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The Effect of *Self-Questioning Strategy* on EFL Tenth-Grade Students' Reading Comprehension

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ABSTRACT

This study investigated the effect of the *self-questioning strategy* on English as a Foreign Language (EFL) for tenth-grade students' reading comprehension. A quasi-experimental design with two groups was employed. The researcher randomly assigned two whole sections of grade 10 from Al Samtt Secondary school for Boys, a public school, Directorate of Education in Irbid (AL Kora Directorate of Education). First, the experimental group of 25 students selected and second the control group of 25 students was selected. To achieve the purpose of the study, a pre-/post reading comprehension test was designed. In addition, *self-questioning strategy* was used to teach the experimental group, whereas a control group was taught by the conventional teaching strategies, as suggested in the Teacher's Book. Results showed that there were significant statistically differences between the control and the experimental groups in favor of the experimental group. Considering the research results, the researcher recommended to use *self-questioning strategy* on different EFL skills and different levels of students. Teachers also should enroll in in-service training courses that provide more information about the curriculum revisions and programs that focus on improving their questioning abilities.

1 Introduction

Reading is a very important part of communication in a foreign language. English as a foreign language (EFL) is a basic school subject and a necessary course in Jordan's universities and schools. It is also a requirement for people who want to progress professionally, communicate well, or have easy access to information. As a result, dedicated EFL learners are required to put in a lot of effort to improve both their language production (speaking and writing) and comprehension (listening and reading) skills.

Reading is essential for effective language acquisition. Success in school and the workplace depends on it (Alderson, 1984).^[3] Reading fosters lifelong learning, opens

doors for readers, and teaches them new things (Chastain, 1988).^[17] Reading exercises should emphasize comprehension (McShane, 2005).^[26] Reading comprehension, according to Snow (2002),^[32] is the process of extracting meaning from written language through an interactive process in which the reader interacts with the text and participates by utilizing his or her abilities, background knowledge, experiences, and skills.

According to Kintsch (1988),^[25] reading comprehension is the central component of reading, which allows the reader to comprehend and infer the meaning of printed texts. It is thought to be a complicated process that involves one's knowledge, experience, and attempt to devel-

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op intuition (Chen, 2009).^[18] Reading comprehension is defined as “the process of simultaneously extracting and constructing meaning through interaction and involvement with written language” (Snow, 2002:11).^[32] According to Stricklin (2011),^[33] it is a multi-step process that students go through in order to comprehend what they are reading.

Barnett (1989)^[14] stated three levels of reading comprehension: literal, inferential, and critical level. When it comes to the literal level, it requires that the reader understand what is being said in the text. The second level is the inferential level, when the reader attempts to comprehend the text by reasoning, drawing on prior knowledge, and interpreting the text in order to ascertain the meaning behind what is presented. The reader advances to the critical level, when they make decisions as they read based on facts or opinions, comparisons, and cause-and-effect relationships, moving beyond the text.

Questioning, as a reading strategy, plays a vital role in assisting learners to effectively understand complex reading demands. Before, during, and after reading, readers can use the questioning. Readers must engage in a questioning process in order to create meaning, improve understanding, identify solutions, address issues, locate information, and learn new knowledge (Harvey & Goudvis, 2007).^[21] With this strategy, students go back to the text as they read to find the answers to the questions the teacher asked before, during, and after the reading. Also, they can recognize whether the questions are factual, inferential or based on students’ prior knowledge. (National Reading Panel, 2000).^[29]

According to Mucher (2007),^[28] Questioning is more of a learned ability than an innate one. According to Cotton (2001),^[19] questioning is the use of questions as instructional cues to help students understand the material they need to learn as well as rules for what and how to do. Literal, inferential, and applied questions are the three main categories of reading comprehension questions (Day & Park, 2005).^[20]

A literal question is one in which both the question and the answer words are typically present in the same sentence. Inferential question inquires reading between lines to understand and find solutions. Readers must read at least two sentences before they can determine the solutions because they must put information together. Readers’ prior knowledge and experiences might be used to provide answers to the applied questions. In order to respond to the question, they must evaluate and combine data. Inferential and applied questions are high-level ones since the readers necessitate thinking deeply and critically; and when they are asked questions, they need to make connections between different components of the text, selectively

make hypotheses, concentrate on specific and important themes, and use attention (Van den Broek, Tzeng, Risden, Trabasso, & Basche, 2001).^[35] Using one of questioning strategies such as *self-questioning strategy* in students’ learning may guide them to deeply and accurately comprehend the situations they face daily.

Self-questioning is a strategy that helps students comprehend the text by allowing them to come up with questions as they read. It also makes it easier for them to be independent in their comprehension because they are fully engaged and thinking in an organized and goal-directed manner. Additionally, *self-questioning* is a continuous act in which readers generate questions to better comprehend a text (Williamson, 1996).^[36] In other words, students may manage their reading comprehension and improve their capacity for independent learning through *self-questioning strategy*.

Self-questioning is a strategy that aids students better understand the text by generating questions while reading it. Students will independently understand the text due to their fully engagement through organized and oriented-goal thinking (Williamson, 1996).^[36] *Self-questioning strategy* involves assessing one’s own reading comprehension using a set of questions that appear to be either self-generated or prepared by teachers (Almeida, 2012).^[8] This strategy is described as a continuous act in which the reader generates a set of questions for better understanding of the text. Additionally, research (e.g., Kamalizard&Jalilzadehb, 2011;^[24] Pearson, Roehler, Dole & Duffy, 1992)^[30] showed that students who receive instruction in creating self-questions read more fluently than those who don’t.

According to Algozine, Dorothy, Obiakur, and Festus (2008),^[5] a student can utilize a variety of strategies to develop, consider, forecast, research, and respond to questions regarding the text they are reading. To engage in *self-questioning strategy*, a reader must search for textual cues that prompt them to consider potential meanings, ask questions about meanings, predict the answer, read to discover it, assess it in light of their predictions, and reconcile discrepancies between their questions and their predictions with the information the author has actually provided in the text. Asking questions is only one aspect of *self-questioning strategy*. Textual hints that students ordinarily overlook must be read carefully by them.

In Jordan, the Teachers’ Book for English Reading highlights the general outcomes of grade 10. It stated that in order to understand basic knowledge and literary literature, students need to use their reading skills. Additionally, students must show that they comprehend the tales and letters they have read. Students in the tenth

grade should connect their prior information, life experiences, and methods for reading. Tenth grade students, are expected to: Scan texts for specific information; use context to guess the meaning of new words, use pictures to participate in a simple discussion; skim the texts for the main ideas; demonstrate understanding of an authentic informational text by answering questions; demonstrate understanding of an authentic informational text by justifying their predictions; make connections between prior knowledge and an informational text; take part in a debate using expressions related to agreement and disagreement; and deduct the implicit meanings in the text, and make judgments (Ministry of Education, 2006).^[27]

2 Statement of the Problem

The researcher has observed a general weakness in students' capacity to successfully understand the written texts, thereby, failing to answer literal, inferential, and critical reading comprehension questions over his 15 years of teaching English in Jordan and Kuwait. This challenge may be attributed to EFL teachers' use of conventional instructional methods and strategies for reading comprehension. As a result, students may be unable to comprehend the reading texts, ask and answer the reading comprehension questions, and self-generate questions before, while and after reading texts.

Furthermore, Jordanian researchers (e.g., Al-Jamal, Hawamleh, & Al-Jamal, 2013;^[6] Al-Damiree & Bataineh, 2015;^[2] Smadi & Al-Shra'ah, 2015;^[31] Bataineh & Mayyas, 2017;^[15] Al-Khamaiseh & Al-Jamal, 2022)^[7] indicated that EFL Jordanian students face problems while reading, as contributed to the lack of proper instructional strategy. To overcome this problem, integrating *self-questioning strategy* may improve students' reading comprehension skills. In the same line, many studies (e.g., Jabbaripour, Mostafaii, & Marefat, 2017;^[22] Alghalban (2019),^[4] Azmi and Usman, 2021)^[13] found that *self-questioning strategy* had a positive effect and recommended it in the teaching/learning process.

2.1 Purpose of the Study

The purpose of this study is to determine how *self-questioning strategy* affects the reading comprehension of male EFL students in Jordan who are in tenth grade.

2.2 Question of the Study

The present study is designed to answer the following research question:

- Are there statistically significant differences ($\alpha =$

0.05) on Jordanian EFL tenth-grade students' overall reading and reading comprehension levels (literal, inferential, and critical) that can be attributed to the teaching strategy used (*self-questioning* vs. conventional instruction)?

2.3 Significance of the Study

This is one of the few studies that examines the effect of the *self-questioning strategy* on students' reading comprehension skills in Jordan. The current study is pertinent because incorporating *self-questioning strategy* into reading comprehension lessons may improve performance among Jordanian EFL tenth-grade students. The findings of this study may help EFL teachers implement an innovative strategy for instructing reading comprehension. The study is significant because it can aid in the development and teaching of the reading curriculum by assisting in the planning and developing pertinent assignments and activities that improve students' reading comprehension. The current study's findings may encourage more research into the possible impacts of *self-questioning strategy* on other English language proficiency, notably in Jordan.

Operational Definition of Terms

The following terms are defined as follows in the current study:

Self-Questioning: Is a reading strategy in which students try to understand and remember a reading material by asking and answering high level questions about the text they are reading (Taboada & Guthrie, 2006).^[34] In this study, it is a strategy to improve students reading comprehension through teaching them how to self-generate questions before, while and after reading texts.

Reading Comprehension: Is how the learner extracts the required meaning from the written texts as efficiently as possible (Snow, 2002).^[32] The ability of tenth-grade students to comprehend a text at the literal, inferential, and critical levels is examined in this study. Based on the results of the two modules (4 & 5) *Action Pack 10*, it is evaluated by the reading comprehension post-test.

2.4 Limitations of the Study

The generalizability of the findings could be bound to the following:

1. School type and sample: The study is only generalizable to students in the tenth grade at the AL-Samt Secondary School for Boys in the Al-Kora Directorate of Education during the second semester of the academic year 2022–2023. As a result, the findings can be generalized to comparable samples or situations.

2. The study's intervention period is only eight weeks long. Different amounts of time could have different results.

3. Action Pack 10 (specifically modules 4 and 5), a textbook utilized in Jordanian public schools, served as the study's textbook. A different textbook with different material can provide different results.

4. The study's focus was on reading comprehension abilities relevant to the levels of literal, inferential, and critical comprehension reported in modules 4 and 5 in *Action Pack 10*.

3 Review of the Related Literature

The following studies are pertinent to the investigation of *self-questioning strategy* and were gathered by the researcher after examining educational research.

Al-Shedeiah (2014)^[10] investigated the effectiveness of *self-questioning strategy* in the development of tenth-grade students' reading comprehension skills and their attitudes towards reading. The participants were 66 female students. Data were collected through a pre-/post-test and an attitudinal questionnaire. The results showed that there were statistically significant differences between the experimental and control groups students' mean scores on reading comprehension skills, favoring the experimental group. The results also showed that the experimental group had positive attitudes towards using *self-questioning strategy*.

Amalia and Devanti (2016)^[12] improved students' reading comprehension by the use of questioning technique. The participants of the study were the second grade students. They are all thirty-two students. Data were collected through in-depth-interview during the process of teaching and learning and test which was given in the end of the process. The results of the study showed that the use of questioning strategy can improve the second grade students' reading comprehension.

Al-Shaigy (2016)^[9] examined the effect of *self-questioning strategy* on students' achievement and on the development of critical thinking skills among the ninth-grade students in Kuwait. The participants were 68 female students. Data were collected through an achievement test and critical thinking test. The results showed that there was a significant positive effect on the use of *self-questioning strategy* on students' achievement and critical thinking skills.

Joseph, Alber-Morgan, Cullen, and Rouse (2016)^[23] reviewed experimental research studies that examined the effects of *self-questioning strategy* on school-age students' reading comprehension to determine the extent to which *self-questioning* is an evidence-based practice. This re-

view resulted in 35 experimental research studies that involved teaching *self-questioning* to K-12 students with and without disabilities. The findings revealed that a variety of strategies were used to teach *self-questioning* to students and this *self-questioning strategy* was effective for improving reading comprehension performance across a range of diverse learners and various educational settings.

Albdour (2017)^[11] investigated the effect of *self-questioning strategy* on developing critical reading and creative writing skills in English among first-year students at Al-Hussein Bin Talal university. The participants were 35 male and female students. Data were collected through critical reading test and creative writing test. The results showed that there were statistically significant differences between the experimental and control groups students' mean scores on reading comprehension skills, favoring the experimental group.

Jabbaripour, Mostafaii, and Marefat (2017)^[22] investigated the effectiveness of self-regulatory and *self-questioning strategies* instructions on Iranian EFL learners' reading achievement. The participants were 45 male and female students designated into two experimental and one control group. Each consisted of fifteen (N=15). Data were collected through a questionnaire. The findings revealed that the two experimental groups that received self-regulatory and *self-questioning strategies* significantly outperformed the control group.

Alghalban (2019)^[4] investigated the impact of employing *self-questioning strategy* on developing reading comprehension skills among the fourth-grade female students and their attitudes towards it. The participants were 76 female students. Data were collected through a pre-/post-test and an attitudinal questionnaire. The results showed that there were statistically significant differences between the experimental and control groups students' mean scores on reading comprehension skills, favoring the experimental group. The results also showed that the experimental group had positive attitudes towards using *self-questioning strategy*.

Bataineh and Al-Shbatat (2019)^[16] investigated how questioning affected the critical reading abilities of Jordanian EFL ninth graders. 85 students participated in the study. A pre/post critical reading test, as well as a semi-structured interview, were used to gather the data. According to the study's findings, the experimental group outperformed the control group because both questioning and *self-questioning* improved students' capacity for critical reading, with questioning having a stronger effect than *self-questioning*.

Al-Swelmyeen and Sakarneh (2020)^[11] determined the effect of *self-questioning strategy* in developing independ-

ent thinking in teaching physics. Forty-six students from Jordan's Amman schools' first secondary science class participated in the study. Through the independent thinking test, data were gathered. A semi-experimental strategy was used. The study's findings showed that there was a statistically significant difference between the means of the two groups (the experimental group and the control group) in terms of their capacity for independent thought, with the experimental group being more likely to exhibit it. Students were able to organize their learning freely and independently by using *self-questioning strategy*, which also enables them to design learning activities that include determining the crucial learning outcomes.

Azmi and Usman (2021)^[13] studied the effectiveness of using *self-questioning strategy* on students reading comprehension in the grade eight students at MTs DDI Soni. A quasi-experimental design was used. Forty students participated in the study. A pre and post-test test were used to gather data. The results of the study showed that employing *self-questioning strategy* could enhance reading comprehension.

4 Concluding Remarks

Many studies (e.g., Albdour (2017),^[1] Alghalban (2019),^[4] Al-Shaigy (2016),^[9] Al-Shedeiah (2014),^[10] Al-Swelmyeen & Sakarneh (2020),^[11] Amalia & Devanti (2016),^[12] Azmi & Usman (2021),^[13] Jabbaripour, Mostafaii, & Marefat (2017),^[22] Joseph, et al., (2016),^[23] and Bataineh & AL-Shbatat (2019))^[16] confirmed that *self-questioning strategy* is advantageous and effective. Additionally, it was revealed that a small number of research studies had been conducted to look at how *self-questioning strategy* affected college and high school students' reading comprehension. However, prior research demonstrated that *self-questioning strategy* had a significant positive impact on the growth of EFL students' reading comprehension as a whole.

To find out how *self-questioning strategy* influenced EFL learners, numerous studies were conducted. However, there hasn't been a lot of research on Arab English learners. There haven't been any local studies on the effects of *self-questioning strategy* on Jordanian students' reading comprehension.

5 Method and Procedures

5.1 Design and Variables of the Study

In the present study, the quasi-experimental design was followed. The independent variable was the teaching strategy employed *self-questioning teaching strategy* or *traditional strategy*. The dependent variable was the students' performance in the reading comprehension post-test.

5.2 Participants of the Study

The present study consisted of two EFL tenth-grade sections of 50 students who were purposefully chosen since the researcher has strong ties with the English teacher in it. They studied at Al Samtt Secondary school for Boys, a public school, Directorate of Education in Irbid (AL Kora Directorate of Education). The present study was carried out during the second semester of the academic year 2022/2023.

Twenty-five students were selected as the experimental group and then 25 students were selected as the control group. To ensure equality, a pre-test was administered to the students in the two groups. The experimental group was taught the reading activities from the *Action Pack 10* textbook using *self-questioning strategy*. The Teacher's Book of *Action Pack 10* was used to provide the lesson plan for the control group, but there was no mention of *self-questioning strategy*.

Research Instrument

The pre/post-test of reading comprehension was designed to achieve the purpose of the study. The description of the instrument is as follows:

The Pre/Post-Test for Reading Comprehension

Based on a review of similar prior literature, the researcher designed a reading comprehension pre/post-test. The three fundamental reading comprehension levels (literal, inferential, and critical) were the focus of the pre and post-tests. Each of these levels was assessed using a unique set of questions that the researcher created in accordance with the tenth-grade modules used in Jordanian public schools and the reading material. The reading comprehension exam was designed using the learning and teaching materials found in the teacher's book. The purpose of the test was to gauge how well each student understood what they had read both individually and collectively before and after applying *self-questioning strategy* in the experimental and control groups to verify the effect of this teaching strategy.

To assess the students' reading comprehension at three levels (literal, inferential, and critical), the pre-/post-test included two reading passages with various questions. Twenty-four questions in total, divided into three levels, were asked. The first level, which accounted for 30% of the total questions, measured literal level and had 12 questions. 8 questions, or 40% of all the questions, made up the second level, which assessed inferential level. 4 questions, or 30% of all the questions, made up the third level, which assessed the critical level.

5.3 Test Validity and Reliability

Content Validity

The validity of the reading comprehension test was investigated by a jury. The jury was given instructions to read the test and assess its content and grammar. Following the evaluation of the test, the jury provided feedback and recommendations to the researcher. When the test's questions were amended, their comments and suggestions, such as replacing unclear questions for ones that were clearer, were taken into consideration.

Construct Validity

The Pearson Correlation Coefficient was retrieved between the item score and the total score of the item's level and the total score of the entire test in order to assess the construct validity. Between the item score and the level's total score, a corrected item total correlation was also extracted. The results showed that the Pearson Correlation Coefficient (i.e., the values are higher than 0.35) between the item score and the total score of its level and the total score of the entire test is statistically significant. The corrected item-total correlation (the relationship between an item's score and the level's overall score) is likewise greater than the cutoff point (0.40). These findings suggest that the internal consistency of the reading comprehension exam is at an acceptable level.

Test Reliability

Cronbach Alpha Coefficients and the test-retest method were used to assess the reliability of the reading comprehension test. The results showed that the literal, inferential, and critical Cronbach Alpha Coefficients were 0.88, 0.87, and 0.89, respectively. For the entire scale, it was calculated to be 0.90, which is all above the cut-off value.70 (Cronbach, 1951). Additionally, the literal, inferential, and critical test-retest coefficients were 0.83, 0.89, and 0.87, respectively. For the entire scale, it was calculated to be 0.88, which is all above the cut-off value.70 (Cronbach, 1951).

Self-Questioning Strategy-Based Instructional Program

The researcher designed a *self-questioning strategy*-based instructional program to aid participants in increasing their reading comprehension in order to fulfill the study's objectives. The reading comprehension activities in modules 4 and 5 were also redesigned by the researcher so that participants in the experimental group engaged in *self-questioning strategy* during their reading comprehension sessions.

The Instructional Material

Modules 4 and 5 of Action Pack 10's Student's Book and Activity Book served as the basis for the instructional materials used in this study. For the participants in the experimental group, the researcher redesigned these activities based on *self-questioning strategy* that was used to teach reading comprehension skills.

Duration and Content of the Instructional Program

This instructional program lasted for eight weeks. It started on the 6th of March 2023 and ended on the 7th of May 2023. The reading comprehension activities of the modules (4 and 5) of *Action Pack 10* were redesigned in the light of *self-questioning strategy*. The reading comprehension activities of each unit were alienated into two 45-minute sessions a week for eight weeks.

Procedures for Designing and Implementing the Instructional Program

To implement the current program, the following procedures were carried out:

1. Analyzing the content of the reading comprehension exercises present in *Action Pack 10*'s targeted modules (4 and 5).
2. Recognizing the reading comprehension skills in *Action Pack 10*'s targeted modules.
3. Outlining the procedures to be followed during every lesson.
4. Selecting the right period of time for each task.
5. Before introducing the targeted *self-questioning strategy*, administer a reading pre-test to the control and experimental groups.
6. Enabling the focused *self-questioning strategy* for the experimental group. An instructional program based on self-questioning strategies will be used to teach the experimental group.
7. Conducted a post-test to gauge the students' comprehension of what they had read.

Validity of the Instructional Program

To ensure the instructional program's validity, the researcher presented it to a panel of English curriculum and instruction specialists. A review of the program and any feedback or comments from the jury regarding the program that was distributed were requested by the researcher. The researcher implemented the adjustments as they had suggested.

6 Results

To answer the research question, the researcher fol-

lowed the following procedures:

1. The means and standard deviations of the pre-/post-test scores in the overall three levels of reading comprehension, which are: literal, inferential, and critical for the experimental and control groups were calculated, as shown in Table 1.

Table 1: Means and Standard Deviations of the Overall Reading Comprehension

Group	Pre-test		Post-test	
	*Mean	S.D	*Mean	S.D
Experimental	13.55	1.85	33.15	2.06
Control	14.35	2.01	26.55	4.57
Total	13.95	1.95	29.85	4.84

*The total score is 40

Table 1 shows that the mean score of the experimental group (Mean=33.15) is higher than the mean score of the control group (Mean=26.35) in the overall reading comprehension.

To investigate the statistically significant effect of the teaching strategy (*self-questioning* vs. conventional) on the overall reading comprehension after controlling the effect of the pre-test scores, a one-way analysis of covariance (ANCOVA) was performed, as shown in Table 2.

Table 2: Results of One-Way ANCOVA for the Effect of Teaching Strategy on the Overall Reading Comprehension

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-test (Covariate)	3.267	1	3.267	.255	.617	.007
Teaching method	432.243	1	432.243	33.724	.000	.477
Error	474.233	37	12.817			
Total	36554.000	40				
Corrected Total	913.100	39				

Table 2 shows a statistically significant difference between the two groups in the overall reading comprehension after controlling the effect of the pre-test scores in favor of the experimental group. The partial eta squared value of (.477) indicates that the teaching strategy explained 47.7% of the variance in overall reading comprehension performance.

Furthermore, the means, standard errors, and standard deviations of the two groups in the overall reading comprehension before and after controlling the overall pre-test scores. Table 3 illustrates the results.

Table 3: Adjusted and Unadjusted Means of the Overall Three Reading Comprehension Levels

Group	Unadjusted Mean		Adjusted Mean	
	Mean	S.D.	Mean	Std. Error
Experimental	33.15	2.06	33.21	.810
Control	26.55	4.57	26.49	.810

As shown in Table 3, there are observed differences between the two groups in the overall reading comprehension post-performance after controlling the differences in the pre-test scores. As such, using *self-questioning strategy* to enhance the overall reading comprehension performance of the experimental group.

2. The means and standard deviations of pre-/post-test scores in the three reading comprehension levels (i.e., literal, inferential, and critical) were calculated, as shown in Table 4.

Table 4: Means and Standard Deviations of the Pre-Test and Post-Test Per-level in the Three Reading Comprehension Levels

Reading level	Group	Maximum score	Pre-test		Post-test	
			Mean	S.D	Mean	S.D
Literal	Experimental	12	3.70	1.08	10.20	.83
	Control		4.00	.79	8.45	1.96
Inferential	Experimental	16	5.20	1.15	13.15	1.23
	Control		5.55	1.05	10.45	1.64
Critical	Experimental	12	4.65	.99	9.80	.95
	Control		4.80	1.15	7.65	2.11

Table 4 shows that the post-test scores of the experimental groups are higher than the mean scores of the control group in the three reading comprehension levels post-performance (literal, inferential, and critical).

To investigate the effect of the teaching strategy (*self-questioning* vs. conventional) on the linear combination of the three reading comprehension levels post-performance after controlling the effects of pre-test scores, a one-way multivariate analysis of covariance (one-way MANCOVA) using a multivariate test (Hotelling's Trace) was used, as shown in table 5.

Table 5 shows that the main effect of the teaching strategy was significant. This indicates that the student's performance in a linear combination of the three reading comprehension levels differs across the two groups. The partial eta square value of .515 indicates that 51.5% of the variance in the in a linear combination of the three reading comprehension levels attributed to the teaching strategy. Since the effect of the teaching method is significant, a follow-up univariate analysis (Follow-up ANCOVAs): (Tests of between-subject effects) was conducted, as shown in Table 6.

Table 5: Results of Multivariate Test (Hotelling’s Trace) for the Effect of Teaching Strategy on the three Reading Comprehension Levels

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Teaching Strategy	1.064	11.701	3.000	33.000	.000	.515

Table 6: The Effect of the Teaching Strategy on Reading Comprehension (Per-level) after Controlling the Effect of Pre-Test Scores

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Covariate-Literal	Literal	.077	1	.077	.032	.858	.001
Covariate-Inferential	Inferential	.662	1	.662	.302	.586	.009
Covariate-Critical	Critical	.516	1	.516	.191	.664	.005
Teaching strategy	Literal	27.758	1	27.758	11.720	.002	.251
	Inferential	69.776	1	69.776	31.900	.000	.477
	Critical	48.502	1	48.502	17.994	.000	.340
Error	Literal	82.899	35	2.369			
	Inferential	76.557	35	2.187			
	Critical	94.340	35	2.695			
Corrected Total	Literal	116.775	39				
	Inferential	152.400	39				
	Critical	147.975	39				

Table 6 shows that there were statistically significant differences between the two groups in the three reading comprehension levels in favor of the experimental group. The partial eta squared values of .251, .477, and .340 indicated that the teaching strategy explained 25.1%, 47.7%, and 34.0% of the variance in the literal, inferential, and critical, respectively. As such, the highest effect size of the teaching strategy was at the inferential level, followed by the critical level, and inferential.

Additionally, the means, standard errors, and standard deviations of the two groups in the three reading comprehension levels before and after controlling the pre-test scores were extracted, as shown in Table 7.

Table 7 shows that there are differences between the post-performance of the two groups on the three reading comprehension levels that remain after the differences in the pre-test scores are controlled. As such, *self-questioning strategy* enhanced students’ performance in the three

reading comprehension levels (literal, inferential, and critical).

3. The means and standard deviations of pre-/post-test scores in the six reading comprehension sub-levels were calculated, as shown in Table 8.

Table 8 shows that the post-test scores of the experimental groups are higher than the mean scores of the control group in the six reading comprehension sub-levels post-performance (scanning texts for specific information, using context to guess the meaning of new words, skimming the texts for the main ideas, demonstrating understanding of an authentic informational text by answering questions, deducting the implicit meanings in the text, and making judgments about the texts).

To investigate the effect of the teaching strategy (*self-questioning vs. conventional*) on the linear combination of the six reading comprehension sub-levels post-performance after controlling the effects of pre-test scores,

Table 7: Adjusted and Unadjusted Means of the Three Reading Comprehension Levels

Reading level (Dependent Variable)	Group	Unadjusted mean		Adjusted mean	
		Mean	S.D	Mean	S.E
Literal	Experimental	10.20	.83	10.18	.349
	Control	8.45	1.96	8.47	.349
Inferential	Experimental	13.15	1.23	13.15	.335
	Control	10.45	1.64	10.45	.335
Critical	Experimental	9.80	.95	9.85	.372
	Control	7.65	2.11	7.60	.372

Table 8: Means and Standard Deviations of the Pre-Test and Post-Test Per-Sub-Level

Reading Sub-Level	Group	Maximum score	Pre-test		Post-test	
			Mean	S.D	Mean	S.D
Scanning texts for specific information (S1).	Experimental	7	2.10	.91	5.70	.57
	Control		2.35	.75	4.75	1.21
Using context to guess the meaning of new words (S2).	Experimental	5	1.60	.50	4.50	.51
	Control		1.65	.49	3.70	.98
Skimming the texts for the main ideas (S3).	Experimental	6	2.15	.49	5.20	.89
	Control		2.45	.51	3.75	1.07
demonstrating understanding of an authentic informational text by answering questions (S4)	Experimental	10	3.05	.94	7.95	.89
	Control		3.10	.85	6.70	.92
Deducting the implicit meanings in the text (S5).	Experimental	6	2.20	.62	4.85	.49
	Control		2.35	.67	3.65	1.09
Making judgments about the texts (S6)	Experimental	6	2.47	.60	4.95	.69
	Control		2.45	.60	4.00	1.26

a one-way multivariate analysis of covariance (one-way MANCOVA) using a multivariate test (Hotelling’s Trace) was used, as shown in Table 9.

Table 9 shows that the main effect of the teaching strategy was significant. This indicates that the student’s performance in a linear combination of the six reading comprehension sub-levels differs across the two groups. The partial eta square value of .567 indicates that 56.7% of the variance in the linear combination of the six reading comprehension sub-levels attributed to the teaching strategy. Since the effect of the teaching strategy is significant, a follow-up univariate analysis (Follow-up ANCOVAs: Tests of between-subject effects) was conducted, as shown in Table 10.

Table 10 shows that there were statistically significant differences between the two groups in the six reading comprehension levels in favor of the experimental group. The partial eta squared values of .165, .158, .340, .334, .323, and .214 indicated that the teaching strategy explained 16.5%, 15.8%, 34.0%, 33.8%, 32.3%, and 21.4% of the variance in the scanning texts for specific information, using context to guess the meaning of new words, skimming the texts for the main ideas, demonstrating understanding of an authentic informational text by answering questions, deducting the implicit meanings in the text,

and making judgments about the texts, respectively. As such, the highest effect size of the teaching strategy was at the skimming the texts for the main ideas sub-level, followed by demonstrating understanding of an authentic informational text by answering questions sub-level, deducting the implicit meanings in the text sub-level, making judgments about the texts sub-level, scanning texts for specific information sub-level, and using context to guess the meaning of new words sub-level.

Additionally, the means, standard errors, and standard deviations of the two groups in the six reading comprehension sub-levels before and after controlling the pre-test scores were extracted, as shown in Table 11.

Table 11 shows that there are differences between the post-performance of the two groups on the six reading comprehension sub-levels that remain after the differences in the pre-test scores are controlled. As such, *self-questioning strategy* enhanced students’ performance in scanning texts for specific information, using context to guess the meaning of new words, skimming the texts for the main ideas, demonstrating understanding of an authentic informational text by answering questions, deducting the implicit meanings in the text, and making judgments about the texts.

Table 9: Results of Multivariate Test (Hotelling’s Trace) for the Effect of Teaching Strategy on the Six Reading Comprehension Sub-levels

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Teaching Strategy	1.312	5.902	6.000	27.000	.000	.567

Table 10: The Effect of the Teaching Strategy on Reading Comprehension (Per sub-level) after Controlling the Effect of Pre-Test Scores

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Covariate- S1	S1	.155	1	.155	.154	.697	.005
Covariate- S2	S2	.176	1	.176	.287	.596	.009
Covariate- S3	S3	.438	1	.438	.415	.524	.013
Covariate- S4	S4	.072	1	.072	.083	.775	.003
Covariate-S5	S5	.000	1	.000	.000	.988	.000
Covariate-S6	S6	.035	1	.035	.031	.862	.001
Teaching Strategy	S1	6.371	1	6.371	6.345	.017	.165
	S2	3.678	1	3.678	6.000	.020	.158
	S3	17.339	1	17.339	16.455	.000	.340
	S4	13.771	1	13.771	16.049	.000	.334
	S5	11.462	1	11.462	15.284	.000	.323
	S6	9.828	1	9.828	8.725	.006	.214
Error	S1	32.132	32	1.004			
	S2	19.615	32	.613			
	S3	33.717	32	1.054			
	S4	27.459	32	.858			
	S5	23.998	32	.750			
	S6	36.044	32	1.126			
Corrected Total	S1	42.975	39				
	S2	29.600	39				
	S3	57.975	39				
	S4	46.775	39				
	S5	41.500	39				
	S6	47.975	39				

Table 11: Adjusted and Unadjusted Means of the Six Reading Comprehension Sub-Levels

Reading sub-level (Dependent Variable)	Group	Unadjusted mean		Adjusted mean	
		Mean	S.D	Mean	S.E
Scanning texts for specific information (S1).	Experimental	5.70	.57	5.65	.232
	Control	4.75	1.21	4.80	.232
Using context to guess the meaning of new words (S2).	Experimental	4.50	.51	4.43	.182
	Control	3.70	.98	3.78	.182
Skimming the texts for the main ideas (S3).	Experimental	5.20	.89	5.18	.238
	Control	3.75	1.07	3.76	.238
demonstrating understanding of an authentic informational text by answering questions (S4)	Experimental	7.95	.89	7.97	.215
	Control	6.70	.92	6.70	.215
Deducting the implicit meanings in the text (S5).	Experimental	4.85	.49	4.83	.201
	Control	3.65	1.09	3.68	.201
Making judgments about the texts (S6)	Experimental	4.95	.69	5.01	.246
	Control	4.00	1.26	3.94	.246

7 Discussion

The results revealed that participants' reading comprehension levels were statistically significant higher in favor of those students in the experimental group. This illustrates how the use of *self-questioning strategy* can enhance students' comprehension. The results show that *self-questioning* as a teaching strategy enhanced students' comprehension at all three levels in the experimental group.

The *self-questioning strategy* had a positive effect on the experimental group of students' post-test reading comprehension for a variety of possible factors. The design of an instructional program based on *self-questioning strategy* is one of the possible deciding factors, because this teaching strategy requires the teacher to carefully create and authorize an order to meet learning objectives. The reading assignments were thoughtfully put together by the researchers; they were brief and well-structured to generate better conversation topics, the themes were picked from the students' curriculum, and the time provided was suitable.

Another factor that may have contributed to students' enhanced reading comprehension is the cooperative environment. By focusing on individual differences, *self-questioning strategy* improved students' cooperation to perform tasks. As a result, the program was designed to help students become more involved with the text they read by creating activities suitable for both individual and group work. *self-questioning strategy's* interactive nature allowed students to become more involved in the learning process rather than simply receiving information from the teacher.

8 Conclusion

The objective of the study was to ascertain the effect of *self-questioning strategy* on tenth grade male EFL students in Jordan's reading comprehension. To achieve this, an instructional program was designed and implemented throughout the school year 2022–2023. The investigation's findings led to the following conclusions:

1. The instructional program strengthened the students' interaction and classroom activities while also improving their reading comprehension.
2. The participants' reading comprehension at the literal, inferential, and critical levels improved thanks to *self-questioning strategy-based instructional program*.
3. The instructional program increased the students' self-assurance and willingness to improve their reading comprehension.
4. The success of this teaching strategy in boosting the

teaching/learning process and enhancing the instructional material of the Ministry of Education textbook is demonstrated by the result that the students' performances on the post-test were greater than their performances on the pre-test.

Recommendations

Following are some recommendations made for EFL teachers, EFL supervisors, the Ministry of Education, and researchers based on the study's findings:

1. It is recommended that EFL teachers use the present curriculum to improve their students' reading comprehension skills and help them overcome challenges.
2. It is highly recommended that EFL supervisors inform their teachers on the value of *self-questioning strategy* activities and incorporate them into reading comprehension courses.
3. The Ministry of Education is recommended to train teachers through conducting training sessions and workshops to qualify and educate them to use *self-questioning strategy* in their teaching.
4. Researchers are recommended to conduct different studies to investigate the effect of *self-questioning strategy* on other grades and other English language skills (e.g., listening and speaking).

References

- [1] Albdour, A. (2017). *The Effect of Self-Questioning Strategy on Developing Critical Reading and Creative Writing Skills in English among First-Year students at Al-Hussein Bin Talal University*. Unpublished Doctoral Dissertation. Jordan University. Jordan.
- [2] Al-Damiree, R. & Bataineh, R. (2015). Vocabulary Knowledge and Syntactic Awareness as Potential Catalysts for Reading Comprehension among Young Jordanian EFL Pupils. *Journal of Teaching and Teacher Education*, 4(1), 53-59.
- [3] Alderson, J. (1984). Reading in a Foreign Language: A Reading Problem or a Language Problem. *Reading in a Foreign Language*, 24 (1), 114-141.
- [4] Alghalban, N. (2019). *The Impact of Employing Self-Questioning Strategy in Developing Reading Comprehension Skills among the Forth-Grade and Their Attitudes towards it*. Unpublished Master Thesis. Islamic University. Gaza.
- [5] Algozine, R., Dorothy, J., Obiakur, A., & Festus, E. (2008). *Culturally Responsive Literacy Instruction*. United States: Corwin Press.
- [6] Al-Jamal, D., Al-Hawamleh, M., & Al-Jamal, G.

- (2013). An Assessment of Reading Comprehension Practice in Jordan. *Jordan Journal of Educational Sciences*, 9(3), 335-344.
- [7] Al-Khamaiseh, H., & Al-Jamal, D. (2022). The Effect of Using KahootOn Jordanian EFL Ninth-Grade Students' Reading Comprehension. *Journal of Positive School Psychology*, 6(6), 757-770.
- [8] Almeida, P. (2012). Can I ask a question? The importance of classroom questioning. *Procedia-Social and Behavioral Sciences*, 31, 634-638.
- [9] Al-Shaigy, S. (2016). *The Effect of Self-Questioning Strategy on Students' Achievement and on the Development of Critical Thinking Skills among the Ninth-Grade of Islamic Education in the State of Kuwait*. Unpublished Master Thesis. Jordan University. Jordan.
- [10] Al-Shedeiah, F. (2014). *The Effectiveness of the Self-Questioning Strategy in the Development of Reading Comprehension Skills and Attitudes towards Reading in the Basic Grade Ten*. Unpublished Master Thesis. Al-Sultan Qabous University. Oman.
- [11] Al-Swelmyeen, M., & Sakarneh, M. (2020). The Effect of Self-Questioning Strategy in Developing Independent Thinking in Teaching Physics. *Cypriot Journal of Educational Sciences*, 15(3), 502-510.
- [12] Amalia, A., & Devanti, Y. (2016). The use of questioning strategy to improve students' reading comprehension. *ELLITE: Journal of English Language, Literature, and Teaching*, 1(2).
- [13] Azmi, N., & Usman, S. (2021). The Effect of using self-questioning strategy on students' reading comprehension. *English Language Teaching Society*, 9(2), 48-57.
- [14] Barnett, M. (1989). *More than meets the eye: foreign language reading. language and education: Theory and Practice*. Prentice-Hall Regents, Englewood Cliffs, NJ 07632.
- [15] Bataineh, R. F., & Mayyas, M. B. (2017). The Utility of Blended Learning in EFL Reading and Grammar: A Case for Moodle. *Teaching English with Technology*, 17(3), 35-49.
- [16] Bataineh, R., & Al-Shbatat, M. (2019). Is Questioning a Catalyst for Critical Reading among Jordanian EFL Learners? *Cypriot Journal of Educational Sciences*, 14(3), 384-400.
- [17] Chastain, K. (1988). Developing Second Language Skills: Theory and Practice. *TESOL Quarterly*, 22(4), 663-664. Harcourt Brace Jovanovich. Florida: U.S.A.
- [18] Chen, H. (2009). *Online reading comprehension strategies among general and special education elementary and middle school students*. (Unpublished doctoral dissertation). Michigan State University, USA.
- [19] Cotton, K. (2001). Classroom questioning. The Schooling Practices that matter most. *Northwest Regional Educational Laboratory*.
- [20] Day, R., & Park, J. (2005). Developing reading comprehension questions. *Reading in a Foreign Language*. 17(1), 60-73.
- [21] Harvey, S., & Goudvis, A. (2007). *Strategies that work: Teaching comprehension for understanding and engagement*. Stenhouse Publishers.
- [22] Jabbaripour, E., Mostafaii, M., & Marefat, F. (2017). The Effect of Self-regulation and Self-Questioning Strategies on Iranian EFL Learners' Reading Achievement.
- [23] Joseph, L., Alber-Morgan, S., Cullen, J., & Rouse, C. (2016). The effects of self-questioning on reading comprehension: A literature review. *Reading & Writing Quarterly*, 32(2), 152-173.
- [24] Kamalizad, J., & Jalilzadeh, K. (2011). Question-generation reading strategy of Iranian EFL learners. *Sino-US English Teaching*, 8(11), 52-57.
- [25] Kintsch, W. (1988). The role of knowledge in discourse comprehension: A construction-integration model. *Psychological Review*, 95(2), 163-182.
- [26] McShane, S. (2005). *Applying Research in Reading Instruction for Adults: First Steps for Teachers*. National Institute for Literacy.
- [27] Ministry of Education. (2006). *The General Guidelines and General and Specific Outcomes for the English Language Basic and Secondary Stages*. Amman (Jordan): Directorate of Curricula and School Textbooks.
- [28] Mucher, S. (2007). Building a culture of evidence through professional development. *The History Teacher*, 40(2), 265-273.73.
- [29] National Reading Panel (US), National Institute of Child Health, & Human Development (US). (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups*. National Institute of Child Health and Human Development, National Institutes of Health.
- [30] Pearson, P., Roehler, L., Dole, J., & Duffy, G. (1992). Developing expertise in reading comprehension. *What research has to say about reading instruction*, 2, 145-199.
- [31] Smadi, O., & Alshra'ah, M. (2015). The Effect of an Instructional Reading Program Based on the Successful Readers' Strategies on Jordanian EFL Eleventh

- Grade Pupils' Reading Comprehension. *Journal of Education and Practice*, 6(15), 76-87.
- [32] Snow, C. (2002). *Reading for Understanding: Toward an R&D Program in Reading Comprehension*. Santa Monica, CA: Rand Corporation.
- [33] Stricklin, K. (2011). Hands-on reciprocal teaching: A comprehension technique. *The Reading Teacher*, 64(8), 620-625.
- [34] Taboada, A., & Guthrie, J. T. (2006). Contributions of student questioning and prior knowledge to construction of knowledge from reading information text. *Journal of literacy research*, 38(1), 1-35.
- [35] Van den Broek, P., Tzeng, Y., Risdien, K., Trabasso, T. & Basche, P. (2001). Inferential questioning: Effects on comprehension of narrative texts as a function of grade and timing. *Journal of Educational Psychology*, 93, 521-529.
- [36] Williamson, R. (1996). Self-questioning—An aid to metacognition. *Reading Horizons: A Journal of Literacy and Language Arts*, 37(1), 3.