

Research Article

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Author for correspondence:

Hazim Al-Zyoud

✉ hazemalzyoud10@gmail.com

✉ Yarmouk University, Jordan.

Naser Maqbleh



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The Effect of the "TWA" Strategy on Enhancing Reading Comprehension Skills among Tenth-Grade Students

Hazim Al-Zyoud^{id}, Naser Maqbleh^{id}

Abstract

Background/purpose. This study aimed to investigate the effect of the "TWA" (Think–Write–Ask) strategy on improving reading comprehension skills among tenth-grade students. The research was conducted to address the challenge of enhancing students' ability to understand and analyze texts across various reading comprehension levels, including literal, interpretive, critical, appreciative, and creative.

Materials/methods. The study sample comprised 54 tenth-grade students from Al-Shaheed Rashid Al-Zyoud Secondary School for Boys, selected via convenience sampling during the second semester of the 2024/2025 academic year. Participants were divided into two groups: an experimental group (27 students) taught with the "TWA" strategy and a control group (27 students) taught with conventional methods. A test was designed to measure students' performance across the five reading comprehension skills.

Results. The findings indicated statistically significant differences between the experimental and control groups in both individual and overall reading comprehension skills, with the experimental group outperforming the control group across all measured domains.

Conclusion. The study concluded that the "TWA" strategy effectively enhances reading comprehension skills among tenth-grade students. It is recommended that further research be conducted to examine the strategy's impact across different educational levels and contexts.

1. Introduction

Reading is crucial for communication and plays a vital role in enhancing linguistic skills. Reading comprehension involves understanding, interpreting, and interacting with texts, significantly influencing academic success, and is categorized into five levels: literal, interpretive, critical, appreciative, and creative. The 2022 PISA test highlighted challenges in the Jordanian education system, revealing that students' average literacy scores were 342, well below the OECD average of 476, and ranking Jordan 78th out of 81 countries. This reflects a learning poverty rate exceeding 60%, indicating major difficulties for students in comprehending Arabic texts. To address these issues, the study examines the effectiveness of the TWA (Thinking Before, During, and After Reading) strategy, which fosters self-regulation and consists of three stages: pre-reading (activating prior knowledge), during reading (monitoring comprehension), and post-reading (summarizing and reflecting). This multi-stage approach aims to engage students more deeply and enhance their reading comprehension by integrating cognitive strategies. The research targets tenth-grade students and is structured around specific questions and hypotheses to assess the impact of the TWA strategy on reading comprehension.

The "Thinking Before, During, and After Reading" (TWA) strategy has emerged as an effective approach to enhancing reading comprehension, rooted in the Self-Regulation Strategies Development (SRSD) model. This model emphasizes the importance of self-regulation in reading, which significantly improves comprehension and information retention (Firat, 2019). TWA enhances learner autonomy through three systematic stages. The following studies, with similar results, attempt to summarize the key findings of the TWA strategy.

This strategy integrates cognitive techniques that enhance comprehension by connecting prior knowledge, monitoring comprehension during reading, and facilitating summarization. Empirical evidence supports the effectiveness of TWA in improving reading comprehension among students across educational levels, making it an essential tool for learners with and without reading difficulties. The structured stages of TWA promote an interactive reading process, leading to significant improvements in comprehension and analysis skills through a more interactive approach to the text (Sanders, 2018; Grünke et al., 2024; McIntosh, 2024).

Building English language skills (listening, speaking, reading, and writing) is among the most important skills essential for human cognition and communication. Reading plays a pivotal role in enriching and developing other language skills while promoting continuous self-learning. Gradually developing these skills is essential for achieving communicative proficiency in English (Navruzova & Qushshayeva, 2025). Achieving this goal requires the application of effective educational strategies, as reading proficiency is primarily measured by a learner's ability to understand written texts and interact effectively with their content to construct meaning (Hayati & Saryanto, 2025).

Reading comprehension has been defined in various ways, yet all definitions converge on the idea that it represents both the essence and the outcome of the reading process. It is conceptualized as a mental activity involving understanding, interpretation, analysis, reconstruction, critique, and judgment. Through this process, readers can grasp the author's intended meaning—explicit or implicit—while drawing on their prior knowledge to make informed decisions about the text (Abu Sarhan, 2014, p. 181).

Reading comprehension is considered one of the most critical cognitive skills, as it directly influences the teaching–learning process and reflects the learner's success in acquiring reading proficiency. This, in turn, impacts overall academic achievement and performance across a wide range of educational tasks. Reading requires learners to engage in complex mental activities, such as transforming written symbols into comprehensible meanings that they can internalize and respond to. While the writer's purpose is to convey a particular message, the reader's role is to interpret and

understand it—an active process often referred to as constructing meaning or reading comprehension (Al-Alimat, 2007).

Scholars have proposed various classifications of reading comprehension, most of which share a common framework. Each classification is organized into hierarchical levels, with each level comprising observable and measurable sub-skills. Among the most prominent is the model proposed by Al-Naqah and Hafez (2004, pp. 231–233), which identifies five main levels, Literal comprehension, reflecting the reader's ability to understand words, sentences, ideas, and events explicitly stated in the text, Interpretive comprehension, highlighting the ability to infer implicit meanings not directly expressed, Critical comprehension, involving the application of evaluative linguistic, semantic, and functional judgments based on appropriate criteria, Appreciative comprehension, which emphasizes deep engagement with the text through reflective experiences, sensitivity to the writer's emotions, and recognition of connotative meanings, and creative comprehension, the highest level, where the reader demonstrates the ability to generate new ideas and apply insights from the text in novel contexts.

The results of the Programme for International Student Assessment (PISA) 2022 revealed several challenges facing the Jordanian education sector, reflected in students' academic achievement. The average reading literacy score was 342, far below the OECD average of 476. This represents a marked decline compared to the 2018 cycle, in which Jordanian students' reading performance dropped by 77 points, ranking Jordan 78th out of 81 participating countries (National Center for Human Rights, 2023).

According to a press report by Al-Mamlaka TV (2024), the Jordanian Minister of Education and Higher Education, Azmi Mahafzah, stated during an interview that the learning poverty rate in Jordan rose from 52.5% prior to the COVID-19 pandemic to over 60%. He clarified that learning poverty refers to "a 10-year-old student (fourth grade) who is unable to understand or comprehend a passage in Arabic." In another lecture at the Royal Society for International Affairs titled "Education in Jordan: Reality and Aspirations", the same source reported that "some tenth-grade students are unable to read or write" (Al Jazeera, 2024).

Drawing on practical experience in education and direct observations of students' weaknesses in reading comprehension, the present study seeks to investigate the impact of the TWA strategy on reading comprehension among tenth-grade students in Jordan.

The current study contributes to the theoretical knowledge base by examining the role of the TWA strategy in enhancing reading comprehension skills. It identifies the most critical comprehension skills for tenth-grade students. It enriches the body of research by addressing a gap in the literature through the application of the TWA strategy. To the best of the researcher's knowledge, this is the first study in Jordan and the Arab world to examine this strategy, thereby paving the way for future research in language learning and pedagogy. Future studies may further explore related variables such as grade level, gender, and other demographic or contextual factors.

The practical importance of this study lies in presenting the TWA strategy as an instructional model for Arabic language teachers within the Jordanian Ministry of Education. This strategy provides teachers with a structured framework for enhancing reading comprehension before, during, and after reading, offering practical solutions to address students' reading difficulties. The study's findings and recommendations can further support the development of Arabic language teaching methodologies within the Jordanian Ministry of Education.

TWA is defined as an instructional strategy designed to improve reading comprehension through three stages: thinking before reading, thinking while reading, and thinking after reading. This strategy enhances students' ability to regulate their reading processes and monitor their comprehension

(Mason et al., 2006). The current study sought to define TWA as a series of teacher-guided steps applied during reading instruction to enhance students' comprehension. The strategy includes (a) activating prior knowledge and setting reading goals before reading; (b) monitoring comprehension, adjusting reading speed, linking prior knowledge to new knowledge, and rereading unclear passages during reading; and (c) identifying main ideas, summarizing them, and reflecting on knowledge gained after reading. Its effectiveness is measured by comparing students' reading comprehension scores before and after reading.

Sartawi and Rawash (2016, p. 61) define reading comprehension as "an integrative process involving the interaction of the reader (experience, goals, prior knowledge, and cognitive ability), the text (genre, features, and linguistic dimensions), and the social and cultural context in which reading occurs." Accordingly, the current study defined reading comprehension as the scores students obtain on a test designed to measure the five levels of comprehension identified by Al-Naqa and Hafez (2004).

2. Literature Review

Omar (2025) conducted a systematic review of effective reading comprehension strategy instruction for students with Specific Learning Disabilities (SLDs) in Arabic language contexts. It analyzes 12 studies published from 2015 to 2024, identifying key components of successful instruction, including structured and explicit teaching, individualized support, continuous progress monitoring, skill retention, and the use of multisensory learning to facilitate generalization. Additionally, the research points out gaps in the literature, including issues with generalizability, a lack of long-term studies, challenges in practical application, and shortcomings in current assessment tools. The findings suggest the need for larger sample sizes, longitudinal studies, and comparative analyses of instructional methods to improve reading strategy instruction for SLD students.

A case study by Grünke et al. (2024) investigated the impact of the TWA strategy on improving reading comprehension among fifth-grade students with learning difficulties in Germany. The study sample included three carefully selected students based on diagnostic assessments of their reading weaknesses. Repeated evaluations revealed substantial progress in reading comprehension and positive engagement in applying the strategy.

Similarly, Manggesti (2019) conducted a study in Indonesia to explore the effect of TWA on students' comprehension of analytical texts and their motivation to learn. The study involved a single group of 29 eleventh-grade students, with pre- and post-tests administered alongside observational tools. Results demonstrated significant improvements in analytical text comprehension and heightened motivation when using the TWA strategy.

Sari (2017) also examined the effectiveness of the "Think Before, While, and After Reading" strategy in improving comprehension among eleventh-grade students in Indonesia. The study included 60 students, equally divided into experimental and control groups, with pre- and post-tests administered. Findings revealed statistically significant differences favoring the experimental group.

In another study, Ekayani (2017) compared the effectiveness of the KWL and TWA strategies in enhancing reading comprehension among tenth-grade students in Indonesia. Using a quasi-experimental design, the study targeted a population of 317 students across 11 classes, with two classes selected through cluster random sampling. One class of 28 students was taught using KWL, while another class of 30 students was taught using TWA. Results of pre- and post-tests showed no statistically significant differences between the two groups, indicating that both strategies effectively enhanced reading comprehension.

In pursuit of effective strategies to achieve language-learning goals, the TWA strategy (Think Before, While, and After Reading) has emerged as one of the most impactful approaches to

enhancing reading comprehension. This strategy was first developed and expanded by Mason and Harris (2002).

The roots of the TWA strategy can be traced to the Self-Regulated Strategy Development (SRSD) model, designed by Harris and Graham (1996). Grounded in cognitive-behavioral and social learning theories (Harris & Graham, 1999; Zimmerman, 2002; Schunk & Ertmer, 2000), the SRSD model offers a comprehensive framework for strengthening learners' capacity for effective self-regulation during reading. This self-regulatory dimension significantly improves learners' comprehension, retention, and analysis of texts (Swanson & Hoskin, 1998). Empirical studies examining the impact of the TWA strategy within the SRSD framework have reported significant improvements in reading comprehension skills among both students with learning difficulties and their peers without such challenges (Mason, 2004; Mason & Bentz, 2004; Mason, Hickey Snyder, Jones, & Kedem, 2006).

A key strength of the TWA strategy lies in its integration of self-regulation and reading comprehension. Self-regulation, defined as "an active and constructive process in which learners set goals for their learning and then strive to monitor, regulate, and control their cognition, motivation, and behavior, guided by goals and contextual features in the environment" (Pintrich, 2000, p. 453), provides the foundation for its effectiveness.

Thus, the TWA strategy fosters learner autonomy and enhances active engagement with texts across three systematic stages: before, during, and after reading. This phased approach equips learners with a holistic framework for strengthening their self-regulation while improving their comprehension, interpretation, and analysis of texts (Swanson & Hoskin, 1998). According to Mason et al. (2006), the TWA strategy is a multi-phase instructional approach designed to help students refine their reading comprehension skills, moving through three essential stages of text engagement as follows: the First Stage (Thinking Before Reading). This stage consists of three steps designed to activate the reader's prior knowledge. The first step is "Think about the author's purpose", followed by "Think about what you already know", and finally "Think about what you want to learn." The first step—thinking about the author's purpose—serves as a motivational element that helps readers anticipate the text's structure, thereby shaping their expectations and guiding their reading strategies. Such engagement enhances the reader's interaction with the text (Pearson & Durkin, 2002). The subsequent steps—thinking about what you already know and what you want to learn—are drawn from the KWL strategy developed by Ogle (1989), which underscores the influential role of prior knowledge in both facilitating and complicating reading comprehension. The Second Stage (W) is Thinking While Reading, which involves three main steps. The first is "Think about your reading speed", the second is "Think about connecting knowledge", and the third is "Think about rereading unclear parts." These steps encourage learners to connect their prior experiences with the knowledge presented in the text and broaden their understanding through idea exchange. This process fosters deeper comprehension during reading (Hansen & Pearson, 1983), and the Third Stage (A) is Thinking. This stage also comprises three key steps. The first is "Think about the main idea", where readers employ the RAP strategy: (Read the paragraph, Ask yourself what the main idea is, Put the main idea into your own words) (Ellis & Graves, 1990). The second step is "Think about summarizing". In this step, learners are introduced to the five summarization rules outlined by Brown and Day (1983): deleting trivial information, eliminating redundancy, substituting terms or expressions with clearer alternatives, selecting a main sentence from the paragraph, or generating a main sentence when one is absent. Studies by Shtiewi (2015) and Al-Janani (2015) confirmed that summarization strategies significantly improved the reading comprehension of tenth-grade and secondary students at both the critical and creative levels. The third and final step, "Think about what you have learned", requires readers to retell the text in their own words. Recent studies have shown that this step strengthens text comprehension and enhances reading skills at the critical, appreciative, and creative levels (Kim & Park, 2021; Maulidina et al., 2022; Gulo et al., 2025).

Accordingly, the TWA strategy integrates cognitive strategies and structured procedures before, during, and after reading, transforming the act of reading into an interactive and organized process. It stimulates learners to connect prior knowledge with new information, monitor comprehension while reading, and eventually summarize and retell the text. This process leads to significant improvements in comprehension skills (Baker et al., 2002).

By reviewing these prior studies, the present research was inspired to investigate the impact of the TWA strategy on reading comprehension in a different educational context—tenth-grade students in Jordan—where it may contribute to advancing their overall reading proficiency.

3. Methodology

3.1. Methodology of Study

The current study adopted a quasi-experimental design, selecting two groups of tenth-grade students: a control group taught using the conventional instructional strategy. An experimental group was taught using the TWA strategy. Pre- and post-tests of reading comprehension were administered to both groups.

3.2. Question and Hypothesis of the Study

The Study Aims to Answer the Following Two Questions and the Hypothesis:

Q1: Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in overall reading comprehension skills attributable to the teaching strategy (traditional vs. TWA)?

Null Hypothesis 1: There are no statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in overall reading comprehension skills attributable to the teaching strategy (traditional vs. TWA).

Q2: Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in each individual level of reading comprehension attributable to the teaching strategy (traditional vs. TWA)?

Sub-Hypothesis 1: There are no statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in literal comprehension attributable to the teaching strategy (traditional vs. TWA).

Sub-Hypothesis 2: There are no statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in interpretive comprehension attributable to the teaching strategy (traditional vs. TWA).

Sub-Hypothesis 3: There are no statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in critical comprehension attributable to the teaching strategy (traditional vs. TWA).

Sub-Hypothesis 4: There are no statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in appreciative comprehension attributable to the teaching strategy (traditional vs. TWA).

Sub-Hypothesis 5: There are no statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in creative comprehension attributable to the teaching strategy (traditional vs. TWA).

3.3. Samples of the Study

The participants consisted of 54 tenth-grade students enrolled at Al-Shaheed Rashed Al-Zyoud Secondary School for Boys during the second semester of the 2024/2025 academic year. The school was selected through convenience sampling because of the availability of its facilities and the resources required for the study.

The participants were divided into two groups:

- A control group of 27 students was taught using the conventional strategy.
- An experimental group of 27 students was taught using the TWA strategy.

3.4. Instrument of the Study

- The reading comprehension skills test

To achieve the objectives of the current study, an achievement test was prepared to measure the extent of improvement in the study subjects' reading comprehension. The test consisted of (30) questions, distributed over five levels: (literal, interpretive, critical, appreciative, and creative), with six questions for each level. The questions for the (literal and interpretive) levels were of the multiple-choice paragraph type (1-12 paragraphs), while the questions for the (critical, appreciative, and creative) levels were of the essay type. The test was prepared according to the following procedural steps:

- Identifying the behavioral indicators for each level of reading comprehension, after reviewing educational literature and previous studies, and the texts that will be taught to students. Each level includes three behavioral indicators. The literal level includes the following behavioral indicators: determining the apparent meaning of vocabulary, identifying the characters, numbers, or places mentioned in the text, and providing details contained in the text. The interpretive level: deduces the main ideas of the paragraphs of the text, deduces the author's purpose, and identifies cause-and-effect relationships. The critical level: judges the text in light of previous experience, evaluates arguments and evidence, and identifies the author's style. The appreciative level identifies the beauty of the text's expressions, infers the feelings and emotions, and clarifies the suggestive meaning of words and expressions. The creative level: suggests solutions to problems mentioned in the text, employs ideas extracted from the text in new situations, and provides the largest number of synonyms or antonyms for some words in the text.

- Selecting the content of one reading text that has not been previously taught to students, as prescribed for the tenth grade from the Arabic Language Book, second semester, Jordanian curriculum, 2018 edition. This ensures that the text content is appropriate for the study population.

- Constructing the test items based on reading comprehension levels and their behavioral indicators, and determining the minimum and maximum marks for each item. Three behavioral indicators were identified for each level, and each indicator had two items. The test, in its initial form, consisted of 30 items: 12 objective multiple-choice items for the literal and interpretive levels and 18 essay items for the critical, appreciative, and creative levels.

- Preparing a model answer guide for the scoring process.

- Validity of the Test

To ensure test validity, the reading passages accompanied by the list of comprehension skills, distributed across the five levels, along with the 30 test items, were reviewed by a panel of specialists in Arabic language curricula and teaching methods, Arabic language and literature, Measurement and evaluation, and Arabic language supervisors and teachers from the Ministry of Education.

They assessed the appropriateness of the test content, the clarity of the instructions, the alignment of sub-skills with the five levels, and the suitability and accuracy of the scoring rubrics for the essay questions. Based on their feedback, necessary modifications were made to the initial version of the test.

- Inter-rater Reliability for the Three Levels of Test

To establish inter-rater reliability for the critical, appreciative, and creative levels, the test was administered to a pilot sample of 30 students. The researcher and an experienced Arabic language teacher (holding a Master's degree in Arabic curricula and instruction) independently scored the students' responses. Agreement coefficients were calculated using Holsti's formula (1969), as shown in Table 1.

Table 1. Inter-Rater Reliability Coefficients

Reading Comprehension Skills	Reliability Coefficient
Critical	0.90
Appreciative	0.87
Creative	0.90
Combined (three levels)	0.89

Table 1 shows that reliability values ranged from 0.87 to 0.90, with an overall reliability coefficient of 0.89. All values are considered acceptable for this study. According to Holsti (1969), an agreement of 0.85 or higher is acceptable.

- Test–Retest Reliability of the Reading Comprehension Test

To assess test–retest reliability, the test was administered to a pilot sample of non-study participants and re-administered after two weeks. Pearson correlation coefficients were calculated for each level and for the overall test, as shown in Table 2.

Table 2. Test–Retest Reliability Coefficients

Reading Comprehension Skills	Reliability Coefficient
Literal	0.92
Interpretive	0.86
Critical	0.83
Appreciative	0.80
Creative	0.79
Combined (all skills)	0.88

The coefficients ranged between 0.79 and 0.92, with an overall coefficient of 0.88, which is acceptable for the current study.

- Test Administration

The pre-test and post-test were administered to both groups, with instructions emphasizing the importance of answering all questions according to the provided guidelines.

- Equivalence of the Study Groups in the Pre-Test

To verify group equivalence, the means and standard deviations of pre-test performance were calculated, and an independent-samples t-test was applied.

Table 3. Results of the Independent Samples t-Test

Teaching Strategy	Mean	Std. Dev.	t-value	df	Sig.
Conventional	22.15	13.50	0.207	52	0.837
TWA	21.43	11.46			

As shown in Table 3, the t-value (0.207) with a significance level of 0.837 (>0.05) indicates no statistically significant difference between the control and experimental groups in pre-test performance. This confirms group equivalence. To further control statistical bias, ANCOVA was applied.

3.5. Procedures of the Study

The study was applied to the students of the experimental group in the second semester of the academic year 2024/2025 AD, with (12) lessons, distributed over (6) weeks, with two lessons per week with follow-up, the duration of the lesson being (40) minutes, while the control group was taught according to the usual method. The researchers followed a set of steps to implement the "TWA" strategy among tenth-grade students to improve their reading comprehension skills:

- Preparing a teacher's guide by reviewing previous studies, such as Mason's (2002) study, as well as educational literature that addressed the TWA strategy and the steps for constructing and designing teacher guides. The guide included an introduction and a brief overview of the strategy and its stages, the general objectives expected to be achieved, the teacher's modeling of the strategy, the specific outcomes expected to be achieved after implementing each lesson according to the strategy's procedures, the tools used, the stages of the teaching process according to the strategy's steps, and the proposed timeframe for each stage. The guide was presented to a group of judges with experience and expertise in Arabic language curricula and teaching methods, including academic professors, educational supervisors, and teachers, to ensure the suitability of the guide's content for the study population, the suitability of the educational objectives for them, and the suitability of the procedures used for the strategy. Modifications were then made based on the judges' opinions and observations.

2. A task facilitation letter was obtained from Yarmouk University and addressed to the Education Directorate for the Second Zarqa District in Jordan.

- The Martyr Rashid Al-Zayoud Secondary School for Boys was selected for the study. The school has 9 10th-grade classes. Two classes were intentionally selected: Class C as the experimental group and Class D as the control group.

- The reading comprehension skills test was administered to a pilot sample of 30 tenth-grade students at the Martyr Rashid Al-Zayoud School, outside the study population. The test was then re-administered to the same sample two weeks later to assess the test's reliability.

- A pre-reading comprehension test was administered to both the experimental and control groups. An experienced Arabic language teacher with a master's degree in Arabic language curricula and teaching methods was selected as the primary examiner, and the researcher as the secondary examiner. The reliability coefficient of agreement was verified, and the results showed that the value was acceptable.

- The primary researcher personally administered the reading lessons using the TWA strategy to the experimental group, according to the manual prepared for this purpose. Meanwhile, an

experienced teacher administered the reading lessons to the control group using the traditional method to ensure that the study was not biased toward the strategy.

- A post-reading comprehension test was administered to both groups to measure the effect of the TWA strategy versus the traditional method.

3.6. Variables of the Study

This study examined the following variables:

The independent variable: teaching strategy, with two categories (conventional and "TWA").

The dependent variables:

- Each level of the reading comprehension test (literal, interpretive, critical, appreciative, and creative) was individually expressed by the study subjects' performance on the items at each level.

- The combined reading comprehension skills, expressed by the study subjects' performance on the combined test skills.

3.7. Statistical Methods Used

- To answer the first study question and verify its main hypothesis, the observed means, standard deviations, and adjusted means were calculated for the performance of the two study groups on the combined reading comprehension skills test. To assess the statistical significance of the apparent difference in post-test means across the teaching strategies, a one-way analysis of variance (ANOVA) was used.

- To answer the second study question and verify its main and sub-hypotheses, the arithmetic means, standard deviations, and adjusted means were calculated for the performance of the two study groups on each skill on the reading comprehension skills test individually. To assess the statistical significance of the apparent differences in the arithmetic means across the teaching strategy, a one-way analysis of variance (MANOVA) was used.

- The Eta square index was calculated to determine the effect size (effectiveness) of the teaching strategy variable (Cohen, 1988).

The methodology section adheres to established academic conventions, mirroring approaches utilized in prior research in the same subject area. It comprehensively outlines the creation of both experimental and control groups. The implementation procedures of the TWA framework are explicitly articulated, detailing the intervention duration and the specific steps it incorporates. Notably, the researchers assert that no artificial intelligence tools were used at any stage of this study.

4. Results

The study aimed to reveal the Effect of the "TWA" Strategy on Enhancing Reading Comprehension Skills among tenth-grade students by answering the following questions:

To answer the first question, which states: Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in overall reading comprehension skills attributable to the teaching strategy (traditional vs. TWA)?

Descriptive statistics were calculated for pre-test, post-test, and adjusted post-test scores.

Table 4. Pre- and Post-Test Descriptive Statistics for Reading Comprehension by Teaching Strategy

Teaching Strategy	Pre-test Mean (SD)	Post-test Mean (SD)	Adjusted Post-test Mean (SE)
Conventional	22.15 (13.50)	31.41 (14.50)	31.07 (1.30)
TWA	21.43 (11.46)	44.33 (13.05)	44.67 (1.30)

Table 4 shows an apparent difference between the pre- and post-means of the experimental group members taught using the "TWA" strategy, and an apparent difference between the post-means of the two study groups: the control and the experimental. To determine the statistical significance of the post-means of the apparent differences across the teaching strategies, after neutralizing the pre-means of the two study groups' performance on combined reading comprehension skills, a one-way analysis of variance was used, as shown in Table 5.

The results revealed an apparent difference in favor of the experimental group. To test significance, ANCOVA was used.

Table 5. Results of One-Way Analysis of Variance Accompanying the Arithmetic Means of the Performance of the Two Study Groups in the Post-Test in Combined Reading Comprehension Skills According to the Teaching Strategy

Source of Variance	SS	df	MS	F-value	Sig.	Effect Size
Pre-test (covariate)	7577.176	1	7577.176	166.614	—	—
Teaching Strategy	2496.515	1	2496.515	54.896*	0.000	0.518
Error	2319.342	51	45.477	—	—	—
Adjusted Total	12152.093	53	—	—	—	—

*Significant at $\alpha = 0.05$

Considering the results of the analysis of variance shown in Table 5, it is noted that the value of statistical significance for the teaching strategy reached (0.000), which is less than ($\alpha = 0.05$); which indicates the rejection of the main null hypothesis and the acceptance of the alternative, which states: "There is a statistically significant difference at ($\alpha = 0.05$) between the arithmetic means of the performance of the members of the two study groups in the combined reading comprehension skills attributed to the teaching strategy (the usual, and "TWA")". From the arithmetic means shown in Table 4, it is clear that the statistically significant difference was in favor of the experimental group members who were taught using the "TWA" strategy. The effect size was calculated, which reached a value of 0.518, which is a high effect size (Cohen, 1988), and it indicates that (51.8%) of the variance (improvement) in the post-study members' performance in the combined reading comprehension skills is due to the "TWA" strategy. This means the TWA strategy is effective at improving overall reading comprehension, with a 51.8% improvement.

To answer the second question, which states: "Are there statistically significant differences at the significance level ($\alpha = 0.05$) between the mean scores of students' performance in each level of reading comprehension attributable to the teaching strategy (traditional vs. TWA)?"

The Following Null Sub-Hypotheses Were Tested:

First Null Hypothesis: There are no statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in literal reading comprehension skills attributable to the teaching strategy (traditional vs. TWA).

Second Null Hypothesis: There are no statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in interpretive reading comprehension skills attributable to the teaching strategy.

Third Null Hypothesis: There are no statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in critical reading comprehension skills attributable to the teaching strategy.

Fourth Null Hypothesis: There are no statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in aesthetic reading comprehension skills attributable to the teaching strategy.

Fifth Null Hypothesis: There are no statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in creative reading comprehension skills attributable to the teaching strategy.

The means and standard deviations for the pre-test, post-test, and adjusted post-test scores of both study groups across the five reading comprehension skills (literal, interpretive, critical, aesthetic, and creative) were calculated in accordance with the teaching strategy. These results are presented in Table 6.

Table 6. Arithmetic Means and Standard Deviations of the Pre-Test, Post-Test, and Adjusted Post-Test Performance of the Study Groups' Members on Each Reading Comprehension Skill, According to the Teaching Strategy

Skill	Teaching Strategy	Pre-Test Performance	Post-Test Performance	Adjusted Post-Test Performance
		Mean	SD	Mean
Literal	Conventional	5.78	3.15	11.33
	"TWA"	5.85	2.14	12.00
Interpretive	Conventional	5.63	3.24	8.67
	"TWA"	5.26	3.60	11.11
Critical	Conventional	5.41	3.84	5.78
	"TWA"	5.81	3.76	9.37
Appreciative	Conventional	2.96	3.98	3.04
	"TWA"	2.81	3.73	6.89
Creative	Conventional	2.37	3.45	2.59
	"TWA"	1.70	2.87	4.96

Table 6 shows noticeable differences between the pre-test and post-test arithmetic means for the experimental group members taught using the "TWA" strategy. Moreover, there are apparent differences between the post-test means of the study groups (control and experimental). To determine the statistical significance of these post-test differences across the teaching strategies,

while controlling for pre-test mean differences in each reading comprehension skill, Multivariate Analysis of Covariance (MANCOVA) was employed, as presented in Table 7.

Table 7. Results of the Multivariate Analysis of Covariance (MANCOVA) for the Post-Test Means of the Study Groups' Members on Each Reading Comprehension Skill, According to the Teaching Strategy

Source of Variance	Skill	Sum of Squares	df	Mean Square	F	Statistical Significance	Effect Size
Covariate (Literal Pre-Test)	Literal	1.604	1	1.604	1.266	—	—
	Interpretive	3.072	1	3.072	0.409	—	—
	Critical	20.422	1	20.422	3.137	—	—
	Appreciative	10.823	1	10.823	2.266	—	—
	Creative	1.820	1	1.820	0.435	—	—
Covariate (Interpretive Pre-Test)	Literal	0.896	1	0.896	0.707	—	—
	Interpretive	40.973	1	40.973	5.454	—	—
	Critical	47.935	1	47.935	7.364	—	—
	Appreciative	0.482	1	0.482	0.101	—	—
	Creative	17.810	1	17.810	4.258	—	—
Covariate (Critical Pre-Test)	Literal	2.783	1	2.783	2.195	—	—
	Interpretive	110.456	1	110.456	14.704	—	—
	Critical	133.364	1	133.364	20.489	—	—
	Appreciative	28.146	1	28.146	5.894	—	—
	Creative	1.173	1	1.173	0.280	—	—
Covariate (Appreciative Pre-Test)	Literal	0.058	1	0.058	0.046	—	—
	Interpretive	3.630	1	3.630	0.483	—	—
	Critical	29.250	1	29.250	4.494	—	—
	Appreciative	193.805	1	193.805	40.582	—	—
	Creative	19.293	1	19.293	4.613	—	—
Covariate (Creative Pre-Test)	Literal	0.033	1	0.033	0.026	—	—
	Interpretive	6.926	1	6.926	0.922	—	—

Source of Variance	Skill	Sum of Squares	df	Mean Square	F	Statistical Significance	Effect Size
Teaching Strategy	Critical	24.195	1	24.195	3.717	—	—
	Appreciative	0.742	1	0.742	0.155	—	—
	Creative	121.171	1	121.171	28.971	—	—
	Literal	5.523	1	5.523	*4.357	0.042	0.085
	Interpretive	66.108	1	66.108	*8.800	0.005	0.158
	Critical	142.554	1	142.554	*21.901	0.000	0.318
Error	Appreciative	189.997	1	189.997	*39.784	0.000	0.458
	Creative	111.758	1	111.758	*26.720	0.000	0.362
	Literal	59.580	47	1.268	—	—	—
	Interpretive	353.057	47	7.512	—	—	—
	Critical	305.929	47	6.509	—	—	—
Adjusted Total	Appreciative	224.458	47	4.776	—	—	—
	Creative	196.579	47	4.183	—	—	—
	Literal	78.000	53	—	—	—	—
	Interpretive	795.333	53	—	—	—	—
	Critical	1059.204	53	—	—	—	—
	Appreciative	1133.926	53	—	—	—	—
	Creative	837.333	53	—	—	—	—

* Statistically significant at $\alpha = 0.05$

As shown in Table 7, the multivariate analysis of covariance reveals that the teaching strategy had a statistically significant effect on the post-test performance of the study groups across most reading comprehension skills. The “TWA” strategy, in particular, demonstrated higher adjusted mean scores, indicating its effectiveness in enhancing literal, interpretive, critical, appreciative, and creative reading skills among students after controlling for pre-test differences.

Based on the Analysis in Table 7, the Following Can Be Observed:

The significance value of Hotelling's Trace for the teaching strategy variable was 0.000, which is lower than ($\alpha = 0.05$). This indicates statistically significant differences in at least one comprehension skill attributable to the teaching strategy.

The significance value for literal comprehension skills was 0.042, which is lower than ($\alpha = 0.05$). This result rejects the first null hypothesis and supports the alternative, which states That There are statistically significant differences ($\alpha = 0.05$) between the mean scores of the two groups in literal comprehension skills attributable to the teaching strategy. As shown in Table 6, this difference favored the students in the experimental group who were taught using TWA. The effect size for literal comprehension was 0.085, which, although modest (Cohen, 1988), indicates that 8.5% of the variance in post-test scores is attributable to the TWA strategy.

The significance value for interpretive comprehension skills according to the teaching strategy was 0.005, which is lower than ($\alpha = 0.05$). This result indicates rejection of the second null sub-hypothesis and acceptance of the alternative hypothesis: "There are statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in interpretive comprehension skills attributable to the teaching strategy." From the mean scores shown in Table 6, it is evident that the statistically significant difference favored the experimental group, which was taught using the TWA strategy. The effect size for interpretive comprehension was 0.158, which is considered high (Cohen, 1988), indicating that 15.8% of the variance (improvement) in post-test performance on interpretive comprehension skills is attributable to TWA. In other words, TWA proved effective in improving interpretive comprehension skills by 15.8%.

The significance value for critical comprehension skills according to the teaching strategy was 0.000, which is lower than ($\alpha = 0.05$). This result indicates rejection of the third null sub-hypothesis and acceptance of the alternative hypothesis: "There are statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in critical comprehension skills attributable to the teaching strategy." According to Table 6, the significant difference favored the experimental group taught through TWA. The effect size for critical comprehension was 0.318, which is considered high (Cohen, 1988), meaning that 31.8% of the variance (improvement) in post-test scores is attributable to TWA. This highlights TWA's effectiveness in substantially improving critical comprehension skills.

The significance value for aesthetic comprehension skills according to the teaching strategy was 0.000, which is lower than ($\alpha = 0.05$). This leads to the rejection of the fourth null sub-hypothesis and acceptance of the alternative hypothesis stating: "There are statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in aesthetic comprehension skills attributable to the teaching strategy." As shown in Table 6, the difference favored the experimental group instructed via TWA. The effect size for aesthetic comprehension was 0.458, which is considered high (Cohen, 1988), indicating that TWA explains 45.8% of the variance (improvement) in post-test performance. This confirms that TWA is highly effective in enhancing aesthetic comprehension skills, accounting for nearly half of the measurable variance.

The significance value for creative comprehension skills according to the teaching strategy was 0.000, which is lower than ($\alpha = 0.05$). This result indicates rejection of the fifth null sub-hypothesis and acceptance of the alternative hypothesis: "There are statistically significant differences at ($\alpha = 0.05$) between the mean scores of the two study groups in creative comprehension skills attributable to the teaching strategy." As indicated in Table 6, the difference favored the experimental group taught using TWA. The effect size for creative comprehension was 0.362, which is considered high (Cohen, 1988), showing that 36.2% of the variance (improvement) in post-test performance is attributable to TWA. This demonstrates the strategy's strong effectiveness in developing creative comprehension skills.

5. Discussion

The current study contributes to enhancing reading comprehension by using the TWA strategy, which organizes the reading process into three stages: pre-reading, during-reading, and post-reading. This structure promotes self-regulation and enables students to plan, monitor, and evaluate their comprehension. The TWA approach also promotes active engagement, critical thinking, and effective participation, improving analytical and inferential skills. Its structured stages facilitate cognitive connections, ensuring a comprehensive reading experience that integrates reading with writing activities. Applying the strategy leads to better understanding through structured thinking processes and encourages students' independence in meaning-making. Overall, implementing the TWA strategy significantly enhances students' reading comprehension at various levels.

According to the results of the first question, which were clear and detailed, the study results showed statistically significant differences at the significance level ($\alpha = 0.05$) between the arithmetic means of the two study groups' combined reading comprehension skills, in favour of the experimental group taught using TWA, compared to the control group taught using the traditional method. This result indicates that implementing the TWA strategy has a clear positive impact on students' reading comprehension performance. This is attributed to the strategy's division of the reading process into organized stages: before, during, and after reading. This may enable students to plan their reading, monitor their comprehension, and evaluate their understanding of the texts they read. This is consistent with the principles of self-regulation of knowledge, as outlined by Merson (2016) and Mason (2002).

This demonstrates the importance of employing the TWA strategy in improving reading comprehension skills, as it is closely linked to the principles of self-regulation strategies (SRSD). This may help improve the student's ability to self-regulate the reading process, making him more aware, organized, and able to monitor and evaluate. He begins by planning his reading towards specific goals, then monitors his comprehension, and evaluates his performance after each stage of reading (Graham & Harris, 1992).

TWA improves reading comprehension as readers' awareness and reflection on the mental processes involved in reading increase. This is directly reflected in the stages and steps of the TWA strategy, as indicated by Attia (2014). It encourages students to reflect on what they already know about the topic and what they want to know, plan how to approach and process the text, reflect on what they have learned after completing reading, and evaluate the success of their TWA strategy, as confirmed by Presley & Afflebach (1995). This may be one of the reasons for the improvement in students' ability to analyze textual ideas and extract implicit meanings.

Promoting active interaction and effective participation during reading can also help explain the superiority of the experimental group. The TWA strategy provides a learning environment that encourages students to think critically and analytically while reading, compare new information with prior knowledge, and form sound conclusions. This enhances motivation for learning and increases their focus when interacting with texts. Previous studies (Tanjung et al., 2022; Manggesti, 2019; Sari, 2017) have shown that applying the TWA strategy improves the ability to understand texts deeply, develops analysis and inference skills, and enhances students' ability to handle different levels of comprehension.

This confirms that the TWA strategy is an integrated educational model that applies self-regulation components and supports metacognitive thinking, leading to improved reading comprehension. This can be explained by the degree of independence students enjoy when implementing the strategy's steps, as they are given the freedom to interact with texts based on their diverse prior experiences and what they want to know, making their role pivotal and active in constructing meaning from the text. At the same time, the teacher becomes a facilitator and guide in the educational process, helping students discuss and exchange opinions (Keller, Abuelhassan, 2015).

Furthermore, the TWA strategy makes the reading lesson more comprehensive by integrating reading activities with writing, summarizing, and paraphrasing. This may allow students to improve their interpretive, critical, and creative skills, as well as interact verbally with peers, expressing what they know and have learned. This may improve the level of dialogue, interaction, and text analysis, thereby enhancing their appreciation.

The researcher attributes the improvement in reading comprehension among students in the experimental group to the systematic stages of the Think Before, During, and After (TWA) reading strategy. The first stage, "Think Before Reading," activates prior knowledge, sets expectations, and

motivates students to question the text, enhancing their focus and comprehension. Duke and Pearson (2002) emphasize this as crucial for meaning construction. The second stage, "Think as You Read," involves training students to monitor reading speed, fostering a balance that boosts comprehension (Jenkins et al., 2001). Students learn to make connections and inferences, and to analyze texts, thereby improving their analytical abilities (Hansen & Pearson, 1983). They also identify ambiguities to reassess their understanding, accommodating individual differences in comprehension (Pressley & Afflerbach, 1995).

The researcher attributes the improvement among students taught the TWA strategy to the third stage (Think After Reading), in which they were trained to organize information from the text and evaluate their learning. This was achieved by identifying and distinguishing the text's main ideas, applying summarization rules, reflecting on what they learned, and retelling it. These are transitional steps from literal comprehension to higher levels of reading comprehension that may improve their abilities in critical, appreciative, and creative aspects (Jitendra & Xin, 2023; Jitendra & Gajria, 2011). The researcher may attribute the improvement in the experimental group's combined reading comprehension levels to the stages and steps of implementing the TWA strategy, which improve students' ability to organize the reading process, increase self-awareness in understanding the text, and integrate their cognitive and metacognitive skills. Providing students with ample space to express their ideas and experiences independently, in line with the principle of considering individual differences among them, may make them more active in the learning process and more engaged with the text. This may be reflected in a comprehensive improvement in reading comprehension skills at all levels, as confirmed by some studies such as Tanjung et al. (2021), Mason (2004), Mason & Graham (2008), Kolić-Vehovec & Bajšanski (2006), and Butterfuss, Kim, & Kendeou (2020).

According to the detailed results of the second question, the study showed that the experimental group using the TWA strategy outperformed the control group at the literal level, with statistically significant differences ($p < 0.05$) and a moderate effect size ($\eta^2 = 0.0850$). This result can be explained by the fact that the first stage of the strategy (think before reading) helps students activate prior knowledge and identify the main ideas of the text, which may contribute to distinguishing direct information in the text. This is consistent with what Anders et al. (2000) and Duke & Pearson (2002) indicated. The results showed that using TWA significantly improved the performance of the experimental group students at the interpretive level, with an effect size increasing to ($\eta^2 = 0.0850$). This may be because the reading stage encourages students to analyze relationships among ideas, connect new information to prior knowledge, and infer the implicit meanings of texts. This interpretation is consistent with the findings of previous studies, such as Mangestei (2019) and Sari (2017), which confirmed that TWA enhances interpretive comprehension through self-monitoring and critical thinking during reading. It also contributes to making inferences more accurate and to interpreting texts more deeply.

The results showed that the strategy had a significant impact on the performance of students in the experimental group at the critical level, with a significant increase in the effect size ($\eta^2 = 0.3180$). This may be attributed to the fact that the final stage (Reflect After Reading) provides an opportunity for students to evaluate the text, systematically critique ideas and information, analyze the validity of conclusions, and verify the accuracy of their understanding. This result is consistent with the findings of Mason et al. (2006; Grünke et al., 2024), which indicated that TWA enhances critical thinking by discussing texts, comparing opinions, and making judgments about information in the text. The results showed a significant superiority in the experimental group's performance on the appreciation level, with an effect size of ($\eta^2 = 0.4580$). This improvement can be explained by the strategy's stimulation of students' emotional and aesthetic engagement with texts through self-reflection and participation in analyzing the writer's style and textual objectives. Previous studies, such as Tanjung et al. (2022) and Sari (2017), have supported this view, indicating that the use of

TWA increases students' interest in the aesthetic aspects of a text, encouraging them to appreciate literature and analyze linguistic style.

The results also showed a superiority in the experimental group's performance on the creativity level, with an effect size of ($\eta^2 = 0.3620$). This can be explained by the fact that the strategy allows students to think outside the text by reframing and reflecting on what they have learned, which makes them think of new ideas based on analyzing information, utilizing prior knowledge to generate new conclusions, and linking them to multiple contexts, and formulating innovative interpretations. Previous studies, such as Manggesti (2019) and Merson (2016), have confirmed that the strategy contributes to developing students' creative abilities through innovation and flexible thinking when dealing with reading texts. The study results indicate that the TWA strategy has an effective impact on all five levels of reading comprehension, with noticeable differences ranging from moderate to large among reading comprehension skills. This difference reflects the nature and complexity of each skill. This is consistent with the results of previous studies that confirmed the ability of metacognitive and organizational strategies to achieve more pronounced results in higher-order skills that require critical and creative thinking, compared to easier skills of a retrospective nature. This impacts the improvement of students' reading comprehension, in line with modern educational trends that focus on building higher-order thinking skills as a primary goal of education.

6. Conclusion

The current study concludes the impact of the Think Before, During, and After (TWA) strategy on reading comprehension among tenth-grade students, comparing its effectiveness against traditional teaching methods. Results reveal significant improvements in comprehension for the experimental group using the TWA strategy, with differences at the $\alpha = 0.05$ level compared with the control group. The TWA strategy breaks down the reading process into three distinct stages—pre-reading, during-reading, and post-reading—which enhances students' self-regulation skills, enabling better planning, monitoring, and evaluating of their understanding. This structured engagement fosters critical thinking and analytical skills, prompting greater participation and ultimately leading to better comprehension outcomes.

The strategy enhances cognitive connections by integrating reading and writing activities, fostering students' independence in reading, and emphasizing reflection on prior knowledge and goal setting. The TWA method promotes active participation, which is crucial for motivation and focus, and is supported by research indicating that it aids in developing a deeper understanding and analytical skills for varied textual comprehension. Its phases facilitate the activation of prior knowledge and organization of information, while the teacher's role is vital in fostering a collaborative, discussion-focused environment.

The study demonstrates the effectiveness of the TWA (Think, While, After) strategy in significantly enhancing secondary students' reading comprehension skills across several dimensions: literal, interpretive, critical, aesthetic, and creative. Statistical analyses, including ANCOVA and MANCOVA, revealed significant differences favoring the experimental group engaged with TWA, with effect sizes from moderate to high, indicating the strategy's considerable impact on reading outcomes. The improvements are largely due to the structured phases of TWA. The pre-reading phase activates prior knowledge and motivates learners to formulate relevant questions, establishing a cognitive framework for comprehension. The during-reading phase enhances self-monitoring, analytical thinking, and inferential reasoning, bolstering interpretive and critical skills. In the post-reading phase, organizational, evaluative, and reflective practices elevate aesthetic appreciation and creative engagement with texts. This structured approach fosters metacognitive awareness and encourages active participation, leading to comprehensive advancements in all facets of reading comprehension.

Practically, TWA transcends traditional methods that typically emphasize surface-level understanding and enables deeper, critical, and creative text interaction. This strategy not only enhances comprehension accuracy but also develops higher-order cognitive and metacognitive skills, fostering independent, reflective, and innovative reading habits among learners.

In addition, the study evaluates the effectiveness of the Teaching While Reading (TWA) strategy in improving students' performance across various levels of reading comprehension, and concludes significant differences based on teaching strategy. The results indicate that the experimental group, which utilized TWA, outperformed the control group using traditional methods at the literal reading level, demonstrating statistical significance ($p < 0.05$) and a moderate effect size ($\eta^2 = 0.0850$). This improvement is attributed to TWA's initial phase, "think before reading," which activates prior knowledge and aids in identifying main ideas.

At the interpretive level, the TWA strategy also significantly enhances performance with an effect size of ($\eta^2 = 0.0850$). This stage encourages the analysis of ideas and connections between new information and prior knowledge, consistent with previous studies indicating that TWA fosters deeper interpretive comprehension through self-monitoring and critical thinking. Moreover, significant advancements were observed at the critical level, with a large effect size ($\eta^2 = 0.3180$). Here, the "Reflect After Reading" phase provides students a platform to critique and analyze texts systematically, aligning with findings that TWA bolsters critical thinking through comparative discussions and evaluations of texts.

Performance on the appreciation level showed marked improvement ($\eta^2 = 0.4580$) due to TWA's ability to engage students emotionally and aesthetically with texts, supporting literature appreciation and analysis of style, as endorsed by recent studies. Creativity also benefited from the TWA approach, with students exhibiting higher performance ($\eta^2 = 0.3620$) by applying innovative thinking and prior knowledge to generate new ideas. The overall results affirm that TWA significantly impacts all five levels of reading comprehension, with varying degrees of improvement from moderate to large, reflecting the complexity of each skill. This finding underscores the importance of metacognitive and organizational strategies in fostering higher-order thinking skills, which are crucial in contemporary education.

In conclusion, the TWA strategy is positioned as an effective educational tool that integrates elements of self-regulation and promotes metacognitive skills, thereby resulting in notable improvements in reading comprehension. TWA enhances critical thinking during its phases, activating prior knowledge before reading and fostering appreciation for literature and creativity afterward. Overall, TWA effectively promotes enhancing Reading Comprehension Skills among tenth-grade students.

Given these outcomes, educators are encouraged to integrate TWA into reading instruction as a systematic and evidence-based approach. Its application can significantly enhance students' overall reading proficiency, develop critical and creative thinking abilities, and strengthen their aesthetic and interpretive engagement with texts. Future research could explore TWA's impact across different age groups, subject areas, and culturally diverse contexts to further validate its effectiveness and adaptability in promoting holistic reading development. And the study advocates for the adoption of such innovative teaching strategies that encourage students to actively engage in their learning processes.

7. Suggestions

This study suggests organizing training programs for Arabic language teachers to integrate the TWA strategy and self-regulation strategies to enhance students' reading comprehension skills. Specialized training programs should also be developed for teachers to familiarize them with the

stages of the strategy and guide them to implement it effectively in classrooms. Future global research should also be conducted to explore the impact of the TWA strategy on improving students' reading comprehension skills at various educational levels.

Declarations

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About the Contributor(s)

Hazim Al-Zyoud, PhD student in Faculty of Educational Sciences—Curriculum and Methods of Instruction Department—major in Curriculum and Methods of Instruction in Arabic at Yarmouk University, Irbid, Jordan

Email: hazemalzyoud10@gmail.com

ORCID: <https://orcid.org/0009-0006-1373-1891>

Naser Maqbleh, Prof in Faculty of Educational Sciences—Curriculum and Methods of Instruction Department—major in Curriculum and Methods of Instruction in Arabic at Yarmouk University, Irbid, Jordan.

Email: naser.m@yu.edu.jo

ORCID: <https://orcid.org/0009-0001-6465-0999>

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