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The Effect of Pictorial versus Linguistic Context on Iranian EFL Learners' Reading Comprehension

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ABSTRACT

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Objective: The objective of this study was to comparatively examine the effects of pictorial versus linguistic context on Iranian EFL learners' reading comprehension.

Methods: The study involved 60 female EFL learners from the Abidar Private Language Institute during the spring term of 2022 in Sanandaj, Iran; they were selected based on their scores from the Nelson Proficiency Test. Participants were divided into two groups: an experimental group exposed to both pictorial and linguistic contexts, and a control group exposed solely to linguistic context. After administering a 25-item multiple-choice reading comprehension pretest, both groups were differently taught based on American English File (3rd edition). A parallel reading comprehension post-test was conducted to assess the outcomes after the treatment.

Results: Data analysis indicated significant differences in reading comprehension scores between the two groups, demonstrating that the inclusion of pictorial context alongside linguistic context positively influenced learners' performance.

Conclusions: The findings suggest that incorporating pictorial elements in reading materials can enhance EFL learners' reading comprehension. This has implications for educational policymakers, textbook designers, material developers, language teachers, and learners, advocating for the use of adequate visual contexts to facilitate more effective learning.

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Introduction

Research indicates that over 2 billion individuals communicate in English as their first, second, or tertiary language (Crystal, 2019). English has emerged as the global lingua franca, influencing various aspects of life and being extensively used in academic, trade, and technological contexts (Rao, 2019; Kamal El-Qoassaby, 2015; Iranmehr et al., 2024). As the dominant global language, it fosters social integrity (Pandarangga, 2016) and cultural assimilation (Cunningham, 2017), while also serving as a gateway to economic opportunities (Adawiyah, 2022). Conversely, English proficiency has become a literacy benchmark, prompting increased investments in EFL/ESL teaching strategies that are efficient and cost-effective.

Reading comprehension is a crucial skill that learners need for both academic and everyday contexts, integral to critical thinking. For EFL students, reading serves to enhance their English abilities (Floris & Divina, 2015). It's defined as "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (Rand Reading Study Group, 2002, p. 11). Key outcomes of reading comprehension include grasping vocabulary meanings and analyzing authors' perspectives (Ruiz, 2015). The process is influenced by various factors, including contextual clues, where teachers can enhance reading comprehension by creating enriched contexts (Mohseni Takaloo & Ahmadi, 2017; Safavi, 2020).

Reading comprehension is multifaceted and involves the interaction between the reader's background knowledge and textual information through effective reading strategies. Linguistic knowledge, awareness of reading strategies, and interpretations of text structure are essential for comprehension (Dew et al., 2021; Pardo, 2004). Meaning occurs via an integrative process that combines the text's message with the reader's background knowledge and skills (Pardo, 2004), utilizing hints from the context to infer meaning (Smith & Fawson, 2005) and calling for innovative teaching procedure (Efendi, 2021). Context encompasses linguistic elements surrounding a text that shape its meaning. Despite its importance, reading comprehension can be influenced by various linguistic and non-linguistic contextual features, including audio-visual and typographical characteristics.

Based on what was presented, this study focused on the effect of linguistic vs. pictorial context on the reading comprehension of Iranian EFL learners. Therefore, the following research hypothesis was formulated:

H0: There is no significant difference between purely linguistic versus linguistic plus pictorial contexts in terms of their effect on Iranian EFL learners' reading comprehension.

Review of Related Literature

Levinson (1983) broadens the notion of context to include elements such as participant characteristics, and the temporal and spatial aspects of speech events, alongside participants' beliefs and intentions. Generally, context can be categorized into three types: physical (the actual setting, time, and environment), linguistic (the surrounding text that aids meaning), and pictorial (the visual presentations that stimulate learners' interest in the written text). Shen (2012) further elaborates that context, as a psychological construct, encompasses lexical items surrounding a word in communication, including the physical environment, shared knowledge, prior assumptions, and the mental capabilities learners bring to the learning situation.

A significant advantage of pictorial context is that it allows interpretation through linguistic means. It can simplify complex content and foster a competitive classroom atmosphere, enhancing engagement and effectiveness. Images may contain more information than they appear to offer and must be interpreted concerning the specific situational context in which they exist. Historically, the use of pictures for communication has been fundamental to humanity (Safavi, 2020).

Pictorial context can take various forms, such as films, movies, and slides, all of which utilize visual elements to aid understanding (Nasri & Namaziandost, 2019). Scholars like Bernhardt (1991), Gyselinck and Tardieu (1999), and Hibbing and Rankin-Erickson (2003) emphasize the enriching role of visual elements in enhancing reading comprehension in tandem with linguistic clues. Renandya (2002) highlights the importance of interaction between readers' thought processes and textual clues in improving comprehension. Previous experimental studies also underline the substantial impact of contextual clues on reading comprehension and associated critical thinking.

Widyana and Dewi (2020) employed a pretest-posttest design using pictorial cards to support slow learners, concluding that these cards significantly advanced reading comprehension. Similarly,

Pérez-Vidal et al. (2018) found that integrating pictorial context in pre-reading activities notably enhanced the reading comprehension skills of eighth-grade learners.

Efendi (2021) underscores the necessity of exploring innovative pedagogical resources to tackle classroom challenges and motivate students. The study asserts that pictures can be instrumental in enhancing comprehension of written texts while strengthening visual perception. Chun Pan and Ching Pan (2009) examined the influence of visual aids on Taiwanese EFL learners with limited proficiency, discovering that low-proficiency participants achieved higher scores in translation tasks when texts were accompanied by images, illustrating the positive effects of visual aids on comprehension. Leibrandt (2022) explores multimodal reading comprehension and advocates for learners' engagement with both textual and visual elements to deepen understanding. Conversely, Yu (2015) analyzed the reading comprehension tasks of the New Hanyu Shuiping Kaoshi, finding that not all pictures enhance comprehension; some may distract from it.

In a state-of-the-art exploration of critical thinking, Asgharheidari and Tahriri (2015) examined context's significant role in shaping teachers' attitudes. Wardini et al. (2021) suggest that picture books are valuable for improving comprehension of narrative texts. Furthermore, Pérez-Vidal and Juan-Garau (2011) investigated the effects of context and input on language proficiency, concluding that rich contextual embedding led to notable enhancements in oral and written performance. An experimental study by Shaw (2010) highlighted how contextual cues serve as concrete evidence that facilitate comprehension. Using pictorial aids significantly improved slow learners' reading comprehension due to their engaging nature.

Aldahash and Altalhab (2020) explored graphic novels' impact on reading comprehension, finding positive effects, with the experimental group outperforming the control group. EFL teachers and students agreed on the benefits of graphic novels for enhancing reading skills. In the Iranian context, Safavi (2020) found that pictorial tasks significantly boosted listening comprehension among elementary and upper-intermediate Iranian learners. Simin (2012) studying pictorial context, found that EFL readers improved significantly when provided with images alongside reading passages compared to those reading without pictures. Rasouli and Ahmadi (2021) concluded that pictorial fiction increased motivation and engagement in writing for Iranian EFL learners.

Tavassoli et al. (2013) examined the influence of pictorial contexts on reading comprehension in Iranian high school students, noting significant improvements, particularly during the pre-reading phase. In a related study, Majidi and Aydinlu (2016) demonstrated that contextual visual aids positively affected reading comprehension among high school learners. Lastly, Sanati (2019) investigated visualization's impact in Iranian EFL settings, revealing that participants exposed to visualization significantly outperformed their peers, emphasizing visualization's crucial role in enhancing comprehension abilities.

Material and Methods

Participants

The original sample included 90 Iranian female intermediate EFL learners studying English at Abidar private English Language Institute in Sanandaj, Iran were selected through Convenience sampling. Later, 60 learners were selected based on their performance in the Nelson English Language Test as the homogeneous sample. It means that the learners whose scores fell between one standard deviation below and above the mean participated in the main study. The participants were randomly divided into two groups of 30 learners one of which served as the experimental group (EG) and the other one as the control group (CG). The age range of the participants extended from 13 to 19 years.

Materials and Instruments

In order to perform the present study, the researcher used the following instruments:

Nelson English Language Test

It was employed as a mechanism for homogenizing the individuals involved in the research. The Nelson English Language Test is a battery including 40 separate tests for ten levels of language proficiency which range from beginner to the advanced. The levels are numbered from 050, 100, ..., to 500. Each test consists of 50 items. In the present study, a test of intermediate level – 250A – was used.

Reading Comprehension Test

Based on the content of the textbook used in the classes, the researcher developed two different versions of a reading comprehension test. Each version of the test included 25 items in multiple choice format which were categorized in Vocabulary and Reading Comprehension Sections. The

aim of the Vocabulary section of the test which included 10 items was to check the participants' ability in guessing the meaning of unknown words from the context. The Reading Comprehension section included 15 comprehension questions about two different passages and it aimed to measure the general comprehension ability of the participants (see Appendices C & D). The parallel-forms reliability of the two versions of the test was checked in a pilot study and the correlation coefficient between the participants' scores in the two versions was 0.79.

The textbook

The textbook used in both classes was American English File 2 (3rd edition). This book includes motivating, real-world texts and tasks to encourage students to speak. It also focuses on everyday language with its integrated video focus. The emphasis of this book is on communicative competence, and for this purpose, it makes a balance of skills, vocabulary, pronunciation, and grammar to enhance the students' confidence in language use situations. The reading comprehension passages in the textbook are about different topics, and they include authentic texts about the topics. Each reading comprehension passage is followed by a set of comprehension questions including reference-type questions, finding the meaning of the words in context, multiple choice, and open-ended questions, and. etc. The reading sections of this book are supported with visual materials to maximize learners' comprehension.

Procedure

In the initial phase, the Nelson English Language Test (NELT) was conducted on a sample of 90 participants. Based on the outcomes of this assessment, 60 individuals were chosen whose performance ranged within one standard deviation below and above the mean. The participants of the study were randomly assigned into one experimental group and one control group with 30 learners in each group.

Before conducting the main study, the researcher-made reading comprehension tests were piloted by administering them to 15 students similar to participants of the main study. Moreover, for the two versions of the reading comprehension test, parallel-forms reliability was calculated by measuring the degree of the correlation between the participant's scores in the two versions of the test. The correlation coefficient was 0.79, which was an acceptable index of reliability. Later the test was administered to both groups as the pre-test. The purpose was to find the learners' ability

in reading comprehension just before conducting the study as measures to be compared with their performance in the post-tests after treatment.

All the participants in both groups received instruction using American English File 2, suitable for intermediate students. The only difference between the two groups was how the materials were presented to the participants. It means that in the control group (CG), the learners were merely provided with copies of the lesson including only linguistic context (i.e., pictures removed) whereas in the second experimental group (EG), the participants received instruction using both pictorial and linguistic context (the normal book).

The instruction in both groups went on for ten sessions (two sessions a week) of 30 minutes. The whole session took 90 minutes, and in every session, only 30 minutes were allotted to the treatment. After the last treatment session, the researcher administered the reading comprehension post-test with minor changes like changing the order of the questions and the alternatives compared with the pretest.

Results

The Results of the NELT

To select the participants, all initial 90 students took part in the NELT, and students whose score fell between one standard deviation below and above the mean participated in the main study. Table 1 shows the descriptive statistics of the participants' PET scores.

Table 1. Descriptive Statistics of the Participants' Nelson English Language Test Scores

Variable	N	Minimum	Maximum	Mean	Std. Deviation
NELT	90	17	50	35.64	8.259
Valid N (listwise)	90				

According to Table 1, the overall mean and standard deviation of the initial participants' NELT scores were 35.64 and 8.259, respectively. From these initial participants, 60 students whose scores were between 28 and 43 were chosen. Table 2 presents the descriptive statistics for the participant's scores in the control group.

Table 2. The Results of the Participants' Pre-test and Post-test Scores in the CG

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test in CG	30	56	80	66.27	7.027
Post-Test in CG	30	64	104	76.17	8.859
Pre-Test in CG	30	6	22	13.37	4.189
Post-Test in CG	30	8	21	15.00	3.332
Valid N (listwise)	30				

As shown in Table 2, the participants' pre-test mean score in the CG was 66.27 with a standard deviation of 7.027, and their post-test mean score group was 76.17 with a standard deviation of 8.859. Regarding the participants' scores in the CG, their mean score in the pre-test was 13.37 with a standard deviation of 4.189, and the post-test mean score was 15.00 with a standard deviation of 3.332. Table 3 displays the descriptive statistics for the participant's scores in the experimental group.

Table 3. The Results of the Participants' Pre-test and Post-test Scores in the EG

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test in EG	30	52	76	65.87	6.678
Post-Test in EG	30	68	107	85.47	8.573
Pre-Test in EG	30	3	23	13.33	5.689
Post-Test in EG	30	9	25	18.20	4.334
Valid N (listwise)	30				

As Table 3 indicates, it has been revealed that participants' mean score in the pre-test in the EG was 65.87 with a standard deviation of 6.678, and their mean score in the post-test was 85.47 with a standard deviation of 8.573. The participants' pre-test mean score was 13.33 with a standard deviation of 5.689, and their post-test mean score was 18.20 with a standard deviation of 4.334. Although the descriptive statistics indicated the better performance of the linguistic+pictorial context group (EG), to have a more solid foundation for the claim in the null hypothesis running inferential statistics was necessary.

Testing the Null Hypothesis

To test the null hypothesis, the researcher had to run ANCOVA. As the first assumption, the normal distribution of the participants' RC scores in the experimental groups was checked through One-Sample Kolmogorov-Smirnov Test. Table 4 presents the results of this test.

Table 4. One Sample Kolmogorov-Smirnov Test for RC Pre-test and Post-test Scores in Two Groups

Variable		RC Pre-Test in EG1	RC Pre-Test in EG2	RC Post-Test in EG1	RC Post-Test in EG2
N		30	30	30	30
Normal Parameters ^{a,b}	Mean	13.37	13.33	15.00	18.20
	Std. Deviation	4.189	5.689	3.332	4.334
Most Extreme Differences	Absolute	.127	.115	.115	.107
	Positive	.098	.101	.115	.067
	Negative	-.127	-.115	-.100	-.107
Kolmogorov-Smirnov Z		.127	.115	.115	.107
Asymp. Sig. (2-tailed)		.200 ^{c,d}	.200 ^{c,d}	.200 ^{c,d}	.200 ^{c,d}
a. Test distribution is Normal.					
b. Calculated from data.					
c. Lilliefors Significance Correction.					
d. This is a lower bound of the true significance.					

As Table 4 shows, the p-value for each set of scores was higher than 0.05. Thus, the four sets of scores were normally distributed, and using the parametric test of ANCOVA was allowed. The equality of the variances between the two groups in terms of RC scores was inspected by Levene's test. Table 5 displays the results of Levene's test of equality of error variances.

Table 5. Levene's Test of Equality of Error Variances in Reading Comprehension Tests

F	df1	df2	Sig.
.009	1	58	.926

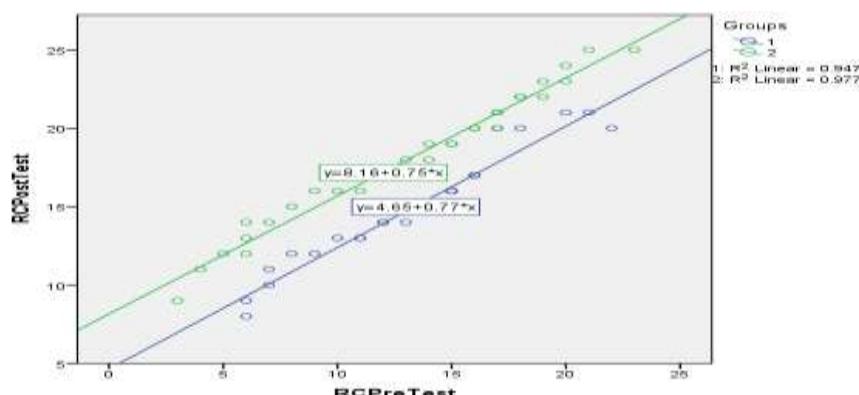
Table 5 confirms that the assumption of homogeneity of variance for the one-way ANCOVA has been met – as evidenced by $F (1, 58) = 0.009$, $p = 0.926$. That is, $p (0.926) > 0.05$. Then, the homogeneity of regression lines was examined the results of which are presented in Table 6.

Table 6. Homogeneity of Regression for RC Post-test in Two Groups

Dependent Variable: RC Post-Test					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	991.112 ^a	3	330.371	631.681	.000
Intercept	270.295	1	270.295	516.815	.000
Groups	20.233	1	20.233	38.686	.000
RC Pre-Test	769.837	1	769.837	1471.957	.000
Groups * RC Pre-Test	.144	1	.144	.276	.601
Error	29.288	56	.523		
Total	17554.000	60			
Corrected Total	1020.400	59			

a. R Squared = .971 (Adjusted R Squared = .970)

As it is indicated in Table 6, the p-value is equal to 0.601 which is higher than 0.05. It means that the interaction between the independent variable – use of context with the two levels of purely linguistic and linguistic plus pictorial – and covariate (i.e., RC pre-test) was not significant, and the assumption of the homogeneity of regression was accepted. Figure 1 displays the linear relationship between covariate and dependent variables.

**Figure 1.** The linear relationship between pre-test and post-test scores in the groups

Concerning testing the null hypothesis of the study, an ANCOVA was run. The results of this analysis are presented in Table 7.

Table 7. Analysis of Covariance (ANCOVA) for RC Scores

Dependent Variable: RC Post-Test						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	990.967 ^a	2	495.484	959.569	.000	.971
Intercept	297.319	1	297.319	575.796	.000	.910
RC Pre-Test	837.367	1	837.367	1621.671	.000	.966
Groups	156.042	1	156.042	302.195	.000	.841
Error	29.433	57	.516			
Total	17554.000	60				
Corrected Total	1020.400	59				

a. R Squared = .971 (Adjusted R Squared = .970)

As it is can be observed in Table 7, the first line shows that participants' pre-test was significantly and positively related to their post-test ($p < 0.05$) with the amount of 0.966. The next line shows the main effect of context on the dependent variable. After adjusting for pre-test scores, there was a significant effect of the group, $F(1,57) = 302.195$, $p < 0.05$, partial $\eta^2 = 0.841$. As the p-value was less than 0.05, the difference between the two groups was significant, and the effect of context on the participants' RC was confirmed. Hence, the second null hypothesis was rejected. To determine the type of context that had a better effect on the participants' reading comprehension, the researcher referred to the estimated marginal means of scores in the two groups. Table 8 presents the estimated marginal means.

Table 8. Estimated Marginal Means of RC Scores

Groups	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
CG	14.987 ^a	.131	14.725	15.250
EG	18.213 ^a	.131	17.950	18.475

Table 8 shows that the estimated marginal mean of the EG was higher than that of CG ($18.213 > 14.987$) and this indicates that the linguistic plus pictorial context was more effective than the purely linguistic context on the participants' reading comprehension score. Therefore the null hypothesis was rejected.

Discussion

The results of this experiment indicate that processing the context activates adequate and appropriate schemata, enabling learners to understand the text more readily. Engaging students in strategies that prompt them to infer the meanings of unknown words from context fosters a deeper comprehension of the whole text. As evidenced by Gyselinck and Tardieu (1999), scaffolded instruction in contextual inference makes learners capable of implementing techniques beyond the mere function of words, leading to enhanced reading comprehension that they might not have previously recognized.

In decontextualized circumstances, the comprehension process differs significantly. Fewer appropriate schemata can be activated when students lack connections between known and unknown elements. As noted by Ben-Shaul (2008), a single sentence often proves insufficient for grasping the meanings of unfamiliar words in a passage. Contextual engagement allows learners to use “an already constructed representation of what has gone before (the context) as a conceptual framework for interpreting a target sentence or any other linguistic unit” (Ortony et al., 1978, p. 467). This process is vital for acquiring idiomatic expressions; however, when idioms are presented in isolation, learners have limited contextual support. Therefore, while the schemata activation decreases, learners' understanding does improve compared to purely decontextualized situations due to the inherent connections they make from prior knowledge.

Regarding the more significant performance of learners exposed to pictorial plus linguistic contexts versus purely linguistic contexts, Paivio's (2006) dual-coding theory serves as a compelling justification for these findings. According to Paivio, images and words engender distinct cognitive representations, implying that the brain engages different memory systems for diverse types of information. He argues that verbal information is processed through sensory memory to visual processors. This theory highlights that memory is structured as a network with unique verbal and visual pathways leading to the same information. Consequently, the more pathways learners employ to recall information, the more proficient they become as readers, leading to enhanced retention and recall. As Miller (2003) posits, these multimodal aids foster a more engaging learning experience, ultimately boosting student motivation. Thus, when students are placed in contexts that rely solely on linguistic means, comprehending related input without visual support becomes exceedingly challenging.

The results concur with existing literature, indicating that Iranian EFL learners, like others, effectively employ inference from context to derive meanings of unknown or unfamiliar language elements encountered in various contexts. The findings reveal that contextual clues significantly aid learners in deciphering unknown words while concurrently fostering critical thinking skills. Learners utilize a range of comprehension strategies, including guessing from context, discussing, analyzing terms, and applying literal meanings when interpreting English words within one- or two-sentence frameworks (Shen, 2012; Safavi, 2020). This multifaceted approach to contextual understanding underscores the necessity of integrating varied strategies to enhance comprehension in language learning.

The results of the study are also consistent with the results of some similar studies including Majidi and Aydinlu's (2016), Gyselinck & Tardieu (1999), Renandya (2002), Hibbing and Rankin-Erickson (2003), Simin (2012), , (2020), Rasouli and Ahmadi (2021), Wardini et al. (2021), Adawiyah (2022), and Leibrandt (2022), to name a few.

Conclusion

The aim of the present study was to examine the probable difference between the effects of purely linguistic versus linguistic plus pictorial contexts on Iranian EFL learners' reading comprehension. Data analysis of the pre-test and post-test results revealed a significant difference in reading comprehension between the two groups, favoring the group that was supported by pictorial context. Therefore, it can be argued that learners' awareness of pictorial context clues contributed significantly to their reading comprehension, aligning with findings from Widyana and Dewi (2020) and Pérez-Vidal et al. (2018), who also emphasized the positive impact of pictorial aids on understanding.

The findings underscore the importance of integrating pictorial elements into language instruction, as these elements serve as powerful tools for enhancing comprehension. According to Bernhardt (1991) and Gyselinck and Tardieu (1999), visual cues enrich reading experiences, showing that the incorporation of imagery can facilitate the comprehension process. Therefore, it is suggested that learners elevate their techniques and strategies in utilizing contextual clues within language classes. By employing both linguistic and pictorial contextual clues, learners can effectively infer the meanings of unknown words, as highlighted by Shen (2012), thus demonstrating a proactive approach to tackling comprehension challenges. This dual approach not only aids in understanding

passages but also cultivates critical thinking and problem-solving skills, making it a viable teaching and learning tool.

Under the guidance of the instructor, students can rehearse a heuristic and critical approach to reading comprehension. As they navigate through texts, learners can be encouraged to engage in a process of inference, which is crucial for developing deeper comprehension skills (Safavi, 2020). As Cain et al. (2009) point out, the inference strategies employed in this study can be adapted to instructional settings involving either individual students or entire classes. Instructors can facilitate this process by encouraging students to utilize contextual clues, prompting them to move forward and backward within the text to guess the meanings of unfamiliar words—an approach supported by Renandya (2002), who emphasizes interaction with textual clues for improved comprehension. This interactive method not only promotes active engagement but also fosters a collaborative learning environment where students can share insights and strategies.

Moreover, the instructor can guide learners toward the correct answers by providing hints about word meanings, thereby scaffolding their understanding. As students attempt to derive meanings, the instructor can pose targeted questions that direct their attention to contextual clues, reinforcing the importance of these strategies for future reading endeavors. This approach not only aids immediate comprehension but also equips learners with skills they can apply independently in their reading activities, as supported by the findings of Rasouli and Ahmadi (2021).

In conclusion, to assist foreign language learners in reading and comprehending written material, presenting texts in a dual-coded mode—combining linguistic and pictorial elements—can be highly beneficial. Hughes and Sweeney (2020) outline how multimodal resources can enrich learning experiences; thus, educators should focus on teaching students how to exploit these techniques in their own learning processes, empowering them to become more autonomous learners. The findings of this study indicate that mental visual imagery is foundational to how the pictorial context of the text operates, suggesting that visual aids should be systematically integrated into language curricula to optimize reading comprehension outcomes. By fostering an environment where learners can effectively utilize both linguistic and pictorial clues, educators can significantly enhance the reading skills of EFL learners, ultimately leading to improved academic performance and greater confidence in language use.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Farhangian University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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