



The Effect of Storyboards Technique on EFL Sixth-Grade Students' Reading Comprehension

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Abstract

The purpose of this study was to investigate how storyboards technique affect the reading comprehension of sixth-grade Jordanian EFL students. The participants of study were 30 female students, who were split equally and at random into two groups: the experimental and control. A pre-/post-test was utilized as the study's instrument for both the control and experimental groups. A quasi-experimental design was followed. The experimental group was taught utilizing the storyboards technique in order to fulfill the objective of the study, whereas the control group received instruction using a conventional teaching method. The findings demonstrated that the use of storyboards technique enhanced students' comprehension of the texts they were reading.

Keywords: English as a foreign language, Reading comprehension, Storyboards technique, Education and Learning

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أثر تقنية القصص المصورة في مهارات الفهم القرائي لدى طلبة الصف السادس الأردنيين من متعلمي اللغة الإنجليزية باعتبارها لغة أجنبية

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المخلص

بحثت هذه الدراسة أثر تقنية القصص المصورة في مهارات الفهم القرائي لدى طلبة الصف السادس الأردنيين من متعلمي اللغة الإنجليزية بوصفها لغة أجنبية. بلغ عدد المشاركين في الدراسة 30 طالبة. تم تقسيمهن بالتساوي وعشوائياً إلى مجموعتين: تجريبية وضابطة. تم تصميم اختبار فهم قرائي قبلي/بعدي أداة للدراسة لكل من المجموعتين التجريبية والضابطة. وتم استخدام المنهج شبه التجريبي. ولتحقيق هدف الدراسة، تم تدريس المجموعة التجريبية باستخدام تقنية القصص المصورة، في حين تم تدريس المجموعة الضابطة باستخدام الطريقة التقليدية كما هو موضح في كتاب المعلم. وفقاً للنتائج، عززت تقنية القصص المصورة الفهم القرائي لدى الطلبة.

الكلمات المفتاحية: اللغة الإنجليزية بوصفها لغة أجنبية، فهم القراءة، تقنية القصص المصورة، التعليم والتعلم.

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Introduction

Teaching and learning witness today different changes that may affect students' performance, especially in learning English as a foreign language. In Jordan, English as a foreign language (EFL) is a required course at colleges and universities as well as a fundamental school topic. It is also a prerequisite for anyone seeking information access, efficient communication, or job advancement. Thus, it is essential for EFL teachers to update their teaching methods and techniques.

The process of understanding written communications is called reading. It involves understanding the content and extracting the relevant information from it (Grellet, 1981). Reading is a complex process where the reader uses visual language to interpret the writer's meaning (Goodman, 1970). To construct or deduce meaning from a text, students must be able to understand the language (Goldman & Rakestraw, 2000; Kompyang, 2017). For readers, reading creates opportunities, encourages lifelong learning, and facilitates discovery (Chastain, 1988).

Pre-reading, while-reading, and post-reading are the three stages in order that make up reading instruction. Throughout the pre-reading stage, the teacher piques the students' curiosity about the text's substance and their schemata. Furthermore, context-based introductions to new vocabulary words are provided. The teacher gives the students a job to accomplish during the while-reading stage and then makes sure it is done correctly. The teacher provides work that includes challenging questions, debate, role-playing, or tasks demanding critical thought during the post-reading stage (Watkins, 2017).

Comprehension is a crucial component of reading exercises (McShane, 2005). It involves the reader interacting with the text and contributing by applying their knowledge, skills, experiences, and abilities in order to derive meaning from written language (Snow, 2002). Understanding is the capacity to discern connections between concepts offered in a text and to comprehend words beyond their obvious meaning (Cain, Oakhill & Bryant, 2004).

Comprehension is a process by which readers predict the text, confirm their predictions and make the subsequent predictions of that text. Meaning is created as a result of this process (Harp & Brewer, 1991). It involves figuring out a text's intended meaning, whether it is spoken or written (Richards & Schmidt, 2010). To get comprehension, one must fulfill two primary requirements: grasp vocabulary words and be familiar with the fundamental organization of written texts (Megawati, 2019).

Reading comprehension is mostly dependent on readers because it is a learned skill. As such, teachers play a crucial part in helping students understand written materials. As a result, reading is a crucial skill that helps readers gain experience and information as well as comprehend what is going on around them (Nuttall,



1996). According to Welson, Abdel-Haq, and Kamil (2020), reading is also essential since it helps readers' imaginations grow and their minds are expanded.

According to Kintsch (1988), reading comprehension is an essential skill for reading that enables a reader to comprehend and extrapolate meaning from printed texts. The process of becoming intuitive is challenging and calls for study, experience, and work (Chen, 2009). The process of concurrently deriving and creating meaning from written language through interaction and involvement is known as reading comprehension (Snow, 2002). In order to understand various types of texts in the future, it aids students in understanding the definitions, content, primary concepts, linguistic features, and generic structures of the text (Wahyono, 2019).

Comprehension is divided into three levels. The first level, the literal level, where the information is provided straight from the text, makes it easy for readers to figure out the answers to the questions. The second level is the inferential level. At this level, information is not provided openly in the text; instead, readers must read between the lines to infer facts or concepts. The critical level is the third level. According to Harp and Brewer (1991), readers build their arguments by contrasting their views with the author's points of view, evaluating the material and responding to it accordingly.

Students who are proficient in reading comprehension can successfully and easily understand the reading material (Mikulecky & Jeffries, 1996). A range of strategies for improving reading comprehension were also covered, including topic identification, summarizing, estimating the meaning of words that are unclear, drawing conclusions, deducing the implied meaning, gauging comprehension, scanning, reading critically, and reading quickly. Understanding and teaching reading comprehension classes require comprehension skills (Afflerbach, Pearson, & Paris, 2008).

Storyboards are a teaching technique that a teacher can use to help students learn. Storyboards are one sort of post-reading exercise that has several benefits for students. For instance, utilizing a storyboard enables students to arrange their thoughts and visualize them prior to writing them down verbally, which improves their planning, time management, and organization skills. Additionally, storyboards give students the opportunity to apply a variety of reading methods, including previewing, picturing, illustrating, summarizing, understanding sequences, finding themes and details, identifying key details, and many more. Last, storyboards promote the integration of reading and writing during class instruction since students are expected to describe their illustrations in detail (Doherty & Coggeshall, 2005).

Storyboards technique is crucial because it emphasizes audiovisual perception and calls for the use of several senses throughout the learning process, which helps students learn more quickly. Additionally, it enhances students' linguistic and cognitive abilities while offering excellent chances for imagination and



creativity. By having students retell the storyboard, it also lessens their boredom in learning circumstances and increases their fluency (Lerner & Jones, 2014; Atili & Nasr, 2015; Al-Shablawi, 2017).

Storyboards technique is a prewriting exercise that places a focus on ideation, elaboration, prediction, and text-based sequencing. It is meant to inspire students to express themselves through art before turning to words. Because students are reading the text and producing the visual representation of the story, they frequently switch between the texts when making a storyboard, which indicates that the students understood the material (Wiesendanger, 2001). Therefore, after reading a narrative text, students can more easily convert the materials into a series of thumbnail sketches by using the storyboard technique (Smaldino, Russell, Heinich, & Molenda, 2004).

According to Abo-Eker (2021), storyboards technique have many advantages in the educational process as follows: improving the process of education's effectiveness, developing the various writing skills of students, attracting the interest and attention of students, encouraging students to think critically, creating a lighthearted and welcoming learning atmosphere, overcoming learners' fears of rejection, failure, or terror, assisting students in expressing their differing opinions on a particular subject, learning in groups helps students improve their communication skills, promoting emotional intelligence and social learning, making the student an active participant in the learning process as opposed to a passive component, helping teachers with specific subjects that are challenging to teach in a conventional way, and assisting in the growth of cooperative and organized skills through group work and engaging instructional strategies.

By implementing curricula and textbooks in schools to enhance students' language proficiency, the educational system in Jordan aims to advance students' command of the English language. In order to help students become competent, confident, and self-reliant in preparation for their future occupations and jobs, they cover listening, speaking, reading, and writing (Alkhawaldeh, 2010). Through reading, readers can interact with the text and its creator in order to understand the intended meaning. According to Erlina (2011), one of the most important parts of the reading assignment is the text. Accordingly, this study investigated the effect of storyboards technique on students' reading comprehension.

Statement of the Problem

Reading comprehension is a challenge for EFL students in Jordanian schools, both at the basic and secondary levels, based on the researcher's experience as an EFL teacher. It has been noted that students have trouble understanding the written texts, which makes it challenging for them to respond to reading comprehension questions in a literal, inferential, and critical manner. Research (e.g., Baniabdelrahman, 2006; Al-Ma'ani, 2008; Ali, 2020; Radaideh, 2020) have shown that the majority of Jordanian classes use conventional strategies for teaching reading comprehension. Specifically, most EFL teachers assign their



students to read particular types of texts, list the vocabulary words in English, and then have them respond to questions about the text on their own. Furthermore, it has been shown by Jordanian studies (e.g., Al-Damiree & Bataineh, 2015; Smadi & Alshra'ah, 2015; Bataineh & Mayyas, 2017) that EFL Jordanian students struggle with reading due to a lack of appropriate instructional strategies. Using storyboards as an instructional technique could help solve this issue by raising students' reading comprehension levels.

Purpose of the Study

The aim of this study is to examine the effect of the storyboards technique on the reading comprehension of sixth-grade Jordanian EFL students.

Question of the Study

This study attempted to answer the following research question: "Are there any statistically significant differences at ($\alpha = 0.05$) in Jordanian EFL sixth-grade students' reading comprehension levels (literal, inferential, and critical) in the post-test that can be attributed to the teaching technique (storyboards vs. conventional instruction)?"

Significance of the Study

This study may be important since it could improve the performance of Jordanian EFL sixth-grade students when they apply the storyboards technique in reading comprehension classes. The findings of this study may be helpful to EFL teachers in helping their students who struggle with understanding. The study can be important for textbook designers as well, since it facilitates the development, incorporation, or application of storyboards into strategies. The findings might also be helpful to EFL supervisors, who might be motivated to provide their EFL teachers with frequent training sessions or intense workshops focused on advancing and improving the usage of storyboards technique in the classroom. Additionally, the results of this study can spur additional research to look into the possible effects of storyboards technique on other English language learners, especially in Jordan. One of the few studies that looks at how storyboards technique affect students' reading comprehension skills is this study.

Operational Definition of Terms

Storyboards are collective of stories created by converting topics and characters into image and text (Abraham, 2002). The sixth-grade students' comprehension of a variety of reading techniques, including previewing, visualizing, illuminating, using background knowledge, summarizing, comprehending sequencing, and locating the main idea and specific details through the use of storyboards, is the main objective of this study.

Reading Comprehension is an intentional and active cognitive process in which readers engage with written texts to create or understand the intended meaning or message (Harris & Hodges, 1995). This study



looks at the literal, inferential, and critical comprehension skills of ninth-grade students. The reading comprehension post-test is used to evaluate it in light of the outcomes of the four units (namely, 9, 10, 11, and 12) from the Student's Book and the Activity Book of Action Pack 6 that are being studied. These three reading comprehension levels are explained as follows:

Literal Comprehension is the ability to understand information that is specifically mentioned in the text (Basaraba, Yovanoff, Alonzo & Tindal, 2013). Sixth-grade students are able to skim texts for the major themes, interpret new vocabulary, and scan texts for specific information in this study.

Inferential Comprehension is the process of analyzing and extrapolating the author's intended message from written content (Basaraba et al. 2013). It is the participants' capacity to understand key elements in this study.

Critical Comprehension: Critical comprehension, according to Thompson (2000), is the ability to assess information in order to determine how well the reading materials are written. The capacity of sixth-grade students to discern between facts and views and to make inferences from straightforward reading materials is the primary goal of this study.

Limitation of the Study

The current study was carried out while considering the following limitations:

Only sixth-grade students attending public schools under the Ajloun Directorate of Education were included in this study. A different sample could produce different results; in the academic year 2023–2024, the treatment was limited to eight weeks. The study was restricted to reading comprehension skills relevant to (literal, inferential, and critical comprehension levels) presented in the four units (9, 10, 11, and 12) from the Student's Book and the Activity Book of Action Pack 6. As a result, longer or shorter duration may have different results.

Review of Related Literature

Following a review of previous studies on education, the researcher gathered studies pertinent to this study.

Hou (2006) investigated how storyboards visuals affected 80 first-year ESL students' reading recall performance. Four treatment groups (elaborate story with storyboard visuals, elaborate story without storyboard visuals, non-elaborate story with storyboard visuals, and non-elaborate story without storyboard visuals) were formed from the students who took part in the reading recall assignment. According to the findings, participants' scores in the non-elaborate story group that included storyboard visuals were considerably higher than those of the non-elaborate story group that did not. Subject scores across the other



two groups did not differ significantly. Thus, storyboards visuals can enhance the performance of reading recollection.

Naar (2013) used storyboards, a kind of graphic organizer that condenses both images and scripts, to assist a group of six limited-proficient English learners (newcomers) in improving their reading comprehension of English novels. Two pre-tests, two post-tests, student portfolios, a teacher's log, and the outcomes of a reading benchmark were used to gather data. The findings showed that storyboards can benefit English language learners who are not very proficient in the language.

Afiyanti (2016) investigated how successfully using storyboards enhanced students' reading comprehension of narrative texts. Two tenth grade classes participated in the study (the experimental and control groups). To collect data, a pre- and post-test was employed. The results showed that applying the storyboards technique enhances the reading comprehension of narrative texts by tenth-grade MAN 1 Tangerang Selatan students.

Maulida and Sumbayak (2017) investigated how second-year students' ability to interpret narrative texts was affected by the storyboards technique. A total of 186 students took part in the study. Try-out tests and pre- and post-tests were the instruments. The findings demonstrated the substantial impact of the storyboards technique on the capacity to read narrative texts.

Aeni, Purwandari, and Sari (2018) sought to gauge how much students' reading comprehension had improved by using the storyboards technique. There were 50 students involved, split up into two groups. While storyboards technique is used in the second group, conventional technique is used to teach students in the first. Both techniques conclude with an evaluation session. To determine the differences in the students' reading comprehension scores following the storyboards technique treatment, the outcomes of the two groups' implementation of the teaching strategies are compared. The findings also demonstrated that the students' reading comprehension skills, particularly with regard to narrative texts, had improved as a result of using the storyboards technique.

Abuzaid and Al Kayed (2020) looked into how the storyboards technique helped Jordanian third-grade students with reading difficulties become more proficient readers. 40 students participated in the study. The data collection tool was an achievement test. The results show that students are better able to distinguish between Arabic letters that are identical when written down but have different pronunciations when they employ the storyboards technique rather than the traditional instructional method.

Hidayanti, Pahamzah, and Miranty (2020) examined the effects of using the storyboards technique on students' reading comprehension in narrative content. In this study, seventy-two students participated. To



collect data, pre- and post-tests were employed. The results showed that the storyboards technique affected the students' reading comprehension of narrative texts in the tenth grade at SMAN 2 KS Cilegon.

Asyrifah, Lestari, and Purwati (2021) used two English teachers as their subjects to examine teachers' opinions of the advantages and difficulties of using storyboards to teach reading. To get the data, a semi-structured interview was done. The results showed that while teachers' perceptions of the advantages of using storyboards were similar, there were disparities in their approaches and difficulties while teaching reading to children who were just mildly mentally challenged.

Mawaddah, Eliwati, and Heriyawati (2022) examined the variety of practical lesson ideas in the storyboards makers as well as the range of reading comprehension ability levels that could be taught using them. Data was collected from the websites. The results demonstrated that both storyboard creators provide a plethora of innovative lesson ideas that are helpful in teaching students how to comprehend narratives. It also suggested that, among other levels of reading comprehension, storyboarding might be useful for extended reading and for enhancing lexical, literal, inferential, applied, critical, and effective comprehension skills.

Pahamzah (2023) looked at how employing the storyboards technique affected the tenth-grade SMAN 2 Krakatan student's ability to comprehend narrative texts. In this study, 72 students took part. Using a pre- and post-test, data were gathered. The results indicated that students' reading comprehension of narrative texts was impacted by the use of storyboards technique.

Concluding Remarks

The majority of research pertaining to this study indicates that employing the storyboards technique enhances students' comprehension of what they read. These studies show how using storyboards technique improves students' reading comprehension by allowing them to organize their thoughts and information, integrate previously learned information with newly learned information from the text, and support the teaching process. As a result, these studies may be relevant to the current study.

To the best of the researcher's knowledge, though, none of the studies examined how employing storyboards technique affected students' reading comprehension at the literal, inferential, and critical comprehension levels. Furthermore, no evaluated research measuring the impact of the storyboard technique on EFL students' reading comprehension were carried out in Jordan.

Given that it addresses students' literal, inferential, and critical reading comprehension, the current study could be important. To the best of the researcher's knowledge, this study may be the first to look into how storyboards technique affects reading comprehension in sixth-grade EFL students. This study aims to fill a gap in the associated literature by offering empirical data that could support EFL teachers when using the storyboards technique to teach students reading comprehension.



Method and Procedures

Design and Variables of the Study

This study followed a quasi-experimental design. Storyboards technique was the independent variable. The performance of the students on the reading comprehension post-test served as the dependent variable.

Participants of the Study

The researcher specifically selected 30 female EFL sixth-grade students for the current study. They attended Al-Qala'h School in Ajloun. The current study was conducted in the academic year 2023–2024 during the second semester. The researcher was able to use facilities supplied by the school administration, which is why it was specifically picked. Additionally, a few tools and resources were needed for the objective of the study.

Out of the three sections, the researcher at Al-Qala'h school in Ajloun randomly assigned two entire sixth-grade sections. Two school sections were randomly selected to partake in this study after the names of the three sections were put in a basket. By flipping a coin, the experimental group of 15 students was selected from the first section, and the control group of 15 students was selected from the second. The experimental group was taught the reading assignments from the Action Pack 6 textbook using the storyboard technique for instruction. The Teacher's Book of Action Pack 6, which provided the framework for the common teaching techniques used with the control group, did not mention storyboards.

Research Instrument

To achieve the study's objective, a pre-/post-test on reading comprehension was developed. The following is the instrument's description:

The Pre-/Post-test for Reading Comprehension

Pre-/post-reading comprehension test was created by the researcher via comparison with related previous research. The pre- and post-test primarily focused on the three basic reading comprehension levels: literal, inferential, and critical. To assess each of these levels, the researcher constructed multiple-choice, wh, true/false, and completion questions based on the readings from the sixth-grade units used in Jordanian public schools. Using the instructional resources and tools found in the Teacher's Book, the reading comprehension test was developed.

At the end of the instructional program, a post-test was administered to students in order to assess the effect of the storyboards technique on their scores after controlling for the effect of pre-test results. Finding out if the storyboards technique had any statistically significant effects on the differences between the sixth-grade students in the experimental and control groups was the aim of the reading comprehension post-test.



Validity of the Reading Comprehension Test:

The reading comprehension test was originally presented to the same jury that approved the curriculum in order to guarantee its validity. Regarding the test's appropriateness, clarity, and question content in respect to the participants' ability levels, the jury members were asked for their input. Regarding the instruments, some recommendations included focusing on the reading comprehension test's content and ensuring that it aligns with the program's objectives and content. The researcher made the changes in accordance with the jury's recommendations.

Reliability of the Reading Comprehension Test

The test-retest method was employed to confirm the instrument's reliability. 20 students were chosen from the original sample and the same population to take the test once more two weeks later. The Pearson's correlation coefficient was computed for both of their responses. The Pearson Correlation between their reading comprehension test results was then determined, as shown in Table 1.

Table 1:

Test-retest of Reading Comprehension Test

	Test-Retest Reliability	Sig.
Reading Comprehension Test	0.89	0.000

Table 1 shows that the reliability coefficient for the reading comprehension test is 0.89, This values is considered appropriate for the purposes of this study.

The Storyboards Technique-Based Instructional Program

To achieve the aim of the study, the researcher developed an instructional program based on storyboards technique to assist participants in improving their reading comprehension. Additionally, when the researcher modified the reading comprehension assignments in units 9, 10, 11, and 12, the participants in the experimental group used the storyboards technique throughout their reading comprehension sessions.

Objectives of the Instructional Program

The goal of a sixth-grade curriculum based on the storyboard technique is to teach students reading comprehension skills. This instructional program aims to increase the literal, inferential, and critical reading comprehension of sixth-grade students; increase their comprehension of reading comprehension strategies; raise their awareness of the benefits of using these strategies; engage students in a variety of reading activities; and inspire them to answer reading comprehension questions through the use of storyboards technique.

The Instructional Material

Units 9, 10, 11, and 12 of the study's teaching materials were based on reading comprehension exercises from Action Pack 6's Activity Book and Student's Book. The researcher altered these tasks and provided the experimental group with reading comprehension instruction by employing the storyboard technique.



Procedures of Designing and Implementing the Instructional Program

The following processes were used in the design and execution of the educational program: examining the content of *Action Pack 6*, a sixth-grade textbook, to determine the reading assignments in the target units; rewriting the textbook's content using the storyboards technique; defining the procedures to be followed in each lesson; assigning the appropriate amount of time for each procedure; validating the program and implementing the jury's proposed amendment; validating the reading pre-/post-test; determining the students' reading proficiency before executing the program by giving the experimental and control groups the reading pre-test during the first week of the treatment, teaching the experimental group how to use storyboards, and assessing the experimental and control groups' performance using the reading comprehension post-test.

Validity of the Instructional Program

The program was presented to a panel of ten experts in English curriculum and instruction by the researcher in order to validate its validity. The jurors were requested to evaluate the program and provide the researcher with any feedback or recommendations regarding the distributed program. One of these ideas was teaching reading comprehension through the use of storyboards in a hands-on way. The researchers put their recommendations into practice when making the improvements.

Teaching Methods for the Two Study Groups

Teaching the Experimental Group

The researcher develops the lesson plan according to storyboards technique steps. These steps are presented and implemented in teaching reading comprehension lessons using storyboards technique as the following:

1. Small groups of students are gathered in order to teach English proficiency using a simplified language.
2. The teacher supports students to work in groups more effectively, as cooperation and sharing are made easier when there are fewer individuals in a group.
3. Students comprehend various reading methods such as previewing, picturing, illuminating, applying background information, summarizing, understanding sequencing, and finding the main idea and details.
4. Different story texts are given to each group using a storyboard. Students can use this technique to arrange their thoughts and images before writing them down.
5. According to the narrative text, each group should illustrate the text as an image, which should also include a caption. With the help of this technique, students can actively participate in imprinting the reading experience and its information on their memories.



6. Students draw the main ideas of a story. Students could do this after hearing a story aloud or while reading a story to themselves. Each drawing should have a short caption explaining what is happening in the picture. You could also have students use relevant quotations from the story as captions.
7. Students compare storyboards with a partner or a small group. How are their storyboards similar? How are they different? This discussion can help students clarify basic ideas in the text and can also help them analyze which ideas are most important.

Teaching the Control Group

1. Students used the standard procedure for reading comprehension in order to read the passages and respond to the questions. With the help of the Teacher's Book of Action Pack 6, the control group was taught.
2. The teacher used questioning and the introduction of new vocabulary to help the students learn to read. To aid students in understanding the key concepts, the teacher probed deeply regarding the images in the courses.
3. Students may alternatively decide to read the content aloud without commentary. While reading, students should respond to the teacher's written questions on the board.
4. The students were separated into groups or pairs by the teacher to respond to the questions.
5. At the end of the lesson, the teacher provided feedback if needed.

Results

In order to ascertain whether there were any statistically significant differences at ($\alpha=0.05$) in the reading comprehension levels (literal, inferential, and critical) of Jordanian EFL sixth-grade students that could be attributed to the instructional technique (storyboards vs. conventional instruction), ANCOVA and MANCOVA tests were used to assess multiple assumptions, including linearity. In actuality, there is a linear relationship between the covariate (pre-test results) and the outcome (post-test results). Table 2 below shows the results of the researcher's test for normalcy and the significant value of normality in the Kolmogorov-Smirnov normality test.

Table 2:

Normality Test for Pre-/Post Reading Comprehension Test

	Experimental		Control	
	Kolmogorov-Smirnov Z ^a	Asymp. Sig. (2-tailed)	Kolmogorov-Smirnov Z ^a	Asymp. Sig. (2-tailed)
Literal pre	.782	.574	3.33	1.543
Inferential pre	.822	.508	3.07	1.710
Critical pre	.951	.327	3.07	1.668



	Experimental		Control	
	Kolmogorov-		Kolmogorov-Smirnov	
	Smirnov Z ^a	Asymp. Sig. (2-tailed)	Z ^a	Asymp. Sig. (2-tailed)
Pre total	.479	.976	9.47	3.226
Literal post	.713	.690	4.53	1.125
Inferential post	1.183	.122	4.87	1.727
Critical post	.791	.559	5.00	.926
Post total	.921	.364	14.00	3.873

a Test distribution is Normal

The homogeneity of variance assumption was the final one that needed to be confirmed before conducting ANCOVA and MANCOVA. Using the Hartley F max equation, the homogeneity value was ascertained (Gravetter & Wallnau, 2008). The researcher calculated the variances of the means for the pre- and post-test findings for both groups using the following formula: F max is equal to Greater Variance / Smaller Variance. In cases where the computed ratio is close to 1, the data show homogeneity of variance. Glenn, 2016. Because the ratio is 1.5, which is rather near to 1, as can be seen from the variance in the Table below, the premise of homogeneity has not been broken.

Table 3:

Homogeneity of Pre-/Post Reading Comprehension Test

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Pre test	30	3	16	9.70	3.053	9.321
Post test	30	9	21	16.20	3.827	14.648

After conducting the test and determining that the ANCOVA and MANCOVA assumptions were met, the researcher came to the following conclusions. Table 4 below displays the means, standard deviations, and estimated marginal means of the reading comprehension of Jordanian EFL sixth-grade students according to the teaching technique (storyboards vs. conventional instruction):

Table 4:

Means, Standard Deviations and Estimated Marginal Means of Jordanian EFL Sixth-Grade Students' Reading Comprehension Due to the Teaching Technique (Storyboards vs. Conventional Instruction)

Teaching Technique	N	Pre		Post		Estimated	Std. Error
					Std.	Marginal	
		Mean	Std. Deviation	Mean	Deviation	Means	
Storyboards	15	9.93	2.963	18.40	2.230	18.321	.785
Conventional Instruction	15	9.47	3.226	14.00	3.873	14.079	.785

Table 4 shows that there was a little variation in the means of the reading comprehension scores of the pre- and post-Jordanian EFL sixth-grade students due to the different teaching technique (storyboards vs. conventional instruction). One way ANCOVA was used to ascertain whether there are statistically significant differences in these means; the outcomes are shown in Table 5.

Table 5:

One Way ANOCVA Results of Jordanian EFL Sixth-grade Students' Reading Comprehension Related the Teaching Technique (Storyboards vs. Conventional Instruction)

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pretest (covariate)	31.094	1	31.094	3.378	.077	.111
Teaching Technique	134.096	1	134.096	14.569	.001	.350
Error	248.506	27	9.204			
Corrected Total	424.800	29				

Table 5 demonstrates that the teaching technique (storyboards vs. conventional instruction) had a statistically significant effect on the reading comprehension of Jordanian EFL sixth-grade students at ($\alpha=0.05$), favoring the Experimental group. Table 6 below displays the means, standard deviations, and estimated marginal means of the sixth-grade reading comprehension levels (literal, inferential, and critical) of Jordanian EFL students that are attributed to the teaching technique (storyboards vs. conventional instruction):

Table 6:

Means, Standard Deviations and Estimated Marginal Means of Jordanian EFL Sixth-Grade Students' (Literal, Inferential, and Critical) Reading Comprehension Levels that are Attributed to the Teaching Technique (Storyboards vs. Conventional Instruction)

Teaching Technique		N	Pre		Post		Estimated	Std. Error
			Std.	Std.	Marginal			
			Mean	Dev.	Mean	Dev.	Means	
Literal	Storyboards	15	3.60	1.549	5.93	1.534	5.876	.343
	Conventional Instruction	15	3.33	1.543	4.53	1.125	4.591	.343
Inferential	Storyboards	15	3.40	1.805	6.33	.617	6.318	.318
	Conventional Instruction	15	3.07	1.710	4.87	1.727	4.882	.318
Critical	Storyboards	15	2.93	1.668	6.27	1.100	6.246	.255
	Conventional Instruction	15	3.07	1.668	5.00	.926	5.020	.255



The means of the sixth-grade reading comprehension levels (literal, inferential, and critical) of Jordanian EFL students showed a modest variation depending on the type of instruction (storyboards vs. conventional instruction) (Table 6). A one-way MANCOVA was performed to see if there were any statistically significant differences in these means; the outcomes are displayed in Table 7:

Table 7:

One Way MANCOVA Results for the Effect of Teaching Technique on Reading Comprehension Levels

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
GROUP	Literal post	12.199	1	12.199	6.971	.014	.218
Hotelling's Trace= 0.724 P=.005	Inferential post	15.209	1	15.209	10.103	.004	.288
	Critical post	11.099	1	11.099	11.472	.002	.315
	Literal pre (Covariate)	1.314	1	1.314	.751	.394	.029
Inferential pre (Covariate)	Inferential post	.461	1	.461	.306	.585	.012
	Critical post	1.627	1	1.627	1.682	.207	.063
Error	Literal post	43.748	25	1.750			
	Inferential post	37.634	25	1.505			
	Critical post	24.187	25	.967			
Corrected Total	Literal post	65.367	29				
	Inferential post	63.200	29				
	Critical post	40.967	29				

Table 7 demonstrates that the storyboards instructional technique outperforms conventional instruction in terms of statistically significant differences at ($= 0.05$) in the literal, inferential, and critical reading comprehension levels.

Discussion

The purpose of the study was to ascertain whether the teaching technique (storyboards technique vs. conventional method) would have any statistically significant effects on the literal, inferential, and critical post-test scores of sixth-grade Jordanian EFL students at the $= 0.05$ level. The findings of the study demonstrate that the significant values support the idea that the storyboards technique effectively affected reading comprehension at each level. This has led to the observation that learners who employed the storyboards technique performed better than those who used the conventional method on the post-test in terms of literal, inferential, and critical performance. Furthermore, the results show that using the storyboards technique helps students improve their reading comprehension skills.



These results are in line with those found in earlier studies, such as those conducted by Hou, 2006, Naar, 2013, Afiyanti, 2016, Maalida & Sumbayak, 2017, Aeni, Purwandari, & Sari, 2018, and Abuzaid & AlKayed 2020. The findings are also consistent with previous research (e.g., Hidayanti, Pahamzah, & Miranty, 2020, Asyrifah, Lestari, & Purwati, 2021, Mawaddah, Eliwati, & Heriyawati, 2022, and Pahamzah, 2023). These studies have proved that using storyboard as a teaching technique can help students become more adept at understanding what they read. The study's findings suggested that the storyboards technique had an impact on students in the treatment group's reading comprehension. Consequently, these results might make the contribution of the storyboards technique to improving sixth-grade students' reading comprehension more broadly applicable.

The storyboards technique has improved students' reading comprehension for a variety of reasons. The way the storyboards technique-based educational program is structured could be one of the possible explanations for this. For this kind of instruction, the teacher must carefully consider and approve the sequence in which the learning objectives are to be met. The reading assignments' themes were carefully chosen by the researchers from the students' curricula, and they were assigned at the right times. The tasks were clear and organized in a way that made them great conversation starters.

The storyboards technique-instructional program that was being conducted also caught students' attention. For instance, students made an effort to understand the tasks that made up the lesson plan. Thanks to this technique, the students were able to participate actively in the learning process rather than just listening to their teacher talk. They were seen to participate in the debates, and their level of engagement was noticeably higher than in previous semesters. Students' enhanced participation in the learning process led directly to their improved grasp of the core concepts as well as their deeper understanding of the subject matter.

The cooperative learning setting is another factor that might have helped students with reading comprehension. Students were better able to work together to finish tasks when individual variety was incorporated into the storyboards technique. Because of this, the curriculum was created with activities that students could complete either individually or in groups to assist them get more engaged with the books they are reading. The participation aspect of the storyboard technique allowed students to actively participate in their education rather of just listening to their teacher's instructions.

The fact that storyboards technique assist students organize their thoughts into sketches and improve their planning, time management, and organizational skills may also have had a role in the students' increased reading comprehension. Additionally, it facilitates the application of numerous reading strategies by students,



such as summarizing, visualizing, previewing, and drawing. Because storyboards technique requires students to generate elaborate graphics for class tasks, they can help students become better readers and writers.

Conclusions and Recommendations

The current study's goal was to explore how the storyboards technique affected the Jordanian sixth-grade participants' reading comprehension. Storyboards technique-based instructional program was created and applied to achieve this purpose during the academic year 2023–2024. After applying the storyboards technique, improvements were observed in the students' reading comprehension level. The findings were presented as follows:

1. The implementation of the storyboards technique-based program improved reading comprehension;
2. The storyboards technique-based instructional program raised the levels of literal, inferential, and critical;
3. Following the implementation of the storyboards technique-based program, students showed increased engagement in the classroom;
4. It was found that teaching reading comprehension through the use of the storyboards technique improved students' performance on the post-test, demonstrating the program's value.

Depending on the current study's findings, the following recommendations are made:

- When designing EFL textbooks, designers should clearly incorporate the storyboards technique into both the teacher's book and the student textbooks. This can be achieved by offering a variety of teaching and learning activities that are centered around reading comprehension levels.
- EFL teachers should use the storyboards technique, which enables their students to comprehend a text effectively and participate in the teaching and learning process.
- In order to put into practice and alter the standard operating procedure of conventional teaching methods, the Ministry of Education ought to consider the advantages of employing the storyboards technique to teach reading comprehension and train EFL teachers on how to use and activate this technique in their instruction.
- More research is needed to ascertain the effects of the storyboards technique on different language skills and students' perceptions of it, as well as to replicate the results of this study.

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