use all types of strategies relatively equally, with no clear dominance of one over the others.

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استقصاء إستراتيجيات القراءة لطلبة الجامعة العراقيين دارسي اللغة الإنكليزية لغة اجنبية

ابتسام جاسم محمد/ جامعه تكريت، كلية التربية للعلوم الإنسانية

الخلاصة:

الاستراتيجيات القرائية هي تقنيات متعمدة وموجهة نحو هدف يطبقها القارئ لمساعدته على فهم النصوص المكتوبة وتفسيرها وتذكرها. تساعد هذه الاستراتيجيات في تحسين الفهم القرائي، وهي ضرورية خصوصاً

لمتعلمي اللغة الانكليزية بوصفها لغة ثانية. تهدف هذه الدراسة إلى البحث في استراتيجيات القراءة التي يعتمدها طلبة الجامعة العراقيين من دارسي اللغة الإنجليزية بوصفها لغة أجنبية ، وتقييم مدى فعاليتها في تحسين الفهم القرائي. تسعى هذه الدراسة إلى معرفة كيفية قراءة الطلبة للنصوص الأكاديمية، وأنواع الاستراتيجيات التي يستخدمونها، والصعوبات التي يواجهونها أثناء ذلك. كما تهدف إلى استكشاف العلاقة بين مستوى المهارة اللغوية لدى الطلبة وسلوكهم الاستراتيجي في القراءة. وتسعى الدراسة إلى تسليط الضوء بشكل أعمق على أكثر الاستراتيجيات استخدامًا وكيفية تأثيرها في أداء القراءة في السياق العراقي. تتألف عينة الدراسة من 60 طالبًا وطالبة من المرحلة الرابعة في مرحلة البكالوريوس، تتراوح أعمارهم بين 21 و24 عامًا، يدرسون اللغة الإنجليزية في جامعة تكريت / قسم اللغة الانكليزية خلال العام الدراسي 2024-2025. أما أدوات الدراسة التي تم استخدامها لجمع البيانات فهي الاستبيان . النتائج التي توصلت إليها الدراسة الحالية تكشف أن طلبة اللغة الإنجليزية بوصفها لغة أجنبية يطبقون مجموعة واسعة من الاستراتيجيات بشكل نشط لتعزيز فهمهم القرائي، وأنهم يستخدمون جميع أنواع الاستراتيجيات بشكل متقارب نسبيًا، دون وجود تفوق واضح لإحدى الاستراتيجيات على الأخرى.

كلمات مفتاحية: استقصاء، إستراتيجيات القراءة ،الفهم القرائي ، دارسي اللغة الإنكليزية - لغة اجنبية.

Section One

Introduction

1.1 Statement of the Problem

To become proficient in English as a foreign language, one must master four basic skills: reading, writing, speaking, and listening. Out of the four, reading has taken on even greater importance in the academic community, especially among students enrolled in university-level courses. Reading is not a mindless process; it is an interactive linguistic and cognitive process that involves the interpretation and comprehension of text to obtain meaning and knowledge (Paris, Wasik, & Turner, 1991). Successful reading entails feeling sentence and paragraph relationships, recognizing implied meaning, feeling central messages, and perceiving contextual differences. These are the abilities students, particularly those learning EFL, must learn to read scholarly texts and enhance their language ability.

Reading is not just a means of gaining written information, but it is also fundamental to gaining other subskills, such as vocabulary acquisition,

understanding of grammar, and writing proficiency. Given that EFL students are exposed to multiple genres, authentic texts, and cultural topics, they will be able to understand challenging texts more effectively as well as draw appropriate inferences (Gorsuch & Taguchi, 2010).

Reading is still on the top list of those language skills most challenging for the majority of EFL learners to learn based on their limited practice of the target language outside class (Mehrpour & Rahimi, 2010). EFL learners are prone to struggle with reading comprehension due to either lack of language knowledge or a lack of cognitive reading ability required (McDonough, 1995). Others argue that restricted linguistic control could lead to successful L1 readers employing incompetent L2 strategies (Clarke, 1978).

Current reading comprehension conceptions focus the active reader on meaning construction, emphasizing the invocation of background knowledge as it pertains to the text material (Dole, Duffy, Roehler, & Pearson, 1991). Background knowledge may be acquired by linguistic capacity or through previous subject-matter knowledge, and both are able to aid inference-making and structure and function awareness of texts. For EFL readers, in our case, Iraqi academic students, like university students, it is through creating and using efficient reading strategies that they can overcome such challenges as well as improve their overall language performance.

1.2 Research Aims

This research aims to:

1. Identify the reading strategies used by university students learning English as a foreign language.
2. Identify the most frequently used reading strategy among university students learning English as a foreign language.

1.3 Research Questions

To achieve the aims of the research, the following research questions are proposed:

1. What reading strategies do Iraqi EFL university students use while reading academic texts?
2. How do the employed reading strategies vary according to students' English language proficiency levels?
3. What are the main challenges that Iraqi EFL university students face when reading in English?

1.4 Limits of Research:

This research is limited to the reading strategies used by Iraqi University students at Tikrit University /College of Education for Humanities during the academic year 2024-2025.

1.5 Significance of the Research

This research is significant in several aspects as follows:

1. First, it sheds considerable light on reading practice among Iraqi EFL students, as English exposure is typically limited to the classroom. With students increasingly dependent on English-medium study material at the university level, a study of how students manage their reading tasks is a must.
2. Second, the findings can inform language teachers about what to do and how to adapt their pedagogy to meet learners' needs. This addresses the call to integrate reading strategy instruction into the EFL syllabus.
3. Finally, by clarifying the challenges faced by the learners, this research may help design specific interventions that promote reading autonomy and academic achievement. Finally, the study aims to contribute to the broader debate of improving EFL reading comprehension by means of strategic instruction.

1.5 Definitions of Basic Terms

1.5.1 Investigating

Investigating is a thorough search for facts, especially those hidden or need to be sorted out in a complex situation. Investigating usually aims to determine how or why something happened (Leonard & More, 1978).

The process of trying to find out, discovering all the details or facts about something to discover who or what caused it or how it happened (Macmillan Dictionary, 2012).

The operational definition of investigating is the process of close examination and systematic inquiry.

1.5.2 Reading Strategies:

Reading strategies are Intentional mental operations engaged in by readers to enhance understanding, solve reading difficulties, and operate effectively with texts (Paris, Wasik, & Turner, 1991).

Reading strategies are processes that learners apply to improve their reading comprehension and problem-solving skills when they encounter difficulties in reading (Singhal, 2001).

The operational definition: reading strategies refer to the specific cognitive and metacognitive techniques employed by Iraqi EFL university students when interacting with English academic texts. These strategies include, but are not limited to, previewing, skimming, scanning, guessing meaning from context, making inferences, summarizing, and monitoring comprehension. The strategies are considered observable through students' self-reports or verbalized thoughts during reading tasks.

Section Two

Theoretical Background and Previous Studies

2.0. Theoretical Background

This section presents the theoretical background of reading strategies and a review of previous studies relevant to this research.

2.1 Reading Strategies

Reading strategies are deliberate tools employed by readers to read, decode, and process written texts, particularly in second and foreign languages. They are not impulsive actions nor random actions but deliberate, intentional processes that engage readers in text and enhance their understanding and accomplishments (Paris, Wasik, & Turner, 1991). With the refinement of instruction in language,

researchers have developed several taxonomies for classifying reading strategies, one of the more popular being Oxford's (1990), which classifies them as cognitive, metacognitive, and social/affective strategies.

2.1.1 Cognitive Strategies

Cognitive strategies are the specific mental processes readers use to access and make sense of the text. These strategies tend to be aimed at the content of the text and include inferencing, summarizing, repetition, translation, note-taking, and identification of text structure (Chamot & O'Malley, 1990). For example, when students are attempting to predict meaning of new words from context clues or filling in gaps by using what they already know to make a connection with new information, they are cognitively exercising their mind. These are root strategies because they allow the mechanical and conceptual deciphering of the language, particularly when the learners are learning fluency.

In learning English as a foreign language, particularly in countries like Iraq where natural exposure to English is minimal, cognitive strategies play an important role. Students will employ native language translation, decoding individual words, and visual or grammatical information to infer the meaning of complex sentences. The use of cognitive strategies is positively linked with literal comprehension and recall enhancement (Sheorey & Mokhtari, 2001).

2.1.2 Metacognitive Strategies

Metacognitive strategies are the control, regulation, and awareness of one's own cognitive processes while reading. Flavell (1979), a fellow of metacognitive research, has described these strategies as higher-order executive processes responsible for planning, monitoring, and evaluating one's own learning. In reading, this may be establishing the purpose for reading, skimming or scanning for information, monitoring understanding during and after reading, or a shift in strategies if understanding breaks down (Mokhtari & Reichard, 2002).

These strategies are essential for proficient reading, especially in academic contexts, where texts have to be read critically and reflectively. Proficient readers have been found to be not only distinguished by the number of strategies they use but by their ability to manage and coordinate the strategies for specific reading objectives (Pressley & Afflerbach, 1995). In EFL settings, metacognitive teaching

has been linked to greater independence and academic success in the sense that it converts learners into independent learners capable of diagnosing their issues and making necessary adjustments (Zhang, 2001).

2.1.3 Social/Affective Strategies

Less studied than the foregoing two categories, yet by no means less important for language learners who face affective and interpersonal issues in their reading process, social and affective strategies. Social strategies may involve cooperative reading activities such as peer discussion of a text, clarification from teachers, or feedback from peers. Affective strategies, on the other hand, help learners deal with anxiety, frustration, or boredom through the employment of strategies such as positive self-talk, relaxation, or motivational self-regulation (O'Malley & Chamot, 1990).

In the Iraqi EFL context, social/affective strategies are particularly important in classroom environments where students might not be secure in their linguistic competence. Participating in peer-led reading discussion or reading tasks in pairs can prove to be a source of motivation and relaxation. Additionally, instructors can go a long way in creating positive reading environments that are conducive to risk-taking and strategic reading behavior.

2.1.4 Integration of Strategies

Although these differences are analytically useful, it is the case that successful readers use a combination of types instead of one type in its pure form. That is, a student might begin by setting a strategy for a reading task (metacognitive), use inferencing and summarizing abilities while reading (cognitive), and negotiate a point of challenge with a peer (social). As Anderson (1991) points out that a proficient reader is not merely one who possesses the required strategies, but one who also applies them with versatility in accordance to the task and context.

Furthermore, the relationship between the use of reading strategies and comprehension is mediated by a number of variables including text type, reader motivation, language proficiency, and cultural background (Grabe & Stoller, 2002). In contexts where English is learned primarily in classrooms—such as in Iraq—

reading strategies can be employed as compensatory mechanisms to bridge the gap between restricted exposure and academic requirements.

Contemporary EFL pedagogy research encourages explicit strategy instruction to enhance the awareness and proficiency of learners. Teaching students to recognize, practice, and reflect on their strategic choices can lead to improvement in reading proficiency and overall language learning (Cohen, 2007).

2.2 Previous Studies

Over the past decades, the use of reading strategies in English as a Foreign Language class has been extensively examined, which revealed the facilitating role of these strategies in reading and overall academic achievement. A great deal of research has repeatedly pointed out that skilled readers employ a set of reading strategies to read difficult texts, but less capable readers lack knowledge of these strategies or are ineffective in employing them (Anderson, 1991).

One of the initial attempts in this regard is that of Sheorey and Mokhtari (2001), who developed the Survey of Reading Strategies (SORS) to measure EFL learners' metacognitive knowledge and use of reading strategies. They found that proficient readers employ a combination of global, problem-solving, and support strategies and that metacognitive knowledge is a reliable predictor of reading comprehension. Their SORS instrument has also subsequently been validated and implemented within a variety of diverse cultural contexts as a benchmarking instrument for research into EFL reading strategies.

Similarly, Zhang and Wu (2009) created a statistically significant correlation between the use of strategic reading behavior and Chinese university EFL students' reading skills. Their conclusion highlighted the requirement for not only the instruction of reading skills but also practice using strategies to support greater engagement with texts. Their study highlighted the way effective readers adapt strategic behavior based on the purpose of reading and the level of difficulty of text—findings confirmed in subsequent studies (Grabe, 2009).

In both the Gulf and Levant Arab environments, there has been evidence of potential and challenges in students' strategic reading behavior. Alhaqbani and Riazi (2012) in Saudi EFL learners' study indicated that learners used predominantly surface strategies such as translation and rereading and showed

little use of higher-order metacognitive strategies. They linked this phenomenon to the prevalence of conventional teaching methods, i.e., the grammar-translation approach, which is bound to emphasize rote memorization at the expense of strategic learning. Limited systematic research has been done on students' application of reading strategies in the Iraqi EFL context at the tertiary level.

Most studies deal with reading difficulty or general language ability without examining how and what types of reading strategies readers use and which types of texts are most challenging. There have been few findings that Iraqi students overuse cognitive strategies such as word-by-word translation or reference dictionary consulting and underuse metacognitive and social strategies (Ali, et al. 2019). Moreover, strategy teaching has not systematically been incorporated within the university course of study, although it would have the effect of further extending understanding and independence in learners. Another major failure of the research is the dearth of genre-sensitive studies.

Most research quantifies reading comprehension and the use of strategy in general and lumps reading as a unifying skill altogether. However, text genres—narrative, expository, and argumentative writing, for instance—differ in structure, purpose, and linguistic complexity and so can, in turn, call up different patterns of strategy use (Grabe & Stoller, 2002). Different international research has started investigating this aspect, but there is clearly a lack of EFL research, and even more so in the Arab and Iraqi settings, where instructional practices do not differentiate strategy teaching by genres. The current study tries to fulfill these voids by investigating the use of cognitive strategies by Iraqi EFL students while reading comprehension of different types of text.

Through that, it cashes in on earlier research but presents an unemphasized emphasis in national scholarship, i.e., the genre approach. It also puts to bear cognitive strategies' place as mediator between limited language capacity and academic demand for understanding—demand being overly pressing in Iraqi universities where students are typically introduced to tough reading materials and in the absence of much preparation facilitation. Through focusing both on text genre as well as use of strategy, this present research sketches out more fully a representation of EFL reading comprehension and is informative concerning

pedagogy in the format of curriculum construction, educational material, and courses of training whose focus is generating strategic, self-functioning readers.

2.3 Reading Models

The work is grounded in reading comprehension models and language acquisition strategies. Schema Theory (Carrell & Eisterhold, 1983) provides a basis for the description of how the reader utilizes previous knowledge and experience in text interpretation. Comprehension occurs as a conversation between the reader's previous knowledge (schemata) and text-based new information, according to this theory. Different genres activate different schemata, and thus, reading strategies must be adaptable based on the requirements of the text genre.

Anderson's Interactive Model of Reading (1991) also informs this study to the extent that it places reading as an interactive process involving bottom-up decoding and top-down conceptualization. The model readily accounts for the use of cognitive strategies such as predicting, inferring, and summarizing that complement decoding and comprehension.

The study also draws on a citation of Oxford's (1990) Strategy Inventory for Language Learning (SILL) that, together with her taxonomy of cognitive strategies, is accepted as vehicles whereby language intake and internalization are facilitated.

In its focus on cognitive reading strategies, this research positions itself within a sound theoretical tradition that focuses on context sensitivity, strategic competence, and learner agency. These theories are most applicable to the manner in which the problems of university students in Iraq will end up having to read academic writing with little strategic reading training from past education.

2.4 EFL Students' Problems

The EFL learners experience a chain of difficulties learning the language, particularly reading comprehension. Keezhatta and Omar (2019), through their research after gathering questionnaires from secondary EFL students as well as Arabic teachers, identified several alarming factors affecting students' reading performance. These include lack of concentration, overall comprehension, reading fluency, memory recall, and motivation. Students tend to lack concentration while

reading, hence they are unable to understand and retain information to the highest level possible. Additionally, reading fluency issues—like poor reading speed or insufficient reading smoothness—make comprehension even more complicated. Such a deficiency in fluency may result in low motivation, as students feel frustrated with their own lack of ability to read, which might further impact their academic achievement and reading interest.

The reading culture within the first language community also affects students' reading behavior in EFL contexts. Reading is not a common practice in Arabic countries, nor do students read for pleasure in their own mother language (Al-Shumaimeri, 2006). This cultural factor diminishes the exposure that students have to written forms, which in turn makes reading from a foreign language like English even more challenging. In addition, the employment of local dialects in informal settings, in contrast to formal Arabic, in daily life makes Arab students' reading proficiency in formal Arabic equivalent to that of a second language and their English reading proficiency lower and sometimes equivalent to that of a third language (O'Sullivan, 2009). This language difference poses severe challenges to EFL readers because they must cope with complex language systems and out-of-vocabulary items in their attempt to attain reading comprehension.

Another challenge faced by EFL learners is that they possess limited prior knowledge they can apply to the reading process. O'Sullivan (2009) contends that a lack of baseline knowledge and global awareness can inhibit reading comprehension since students might not be able to understand context, references, or underlying meaning from texts. This lack of background knowledge can prove to be a notable hindrance, most particularly when dealing with the reading of texts that entail a need for a working understanding of specific cultural references or world issues. Besides, reading understanding in an EFL environment is typically further reinforced by the nature of the syllabus. It has been reported that most Saudi Arabian teachers of EFL lack proper qualifications and do not possess the necessary level of expertise needed to employ proper methods of pedagogy. This lack of qualified experts suggests that students are not being provided with the nurture that they should be given if they are to improve their skill in reading (Bersamina, 2009). The lack of effective teaching techniques and proper training further adds to problems faced by EFL learners when gaining reading competency.

In addition, the lack of motivation from students also becomes a significant cause of students' reading issues. Motivation is one of the best predictors of how much effort students will put into learning, and reading no exception, this means that students are not going to be motivated to read if they don't find reading matter interesting, relevant, or challenging in a positive sense. Thus, students may not read extensively in texts they read, and this can prevent them from developing critical reading skill.

2.5 Solutions to Issues Confronted by EFL Students

To address the problems encountered by EFL learners, both teachers and students use a few strategies that can go a long way in reading comprehension and language acquisition. Keezhatta and Omar (2019) identify some techniques that have been employed by learners to bypass reading difficulties. One such technique includes decoding words and sounds, in which learners are able to break down hard words into small chunks that are manageable. The phonetic technique helps learners to boost fluency while reading and also assists them in decoding unknown words easily. Secondly, reading interest books individually is also a simple strategy. Students' reading desire is increased when they read books they like or can associate with, and this consequently leads to greater retention and comprehension. Finally, being read to by the teacher is also a strategy that has proven effective. This, aside from showing correct pronunciation, also acclimatizes the students further to the rhythm, intonation, and flow of the language and thus makes them better equipped to understand written texts.

Another method, detailed as effective in teaching EFL students, is scaffolding. This constitutes the giving of short-term support frameworks so that the learners may be able to achieve tasks that otherwise they may not be able to achieve on their own. Scaffolding can be by providing definitions to difficult vocabulary, breaking difficult texts into more manageable, easier sections, or providing additional background information to assist the students' understanding. As the students become more confident and competent, the help is gradually withdrawn step by step in order to allow independent learning and growth. Systematic vocabulary teaching is also required for the control of reading difficulties. With the emphasis on vocabulary learning from context, flashcards,

and repetition, students can be sure to build a strong foundation for reading texts as well as effective expression in English.

Other than this, reading aloud is specifically noted to be an especially good way of promoting vocabulary learning. Kindle (2009) makes the point that reading aloud, particularly in classroom settings for grade school, is an effective means of vocabulary development since students hear words being read properly and positioned within sentences. The process also gives educators the chance to model proper reading technique and interact with students in a dynamic manner. Interactive read-alouds, where the students and teacher both discuss the reading, can prove particularly useful in creating stronger critical thinking and comprehension.

Cognitively, EFL learners apply various strategies to improve comprehension in reading. For example, in the linguistic schema, learners utilize their logical sense, phonetic, and decoding to read written texts (Zhao et al, 2012). It is here that the reader recognizes and examines language structure, understands sentence patterns, and applies knowledge of language rules to make sense. The second general strategy is that of using formal schema, where the students apply structural knowledge and rhetorical awareness to read texts with sense. This involves a sensitivity to text structure and understanding how the author's use of language impacts the message being communicated (Nagy, et al, 2006).

Students also rely on previous knowledge and conceptual understanding under the schema of content. By relating new information to what they already understand, readers are better able to interpret and comprehend reading texts. This is one of the most effective means of overcoming the issue of lacking background knowledge because it allows learners to connect new information to common knowledge or everyday experience (Zhao et al, 2012). As a means of supporting word meaning, syntactic, and sentence complexity issues, the majority of EFL learners make use of external aids like Google Translate, online dictionaries, reference books on grammar, and even social networking websites as a prop. These tools aid by bridging gaps in comprehension, enabling learners to unravel meanings, build vocabularies, and improve grammar.

By the application of such diverse strategies, EFL learners can overcome the numerous challenges they face with reading comprehension. However, for such

strategies to operate optimally, they need to be taught and practiced within an organized, supportive environment. Teachers need to include these strategies in their instructions so that the students are well-equipped with the skills needed to succeed in reading and language learning. By practicing these strategies daily and implementing them, EFL learners can enhance their reading ability as well as their general language skills to a great extent.

Section Three

Methodology

3.1 Population and Sample of the Study

The participants in this study are fourth-year undergraduate students enrolled in the English Department at Tikrit University College of Education for Humanities during the academic year 2024–2025. A total of 60 students, aged between 21 and 24, took part in this research. All participants had completed at least six semesters of academic English studies, ensuring they possessed a relatively high level of language proficiency, which made them suitable candidates for learning how to apply reading strategies when engaging with complex texts. The sample included both male and female students, and participation is entirely voluntary, as shown in Table 3.1

Table (3.1) The Population and Sample of the Study

University	College	No. of Population	No. of the Sample	Percentage
Tikrit	The College of Education for Humanities	145	60	40%

3.2 Data Collection Methods

To gather extensive information regarding the application of reading strategies by students, a reading strategy questionnaire developed by Hui-Fang Shang 2010 has been adopted in this research.

3.2.1 Questionnaire

The Reading Strategy Questionnaire, developed by Hui-Fang Shang in 2010, is the research instrument adopted to investigate the reading strategies employed by learners, particularly in the context of learning English as a Foreign Language (EFL). The main goal of the questionnaire is to identify and evaluate the various reading strategies that EFL learners utilize when reading texts in English. It aims to understand how these strategies impact reading comprehension and overall language acquisition. The questionnaire typically categorizes reading strategies into three key types as follows:

1. Cognitive Strategies: These involve mental processes used while reading, such as summarizing, predicting, and making inferences.
2. Metacognitive Strategies: These strategies pertain to self-regulation and awareness of one's reading processes. They include planning before reading, monitoring comprehension during reading, and evaluating understanding after reading.
3. Social/Affective Strategies: These involve interaction with others or managing emotions related to reading, such as collaborating with peers or using positive self-talk to boost confidence.

The questionnaire consists of a series of statements or items (44) that respondent's rate based on their frequency of use. This often employs a Likert scale (e.g., 1 = never, 5 = always), allowing for a nuanced understanding of how often students use different strategies. The questionnaire is primarily aimed at EFL learners, particularly those in academic settings, such as university students. It can be adapted to different educational contexts and proficiency levels. The insights gained from the questionnaire can help educators and researchers:

- Identify common reading strategies used by students.
- Tailor instruction to address specific challenges and enhance reading skills.
- Develop interventions aimed at improving reading comprehension based on the strategies that students are using or are not using effectively. Hui-Fang Shang's Reading Strategy Questionnaire is a valuable tool for understanding the reading habits of EFL learners. By investigating the strategies they employ, educators can

better support their students in developing effective reading skills that contribute to their overall language proficiency.

3.3 Data Analysis

3.3.1 Quantitative Analysis

The questionnaire data were statistically analyzed using descriptive and inferential statistical analyses. Frequency, means, and standard deviations were estimated to determine prevalence and variation in strategy use among the sample. Statistical testing, such as t-tests, was being contemplated to test the difference in significance in strategy use between text genres or demographic variables.

3.3.2 Statistical Analysis of the Questionnaire Items

The statistical analysis of the scale items represents a crucial step in the implementation of any measurement instrument. It aims to identify the psychometric properties of the items, which assist the researcher in selecting those with strong characteristics. This, in turn, contributes to enhancing the validity and reliability of the scale (Anastasi & Urbina, 1997, p. 172). Accordingly, the researcher conducted a statistical analysis and extracted both the discriminatory power and internal consistency of the items as follows:

1. Discrimination Power of the Items

The discrimination power of an item refers to its ability to distinguish between students who possess a high level of the measured trait and those with a lower level of that trait. This differentiation is achieved through the items included in the scale (Melhem, 2000, p. 236). Calculating item discrimination is considered one of the most important characteristics of psychological scales, as it significantly influences the scale's ability to detect individual differences among participants—differences that psychological measurements are fundamentally designed to capture (Ebel, 1972, p. 398).

Accordingly, the researcher administered the scale to a sample of 120 male and female students and scored the response forms. To determine the discrimination power of the scale items, the researcher ranked the total scores of the participants from the highest to the lowest, and then identified the two extreme

groups based on the total score, selecting 27% from each end. This resulted in 32 students in the upper group and 32 students in the lower group.

The researcher employed the independent samples t-test to calculate the significance of the differences between the means of the two groups for each item. The computed t-value was taken as the indicator of the item's discrimination power. The analysis revealed that all items were statistically significant, as their calculated t-values exceeded the Tabulated t-value of 1.96 at 268 degrees of freedom and a significance level of 0.05. Table 3.1 presents the results of the item discrimination analysis.

Table (3.1)

Discriminating power of questionnaire items

T	The senior group		Lower group		Calculated T- value	Significance level 0.05
	Paragraph	arithmetic mean	standard deviation	arithmetic mean		
Cognitive strategy						
1	3,600	1,345	1,770	0.969	6,374	function
2	4,496	1,196	2,007	1,443	7,667	function
3	4,319	1,104	2,207	1,350	6,992	function
4	4,556	0.912	2,911	1,047	6,840	function
5	4,852	0.592	3,674	1,365	4,571	function
6	2,852	1,586	1,348	0.822	4,861	function
7	4,593	0.972	2,763	1,720	5,348	function
8	3,289	0.880	1,926	0.895	6,270	function
9	3,644	0.787	2,541	0.853	5,487	function
10	4,741	0.864	2,919	1,804	5,259	function
11	4,719	0.581	3,756	0.996	4,822	function
12	4,378	0.597	3,304	0.987	5,376	function
13	4,370	0.817	2,948	1,039	6,211	function
14	3,452	1,348	1,822	1,209	5,197	function
15	3,711	1,545	2,081	1,399	4,515	function
16	4,259	1,258	2,326	1,480	5,746	function
Metacognitive strategy						
17	4,689	0.796	2,281	0.807	12,265	function
18	4,230	1,221	2,452	1,214	5,962	function

19	3,696	0.638	2,504	0.545	8,202	function
20	4,585	0.841	2,733	1,141	7,543	function
21	3,926	0.927	2,674	0.854	5,735	function
22	4,941	0.237	2,933	1,537	7,455	function
23	4,030	0.992	2,333	1,146	6,464	function
24	3,378	1,064	1,444	0.555	9,305	function
25	4,541	0.968	1,348	0.736	15,160	function
26	4,296	0.986	1,963	1,003	9,577	function
27	3,911	0.696	2,904	1,145	4,339	function
28	4,378	0.790	2,356	1,379	7,346	function
29	4,163	1,288	1,978	0.579	8,933	function
30	4,044	0.992	2,763	1,356	4,402	function
31	4,133	1,220	2,222	1,568	5,553	function
32	4,748	0.709	2,941	1,035	8,316	function
33	4,281	0.936	2,407	1,046	7,708	function
Formative strategy						
34	4,126	1,242	1,844	1,239	7,510	function
35	3,570	1,110	1,741	0.977	7,141	function
36	4,867	0.486	3,985	1,258	3,776	function
37	4,370	0.920	2,667	1,355	6,003	function
38	3,578	0.859	1,407	0.626	11,793	function
39	4,963	0.226	3,289	0.937	10,027	function
40	4,956	0.364	3,356	1,664	5,423	function
41	4,319	1,048	2,319	1,170	7,351	function
42	4,896	0.477	2,578	1,284	9,770	function
43	4,770	0.743	1,785	1,278	11,658	function
44	4,400	1,173	1,896	0.705	10,564	function

2. The Relationship Between the Item Score and the Total Score of the Strategy and Its Corresponding Subdomain

This refers to calculating the correlation coefficient between performance on each item of the scale and the overall performance on the entire scale (Kaplan & Saccuzzo, 1982, p. 147). Specifically, it involves determining the relationship between each item's score and the total score of the corresponding subdomain for each participant, which serves as an indicator of the internal consistency of the scale.

Anastasi points out that the correlation of an item with an internal or external criterion is an indicator of its validity. In the absence of an appropriate external criterion, the total score of the construction is considered the best internal criterion for assessing this relationship (Anastasi, 1976, p. 260).

In the present study, the researcher assessed item validity by calculating the Pearson correlation coefficient between the score of each item and the total score of the strategy and its corresponding subdomain, since the item scores are continuous and graded. The sample used for this analysis consisted of 120 individuals.

The results indicated that all correlation coefficients were statistically significant when compared to the critical correlation value of 0.196 at a significant level of 0.05 and 118 degrees of freedom. This provides strong evidence that the scale is valid for measuring the phenomenon it was designed to assess.

Table (3.2)

Correlation coefficient between the score of each paragraph and the total score of the strategy and the sub-domain to which it belongs.

Strategy number	Strategy	Sub-field	Paragraph number	Paragraph connection to the strategy to which it belongs	Paragraph relevance to the subdomain to which it belongs	
1	cognitive	memory	1	0.277	0.537	
			2	0.588	0.722	
			3	0.237	0.436	
		expansion	4	0.421	0.565	
			5	0.278	0.515	
			6	1 0.62	0.648	
			7	0.357	0.659	
			8	0.407	0.657	
			9	0.585	0.512	
			10	0.511	0.696	
			organization	11	0.350	0.672
				12	0.379	0.544

			3 1	0.263	0.254
			14	0.310	8 0.57
			15	0.365	0.520
			6 1	0.305	0.614
2	metacognitive	Planning	17	0.541	0.655
			18	0.488	0.561
			19	0.454	0.689
			20	0.503	8 0.55
			21	0.495	0.579
			22	0 0.45	8 0.58
			23	0.433	0.515
			4 2	0.418	7 0.60
		Monitoring	5 2	0.481	0.571
			26	0.450	0.490
			27	0.446	0.575
			28	0.614	0.827
		organization	29	0.617	0.756
			0 3	0.537	0.674
1 3	0.481		0.536		
32	0.460		0.508		
3 3	0.560		0.671		
3	formative	Linguist	4 3	0.636	0.643
			5 3	0.336	0.466
			36	0.377	0.482
			7 3	0.650	0.733
			38	0.600	0.669
		Moral	39	0.546	0.666
			0 4	0.647	0.756
			41	0.522	0.605
			42	0.633	0.711
			43	0.501	0.663
			44	0.642	0.715

3. Questionnaire Reliability

The concept of scale reliability refers to the degree of consistency or agreement in the scores obtained by groups of individuals when the scale is

repeatedly administered to the same group (Abu Ghoush, 2011, p. 54). A reliable scale is one that consistently estimates an individual's true score on the trait being measured, without yielding contradictory results when applied to the same individual multiple times (Odeh, 2002, p. 194). Reliability in this study was calculated using Cronbach's Alpha method as follows:

- **Cronbach's Alpha Coefficient for Internal Consistency**

The purpose of calculating the reliability coefficient using this method is to ensure the consistency of an individual's performance across the entire scale from one item to another. It reflects the overall homogeneity of the scale items and the stability of participants' responses. The more homogeneous the content of the scale, the higher the internal consistency reliability is likely to be. Each item is considered an independent measure, and reliability is computed by analyzing the variance in scores from the reliability sample across all items of the scale. The scale is effectively divided into as many "subtests" as there are items (Odeh & Al-Khalili, 1988, p. 254). To calculate reliability using this method, Cronbach's Alpha formula was applied to the responses of the statistical analysis sample, which consisted of 60 participants. The resulting reliability coefficients for each strategy are presented in Table 3

Table (3-3)

Reliability coefficient for each strategy

Strategy	stability coefficient
cognitive	0,88
metacognitive	0.84
formative	0.86

4. Statistical Methods

The statistical methods were computed using the SPSS software program and included the following:

- **One-Sample t-Test:** Used to determine the level of the variable among the sample.

- **Independent Samples t-Test:** Applied to calculate the discrimination power of the scale items.
- **One-Way ANOVA:** Employed to identify the dominant strategy.
- **Pearson Correlation Coefficient:** Used to compute the correlation between each item score and the score of the strategy and its corresponding subdomain.
- **Alpha Cronbach's Formula for Internal Consistency:** Applied to assess the reliability of the scale using the internal consistency method.

Section Four

Analysis of Data and Discussion of Results

4.1. Results related to First Aim

To identify the reading strategies used by university students learning English as a foreign language.

To achieve this objective, the researcher administered the scale to the research sample consisting of 120 individuals. The means and standard deviations were calculated for each strategy separately. To determine the significance of the difference between the actual mean and the hypothetical mean for each strategy, the researcher employed the one-sample t-test. The results are presented in Table 4.1.

Table (4.1)

Arithmetic mean - standard deviations, and t,t-values for reading strategies

Reading strategies	Sample	arithmetic mean	standard deviation	Hypothetical mean	t- value		significance (0.05)
					The calculated	Tabular	
cognitive	120	55,610	12,675	48	6,575	8 1.9	function
metacognitive	120	60,167	14,211	51	7,066	1.98	function
formative	120	38,242	9,183	33	6,252	1.98	function

The Table above reveals the following:

1. The calculated t-value for the cognitive strategy, which is (6.575), is greater than the tabulated t-value of (1.98) at the significance level of (0.05) and with (119) degrees of freedom. This indicates that the sample uses this strategy to a high degree.
2. The calculated t-value for the metacognitive strategy, which is (7.066), is greater than the tabulated t-value of (1.98) at the significance level of (0.05) and with (119) degrees of freedom. This indicates that the sample uses this strategy to a high degree.
3. The calculated t-value for the support strategy, which is (6.252), is greater than the tabulated t-value of (1.98) at the significance level of (0.05) and with (119) degrees of freedom. This indicates that the sample uses this strategy to a high degree.

4.2. Results related to Second Aim

To identify the most frequently used reading strategy among university students learning English as a foreign language. To achieve this objective, the researcher converted the participants' scores on each strategy into percentages, since the number of items in each strategy was not equal, as shown in Table 4.2.

Table

(4.2)

Average percentages and standard deviation of the ratios in each strategy

Strategy	arithmetic mean of the ratio	standard deviation
cognitive	0.6951	0.158
metacognitive	0.7078	0.167
formative	0.6953	0.166

To identify the most frequently used strategy among the research sample, the researcher employed a one-way ANOVA analysis. The results are presented in Table 4.3.

Table (4.3)

Results of one-way analysis of variance for differences between strategies

Source of variance	sum of squares	degree of freedom	mean squares	The percentage of the letter F	Significance (0.05)
Between groups	0.013	2	0.006	0.237	Not significant
Within groups	9,631	357	0.027		
Total	9,644	359			

The results shown in the table above indicate that the calculated F-value (0.237) is smaller than the tabulated F-value (3.00) at the significance level of 0.05 and degrees of freedom (2, 357). This indicates that there are no statistically significant differences in the use of reading strategies.

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