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Research Paper

Mapping Reading Strategy Use in Iranian EFL Learners: Toward a Context-Specific Taxonomy

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ABSTRACT

Much has been done on reading strategies used by test-takers in responding to reading tasks. However, little research has concentrated on reading strategies in foreign language contexts. As a step to fill this gap, this study intended to investigate Iranian English as a Foreign Language (EFL) students' strategy use in a reading comprehension test. To this end, sixty EFL students (30 with a high proficiency level and 30 with a low proficiency level) were selected conveniently. Drawing on introspective and retrospective verbal report, the researcher analyzed the participants' thought processes and identified 44 reading strategies. The findings led to the development of a taxonomy of reading strategies used by Iranian EFL learners, providing insights into their reading performance and informing reading strategy-based teaching in EFL contexts. This study has implications for language teachers to incorporate strategy instruction into reading curricula as well as teacher educators and curriculum developers to develop materials that support learners' metacognitive awareness and strategic flexibility.

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1. Introduction

Language testing strategies have received considerable attention in recent decades. A number of studies have investigated strategies used by test-takers in writing tasks (Plakans, 2009). Others have concentrated on test-takers' processes and strategies in response to selected-response items, such as multiple-choice ones, in reading and listening comprehension tests (Cohen & Upton, 2007; Douglas & Hegelheimer, 2006; Khalifa & Weir, 2009). Of the various language skills assessed, reading strategies have remained the most intensively studied ones as they provide insights into comprehension processes and test performance (Bachman, 2000; Phakiti, 2018).

Research on reading strategies used by English as a Foreign Language (EFL) learners started with Goodman's (1967) study titled 'Reading: A psycholinguistic guessing game' (Khaki, 2014). Since then, many studies have investigated reading strategies from diverse theoretical and empirical perspectives. Some studies have examined the role of strategy use in reading comprehension (Afflerbach et al., 2013; Pearson, 2009; Pressley & Afflerbach, 1995; Zhang, 2010). Others have employed survey instruments and quantitative methods to investigate the correlational or causal relationship between learners' reported strategy use and their reading performance (Carrell, 1989; Mokhtari & Reichard, 2002; Teng, 2020). These studies have consistently reported that effective use of reading strategies is closely associated with successful reading comprehension performance (Phakiti, 2018; Zhang & Seepho, 2018).

Although there has been much research on reading strategies in both first and second language contexts, not much has been done on foreign language ones, where learners are not exposed to much real language input. In particular, little is known about how EFL students in countries where English is not the first language, such as Iran, deal with reading comprehension assignments under test conditions. Such lack of context-specific studies limits the generalizability of the global strategy models to localized teaching settings. To fill this gap, the current research employed introspective and retrospective verbal protocols to analyse reading strategies used by Iranian EFL learners of different proficiency levels. Through developing a taxonomy of these strategies, this research attempted to inform reading instruction and testing in ELF contexts. This will also help students become more conscious of their strategies and improve their reading performance.

2. Literature Review

Many studies have been done on reading strategies in different contexts, leading to the development of diverse classification systems that address diverse dimensions of reading (Chamot, 2005; Oxford, 1990). Recent studies have also reaffirmed these models (Grabe, 2020; Zhang & Seepho, 2018). Among the existing models, Zhang's (1993) classification seems to be more comprehensive in the sense that it considers strategies that are related to both text and test items, as the two interrelated processes in academic settings. This integrated focus has been supported by later studies such as Teng (2020), which emphasize the relationship between strategy awareness, reading outcomes, and test performance. Strategies that test-takers use while reading the texts tend to affect their responses to test items; however, many research studies have neglected this issue. Moreover, the major aim of the present research was to provide a taxonomy of reading strategies used by Iranian EFL students in responding to reading tasks, and Zhang's framework is helpful in providing such a taxonomy in the sense that his framework considers almost all possible kinds of strategies identified by previous research in different contexts. According to Zhang, reading strategies can be categorized into four broad groups: cognitive strategies, compensation strategies, memory strategies, and test-taking strategies.

2.1. Cognitive Strategies

Reading comprehension is inherently a cognitive process (Zhang, 1993), including mental operations that enable learners to interact and interpret texts. Specifically, cognitive strategies involve mental processes concerned with the processing of information in order to learn; i.e., for acquiring, storing, retrieving, and applying information (Williams & Burden, 1997). A substantial amount of research conducted on reading comprehension strategies has focused on the cognitive strategies that readers employ when deriving meaning from texts (Keene & Zimmerman, 1997; McKeown et al., 2009; Pressley, 2000). Some cognitive strategies recommended by researchers include predicting based on prior knowledge (Cromley & Azevedo, 2007), synthesizing and summarizing (Ghaith, 2004), and self-questioning (Kazemi et al., 2013; Nolan, 1991). In this regard, Cromley and Azevedo (2007) suggested that background knowledge is a significant contributor to comprehension. Similarly, Nolan (1991) argued that self-questioning directs the reader's attention to critical aspects of the text.

Recent research has expanded our understanding about cognitive strategies by focusing on how flexible learners are and how they may change their strategies based on task demands and text type. For example, Bilir (2023) showed that students who used two cognitive methods at once (for example, combining prediction with visual outline) performed better at figuring out implicit meanings and authors' points of view. These studies show that cognitive strategy research has moved beyond just listing strategies to analysing strategy coordination, metacognitive control, and task-based transferability.

2.2. Compensation Strategies

Compensatory strategies are used to compensate or remediate for a lack in some language area (Cohen & Upton, 2006). For example, many test-takers face challenges with unfamiliar vocabularies and concepts or syntactic structures. To address such problems, researchers recommend using contextual clues such as syntactic (grammatical structure) and semantic ones like intra- and inter-sentence meaning relationship (Sheorey & Mokhtari, 2001; Yu & Altunel, 2018; Yap et al., 2021), and linguistic clues such as suffixes, prefixes, and word order (Oxford, 1990). Moreover, Pardede reported that successful EFL readers combine background knowledge with discourse-level features to develop educated guesses. Likewise, Yuxi (2024) stressed the role of visual and structural patterns in reading comprehension, arguing that teachers should focus on teaching ways of harnessing different contextual and structural sources for effective reading comprehension.

In addition to language and context signals, compensatory strategies involve multimodal literacy skills and adaptive reasoning, especially in digitally mediated EFL contexts. Recent research shows that skilled readers do not only depend on language-level cues; they also use genre-specific norms, visual aids, and discourse markers to fill in gaps in their understanding. (Alharbi, 2022; Al-Jarf, 2021). For example, Alharbi (2022) found that Saudi university students, who were specifically taught how to distinguish discourse markers such as contrastive and sequential connectors, performed better at figuring out what words meant and filling in missing words as they read. In the same way, Al-Jarf (2021) reported that EFL students who used mind mapping tools and visual organizers performed better at making inferences and predictions about textual content.

Pratiwi (2022) also pointed out that EFL students who used story-mapping tools not only made up for vocabulary they did not know, but also made their text reconstruction more coherent.

2.3. Memory Strategies

Memory strategies in reading refer to techniques that help learners store, retain, and retrieve information through mental or visual associations. Some memory strategies have been identified such as imagery and visualization (Bell, 1991; Paivio, 1986), story mapping (Istiqomah, 2022), and semantic mapping (Aini, 2024). Researchers have emphasized the effectiveness of these techniques in EFL contexts, demonstrating that visualization helps learners mentally reconstruct narrative elements and enhance retention (Boukhalfa, 2017). Story mapping, for instance, has been reported to enhance understanding of structure and relationships through enabling learners to sequence events and identify thematic patterns in a text (Istiqomah, 2022). Similarly, students who use semantic mapping tend to outperform those who rely on traditional note-taking in comprehension tasks (Aini, 2024). Furthermore, Boutheyna (2021) emphasized that these strategies are more effective when tied to learners' personal experiences as they enable the information of deeper mental models and schemas.

Recent advances in educational technology have further expanded the role of memory strategies in EFL settings by adding digital tools for mapping and visualization. For example, Rosário (2021) did a systematic review of software-based semantic mapping and found that visual interfaces helped students better organize language and ideas, which made them read faster. In the same way, Bilir (2023) analysed paper-based and digital semantic mapping and reported that the digital group remembered and understood better since the interactive visual aspects facilitated dual coding (verbal + visual memory). This supports Le-Thi and Dörnyei's (2022) assertion that imagery-based teaching improves memory not only by creating mental pictures, but also by activating pathways that are important for L2 learning. Also, Narawang and Phusawisot (2023) found that e-mind mapping helped Thai EFL students make their conceptual frameworks more visible and easier to change, which improved both their working memory and their long-term memory.

2.4. Test-taking Strategies

According to Cohen and Upton (2006), the combination of test management (e.g., selecting options through the elimination of other options as unreasonable based on paragraph or overall passage meaning) and test-wiseness (e.g., selecting the option because it appears to have a word or phrase from the passage in it – possibly a keyword) strategies is what previous literature called test-taking strategies. In a study on 32 students from four language groups (Chinese, Japanese, Korean, and Other), Cohen and Upton found some common test management strategies among test-takers such as paraphrasing questions, rereading questions, selecting and discarding options through vocabulary, sentence, paragraph, or passage overall meaning. In similar lines, Jacob (1985) recommended two ways for answering test questions. First, for multiple-choice questions, test-taker should answer the questions by elimination (test-management strategies). Second, test-taker should read questions and answers before reading the passage in order to focus on the relevant information in the passage. Likewise, Fry (1989) and Oxford (1990) asserted that reading with a purpose would significantly improve efficiency and test results.

Recent research has shown that test-taking strategies like elimination, keyword matching, and question paraphrasing are still useful, especially in multiple-choice reading forms utilized in EFL tests. For instance, Ketworrachai and Sappapan (2021) examined how Thai college students used reading strategies during English proficiency examinations and found that students who used keyword-based elimination and reread questions consistently scored better on comprehension assessments. These students usually looked over the material for essential keywords before reading the questions. Then they went back to the parts that were most important to them to verify or discard the options. Their results support the argument that using both bottom-up (like matching words) and top-down (like generating inferences based on the gist) strategies might help people make better decisions while taking reading tests. The research also showed that students who rephrased questions in their own terms before looking for solutions in the text had a better understanding and were more accurate.

3. The Present Study

The four strategies have received considerable attention in first and second language studies. However, little, research has been done on reading strategies in EFL contexts, especially in the

context of Iran. The difference between second language and foreign language (FL) contexts remains important as learners in FL contexts often tend to lack authentic, immersive exposure to the target language (Nadoushani, 2024). This contextual distinction tends to influence not only language acquisition but also test-taking and strategy employment. Furthermore, according to Zhang (1993), the use of appropriate strategies may improve reading comprehension. Therefore, this study aimed to investigate Iranian EFL students' strategy use in a reading comprehension test and provided a taxonomy of these strategies. Specifically, this study aimed at addressing the following research question: Which reading strategies do Iranian EFL students use in responding to reading tasks?

4. Method

4.1. Participants

Sixty EFL students from Ilam University were selected through convenience sampling. According to Phakiti (2003), personal characteristics influence language test performance. Test-taker characteristics include personal qualities such as age, native language, culture, gender and background knowledge, as well as cognitive, psychological and social traits like strategy employment, motivation, attitude, IQ, anxiety and socio-economic position (Phakiti, 2003). To control potential confounding variables, therefore, 30 male and 30 female students, aged between 18 and 28 ($M=23$), who were native speakers of Kurdish were selected in order to eliminate the effect of gender and native language. Also, to ensure that cultural differences did not affect results of the study, only students from Ilam were invited to take part in the study. Furthermore, their socio-economic status were approximately similar. Table 1 shows the demographic information of the participants.

Table 1. Participants' Demographic Information

Variable	Category	Frequency (n)
Gender	Male	30
	Female	30
Age range	18–28 years	60
Native language	Kurdish	60

Variable	Category	Frequency (n)
Place of residence	Ilam, Iran	60
Proficiency level	Low proficiency	30
	High proficiency	30
Socio-economic background	Similar across group	60

4.2. Instruments

4.2.1. The Ministry of Science, Research and Technology Test

The reading section of the Ministry of Science, Research and Technology (MSRT) Test was used in this study to investigate the students' strategy use. MSRT is an English proficiency test that is administered about once a month by Student Affairs Department of Iran's Ministry of Science, Research and Technology, and students' grade in this test is acceptable by almost all Iranian universities. In an investigation of 10 MSRT tests, Sahari and Mamaqani (2013), reported that the reliability of this test is more than 0.7, which is considered satisfactory. They also argued that the MSRT Test has satisfactory reliability and validity at general level. The format of MSRT Test is similar to that of TOEFL to a large extent; however, it tends to be easier than TOEFL. Therefore, the description of TOEFL item types presented in Cohen and Upton (2006) was used in this study (see Table 2). After scrutinizing MSRT item types, it was ensured that this description can be used for MSRT item types.

Table 2. MSRT Test Item Types

Item Number	Item Type
1	Basic comprehension - Vocabulary (Bc-V)
2	Basic comprehension - Pronoun reference (Bc-Pr)
3	Inferencing - Inferencing (I-I)
4	Basic comprehension - Negative fact (Bc-Nf)
5	Basic comprehension - Vocabulary (Bc-V)
6	Basic comprehension - Vocabulary (Bc-V)
7	Inferencing - Rhetorical purpose (I-Rp)
8	Basic comprehension - Vocabulary (Bc-V)

9	Basic comprehension - Vocabulary (Bc-V)
10	Reading to Learn (RI)

4.2.2. Think Aloud Protocols

In this study, *think-aloud* was used in order to obtain data about the strategies that test-takers used. According to Cohen (2007), in the think-aloud method, readers report their thoughts during reading; however, they are not supposed to analyze their own behavior. This approach is useful in language testing, where revealing test-takers' mental processes is necessary for understanding strategic behavior. In this study, the participants were taught how to think aloud and provided with some examples, as effective think-aloud instructions should be aligned with research objectives to make sure that participants focus on relevant cognitive processes (Ketworrachai & Sappapan, 2021). An important consideration in the think-aloud method is the language of verbalization. There is a danger that subjects will worry more about speaking out loud and focus less on the reading itself if they are required to verbalize in a foreign language; so they were told to use their mother tongue. After the test, retrospective interviews were done with the participants. They “provide an opportunity for investigators to ask directed questions to gain clarification of what was reported during the think-aloud” (Cohen & Upton, 2006, p. 15). They are specifically useful for understanding complicated cognitive and metacognitive strategies that may not be revealed during the task (Tabari et al., 2023).

4.3. Data Collection

After informing the participants about the objectives of the study, their signed consent letters were obtained. Provisions for confidentiality were also ensured. Since the researcher herself conducted all of the interviews and verbal protocols, the tests were not administered simultaneously so that she could ask the questions instantly after each participant took the test. The prompts for think-aloud protocols and interviews were developed by the researcher and checked by three experts. A pilot study was done on five individuals first to assess the practicality of the procedures. The test was administered at Ilam University.

4.4. Data Analysis

Based on the literature reviewed, a set of codes for the four reading strategies were prepared before administering the test. After collecting and analyzing the data, these codes were modified or combined for more precise investigation of the strategies actually used by the participants (see Tables 3, 4, 5, and 6 for the set of codes).

Table 3. Cognitive Strategies

Strategy Code	Description
C1	Using background knowledge in responding to items
C2	Connecting what they know with what they are reading (e.g., using past experiences, feelings, information and opinions to connect the text for better understanding)
C3	Predicting (based on what they have read)
C4	Skimming and then scanning the passage (not reading the whole passage)
C5	Skimming and then reading the whole passage
C6	Forming a general idea about the text
C7	Paying attention to the title in order to form a general idea about the text
C8	Analyzing text organization after reading the whole text
C9	Classifying different paragraphs of the text after reading the whole text

Table 4. Compensatory Strategies

Strategy Code	Description
Cp1	Inferring the meanings of new/unknown words by using work attack skills: Internal (root words, prefixes, etc.)
Cp2	Selecting answer because it appears to make sense in the passage
Cp3	Using other parts of the passage to help in understanding a given portion: Reading ahead to look for information that will help in understanding what has already been read
Cp4	Using other parts of the passage to help in understanding a single word

Table 5. Memory Strategies

Strategy Code	Description
M1	Imagining static representations of objects

M2	Imagining dynamic representations of action sequences
M3	Using paragraph imaging

Table 6. Test-taking Strategies

Strategy Code	Description
T1	Reading all of the questions and the answers before going to the portions of the passage that are related to each item
T2	Reading all of the questions and guessing the answers before going to the portions of the passage that are related to each item
T3	Reading all of the questions (and not the answers) before going to the portions of the passage that are related to each item
T4	Reading the questions one by one and respond to them by going to the text (not reading the whole passage)
T5	Predicting or producing own answer after reading the portion of the text referred to by the question and then looking at the options (Test-management)
T6	Reading the whole passage for responding to some items
T7	Selecting answer without referring to the passage (for those student who do not first read the whole passage, but simply refer to the passage for some questions)
T8	Constituting shortcuts to arriving at answers (not reading the whole text but simply looking immediately for the word that exist in the items and alternatives)
T9	Constituting shortcuts to arriving at answers (not reading the whole text but simply looking immediately for a portion (some sentences before and after the word or phrase that is related to the item under consideration) of the text)
T10	Constituting shortcuts to arriving at answers (not reading the whole text but reading some sentences before the word in the item)
T11	Selecting options through the elimination of other options as unreasonable based on paragraph or overall passage meaning (Test-management)
T12	Selecting options through elimination of other option(s) as unreasonable based on background knowledge (Test-management)

T13	Using the process of elimination (i.e., selecting an option even though it is not understood, out of a vague sense that the other options couldn't be correct) (Test-wiseness)
T14	Reading the whole paragraph for items that are not mentioned explicitly in the passage
T15	Referring to the text-for items that test-taker does not have any idea about
T16	Rereading the portion of the passage that is related to the item (for clarification)
T17	Rereading the items and answers (for clarification)
T18	Selecting options through background knowledge
T19	Selecting the answer because it appears to have a word or phrase from the passage in it-possibly a keyword (Test-wiseness)
T20	Selecting based on guess (to some extent)
T21	Selecting answers after reading questions that require text insertion (without going to the passage) (Test-management)
T22	Selecting an option simply because it is familiar to the student
T23	Making educated guesses (e.g., using background knowledge or extra-textual knowledge) (Test-management)
T24	Using clues in other items to answer an item under consideration (Test-wiseness)
T25	Reading the question and guessing the answer (before going to the text)
T26	Surface matching of identical information in the passage and in one of the response choices
T27	Reading the whole text before reading and answering items
T28	Produce a written translation of some words or phrases

To ensure the trustworthiness of this study, the four criteria suggested by Lincoln and Guba (1985), credibility, transferability, dependability, and confirmability, were considered. Credibility was ensured through prolonged engagement with the participants during both think-aloud training and retrospective interviews as well as through the triangulation of data sources. Transferability was enhanced by providing rich description of the context, participants, and the strategies. Dependability was supported through maintaining an explicit audit trail of coding decisions and

analytical procedures. Confirmability was maintained by reflective journaling and peer debriefing to decrease research bias.

4.5. Researcher's Positionality

As the only researcher in this study, I acknowledge that my background, professional background, and beliefs might have influenced both the design and interpretation of the research process. Moreover, my shared cultural and linguistic background with the participants might have influenced how the participants expressed their strategies and how I interpreted their ideas. These factors refer to researcher's positionality, positions that researchers select to adopt in their studies (Savin-Baden & Major, 2013). To minimize this bias in this research, I documented all of my decisions and interpretations, and asked three outside experts to review the reported document. They argued that after reviewing the data, they arrived at highly similar interpretations and conclusions.

5. Findings

The current study attempted to identify reading strategies used by Iranian EFL students. Table 7 shows the strategies used by both groups of students (high proficiency and low proficiency).

Table 7. Reading Strategies Used by the Students

Item	Low proficiency students	High proficiency students
Bc-V	C1, M1, M2, T1, T8, T9, T14, T18	C1, T8, T9, T12, T18, T25
Bc-Pr	M1, M2, T5, T9, T10	T5, T10, T19, T21
I-I	M1, M2, T5, T9, T11, T17, T21,	T8, T9, T11, T16, T17, T19, T21, T26, T28
Bc-Nf	C1, M1, M2, T5, T9, T11, T14, T16, T19, T21	T8, T9, T11, T12, T14, T19, T26
Bc-V	No answer, T21, T22	Cp1, Cp2, Cp4, M1, M2, T13, T15, T20, T22, T23
Bc-V	C1, T5, T7, T9, T18	C1, T8, T9, T18, T21, T25

I-Rp	M1, M2, T5, T9, T11, T12, T14, T16, T18, T23	C1, T6, T9, T11, T12, T14, T17, T18, T21, T23, T26, M1, M2
Bc-V	No answer, Cp1, Cp2, T8, T12, T15, T21, T23	Cp1, Cp2, M1, T12, T13, T22
Bc-V	No answer, Cp1, Cp2, T9, T20, T22, T23	Cp1, Cp2, T8, T9, T12, T13, T17, T22
Rl	T5, T6, T9, T10, T14, T24	T6, T8, T11, T17, T21
The whole test	C1, C2, C5, M1, M2, T1, T2, T3, T4, T27	C1, C3, M3, T1, T3, T4, T18, T27
While reading the reading passage	C3, C4, C6, C7, C8, C9, Cp3, M1, M2, T1	C1, C2, C3, C6, Cp1, Cp3, Cp4, M1, M2

As Table 7 shows, both high- and low-proficiency students relied mainly on test-taking strategies, constituting 61% of all of the coded strategies. This category was employed for all items by both groups, with frequent use of strategies such as reading specific portions of the text (T9), rereading item-related segments (T16), and eliminating implausible options (T11, T12). Among these, reading surrounding sentences near a keyword (T10) was the only strategy that was employed by all of the participants for item Bc-Pr. Also, the participants of both groups consistently used multiple test-management and test-wiseness strategies.

In addition to test-taking strategies, students employed a limited set of cognitive, compensatory, and memory strategies. Cognitive strategies like using background knowledge (C1) and predictive reading (C3) were more frequently observed in tasks that required inferencing or rhetorical comprehension. Compensatory strategies (Cp1, Cp2, Cp4) were used more in vocabulary-related items. Memory strategies, such as mental imagery (M1, M2), were used by both groups for responding to several items, particularly inferencing tasks. Items distribution varied by item type, including a broader range of strategy codes in vocabulary and rhetorical items. Both groups also used a mix of strategies during the full-test as well as while reading the text, including C1, C2, Cp3, M1, T1, and T27.

6. Discussion

This research examined the reading strategies used by Iranian high- and low-proficiency EFL learners in responding to the reading section of the MSRT examination. The research included think-aloud and retrospective interviews to identify and classify 44 distinct reading strategies into four primary categories: cognitive, compensatory, memory, and test-taking strategies. The findings showed that test-taking strategies were the most frequently used ones, including 61% of the total occurrences of coded strategies. This was uniform across all items and proficiency levels. Among them, T9 (referencing a particular section of the text), T16 (reviewing pertinent portions), and T11/T12 (discarding improbable possibilities) were the most often used. Cognitive strategies, including the utilization of background knowledge (C1) and prediction (C3), alongside compensatory strategies such as employing morphological knowledge (Cp1) and selecting plausible options based on contextual coherence (Cp2, Cp4), were identified across various items, albeit with reduced frequency. Memory strategies, including mental imagery (M1 and M2), were mostly used for inferencing and rhetorical items. In general, the use of strategies differed by item type, with vocabulary and rhetorical problems prompting the most array of strategies across groups.

The prevalence of test-taking strategies, particularly those involving removal, scanning, and keyword recognition, indicates that learners in this context viewed the reading section as a matter of procedural efficiency. These strategies exemplify test-wiseness and test management behaviours, emphasizing the identification of clues within test questions rather than the development of meaning through knowledge of the text. Strategies like T9 and T16 exemplify a selective reading approach aimed at reducing time and enhancing scoring efficiency, particularly in multiple-choice assessments. The dominance of test-taking strategies reflects the arguments of Cohen and Upton (2006), who noted that EFL test-takers often depend on elimination, scanning, and keyword matching while responding to multiple-choice reading questions. Ketworrachai and Sappapan (2021) similarly found that Thai university students preferred test-wiseness strategies over meaning-construction ones during proficiency tests, especially when under time pressure.

Cognitive and compensatory methods, despite being used less, seemed to serve a complementary function. Their involvement in items related to inferencing and vocabulary suggests that learners sometimes participated in more profound text analysis, especially when

superficial cues were inadequate. The use of C1 (background knowledge) and Cp1 (word attack skills) indicates efforts to address understanding gaps using previous information or linguistic proficiency. The infrequent use of these strategies, particularly among low-proficiency students, may indicate either a lack of understanding of these tools or challenges in using them under test pressure. The use of cognitive strategies, including prediction and background knowledge, corresponds with the findings of Zhang and Wu (2009), who indicated that students with better competence employ a wider range of strategies, particularly those necessitating the integration of textual materials with prior experience. The disparity in strategy frequency across proficiency levels in this research reflects Phakiti's (2003) arguments that strategy use is intricately linked to language competency and test outcomes. Phakiti specifically highlighted the significance of metacognitive coordination among proficient readers, a notion indirectly corroborated by the present study's findings, which indicate that high-proficiency students more often integrated test-taking with cognitive and compensatory strategies compared to their low-proficiency counterparts.

Memory strategies were the least frequent ones but had specific use, particularly for items requiring inference or interpretation. The use of M1 and M2 demonstrates students' efforts to visualize material or mentally recreate text sequences to preserve coherence or monitor details. These strategies correspond with mental modeling and memory processes, essential for processing non-literal or rhetorically organized elements. The restricted use of these strategies across various items may indicate the little visibility or underutilization of imagery-based training in standard EFL reading courses. This study's findings about the use of mental imagery and visualization align with Bell (1991) and Paivio (1986), who recognized imagery as a fundamental cognitive process in reading comprehension. Recent research (Rosário, 2021; Bilir, 2023) has broadened this concept to include the use of digital visual aids in facilitating memory-based understanding. The results also correspond with the extensive research confirming that visualization and semantic memory enhance inferential comprehension, particularly in EFL contexts with restricted exposure to target-language input.

7. Conclusion

The results of this research showed that both groups of Iranian EFL students used test-taking strategies more than other kinds of strategies. Moreover, there was a limited use of cognitive,

compensatory, and memory strategies. It was further found that while both groups used a variety of strategies, high-proficient ones showed a broader and more flexible strategy repertoire. The taxonomy developed in this study provides a detailed classification of strategy use in the context of Iran.

The results of this research have both theoretical and pedagogical implications. The taxonomy developed based on the real test-taking behaviors of Iranian EFL learners adds to current strategy categorization frameworks by including context-specific, task-dependent strategy use in a foreign language testing setting. It supports the idea that reading comprehension is not only a cognitive-linguistic process, but also a test-conditioned, strategy-mediated activity. This supports models that include both reading and test-taking components (Cohen & Upton, 2006). From a pedagogical perspective, the research shows that EFL courses need to include more explicit training in a broader variety of reading strategies, including cognitive and compensatory ones. Teachers can use the taxonomy to help students become more aware of their strategies, and curriculum designers can add specific activities that help students develop their metacognitive regulation, contextual guessing, and inference-making skills to get them more involved with texts than just test-taking strategies.

As for the limitations and suggestions for further research, this study did not include students from other cultures, as those students were not easily available. Hence, there is a need for further research with subjects from other cultures to investigate the effect of culture and context. Also, the sample was limited to 60 participants from one university, which may affect the generalizability of the findings to broader EFL populations or other cultural contexts. Moreover, the reliance on verbal protocols, despite being qualitatively rich, might not consider all cognitive processes, especially those that are automatic or hard to learners to articulate. Additionally, because of time constraints, the current research investigated strategies used in response to just some kinds of items. Hence, further studies should be conducted with more item types.

Bio-data

Shima Azizbeigi is a PhD holder in Teaching English as a Foreign Language (TEFL) from Allameh Tabataba'i University, Tehran, Iran. She has published in both peer-reviewed journals and edited volumes, including forthcoming publications with Springer Nature. She is interested in

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Declarations

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Authors' contributions: Conceptualization-writing-data generation and analysis-revision

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