Enhancing EFL Students' Reading Comprehension through the Use of Schema Activation Techniques

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Abstract

This study investigates the effect of the Schema Activation Strategy on EFL students' reading comprehension, particularly in analyzing and interpreting narrative texts. A quasi-experimental design was employed involving 68 eleventh-grade students divided into an experimental group and a control group. Over four weeks, the experimental group received instruction using schema-based activities such as K-W-L charts, pre-teaching vocabulary, visual aids, and case-based reading, while the control group was taught using conventional methods. Pre-tests and post-tests were administered to both groups, and the data were analyzed using descriptive statistics and inferential analysis (paired and independent samples t-tests). The results showed that both groups improved their reading comprehension performance; however, the experimental group demonstrated a significantly higher mean gain (9.94 points) compared to the control group (8.83 points). Furthermore, an independent t-test revealed a statistically significant difference in post-test scores between the groups ($t = 2.439$, $p = 0.017$), favoring the experimental group. These findings confirm that schema activation strategies, which engage learners' prior knowledge, effectively enhance inferential understanding, critical thinking, and textual interpretation in EFL contexts. The study suggests incorporating schema-based reading instruction into the EFL curriculum to foster deeper comprehension and metacognitive skills.

***Keywords**: EFL learners, inferential thinking, narrative texts, schema activation, reading comprehension,*

INTRODUCTION

A key component of teaching English as a foreign language (EFL) is reading comprehension, which serves as the basis for both academic achievement and effective communication. Schema activation, or drawing on students' existing knowledge, has been shown to significantly enhance their comprehension and critical thinking. According to schema theory, readers are better able to understand texts when they are able to make connections between new and existing information (Ahmadi, 2017). Many EFL students still struggle with reading comprehension, nevertheless, for a variety of reasons, such as a limited vocabulary, a lack of exposure to different kinds of texts, and trouble connecting textual information to cultural or real-world contexts. Students' capacity to create meaning, make deductions, and interact critically with reading materials is frequently hampered by these challenges.

This problem is especially significant since inadequate reading comprehension abilities can hinder kids' general language development and have an impact on their academic achievement in a variety of courses. The role of schema activation is still neglected or handled inconsistently in many educational settings, despite the increased focus on reading skills in EFL classes. Although schema theory and its general impacts on reading have been studied in the past, context-specific research that examines how

intentional schema activation tactics affect comprehension outcomes among EFL learners in various educational situations is still lacking.

This study is innovative because it examines schema-based reading strategies in EFL contexts with a specific focus on how these strategies can help students bridge the gap between new textual content and their existing knowledge. This study offers fresh perspectives on successful teaching strategies by investigating the effects of activating students' prior knowledge both before and during reading on their comprehension performance.

Thus, this study's primary goal is to investigate how well schema activation techniques improve EFL students' reading comprehension. The study specifically aims to determine the most advantageous forms of schema activation (cultural, linguistic, or content-related) and how they might be actually incorporated into reading instruction to enhance students' comprehension and interaction with texts. It is anticipated that the findings would have significant ramifications for educators, teachers, and curriculum designers who want to enhance reading results in EFL contexts.

EFL students' reading comprehension and engagement have been demonstrated to increase with the use of several schema activation strategies. As an example, a study involving Saudi EFL students revealed that teachers who used pre-reading conversations and brainstorming techniques greatly improved their students' understanding (Asmari & Javid, 2018). In this study, students were able to develop pertinent mental frameworks prior to encountering the text by using guided discussions and brainstorming sessions to activate their prior knowledge. By using these techniques, students were able to anticipate what would happen, connect the book to their own experiences, and recognize important words beforehand, all of which improved their comprehension of the text's core themes and specifics.

Similarly, research on Chinese university students showed how digital tools including online concept maps, multimedia tools, and apps for schema-building could enhance schema-based learning and deeper textual engagement (Yan & Kim, 2023). Multiple types of schema (e.g., linguistic, cultural, and content-related) were supported by the integration of digital platforms, which enabled students to interact with pre-reading content in visual and auditory formats. By enabling students to examine background material, relevant films, or related articles prior to reading the primary text, these tools promoted tailored schema activation. Consequently, throughout reading assignments, students demonstrated improved inferencing skills, improved information retention, and heightened motivation.

These results imply that by making the material more approachable, relevant, and interesting, both conventional and technologically enhanced schema activation strategies can be effective instruments for scaffolding EFL learners' reading processes.

Quantitative findings also support the efficacy of schema techniques. Students' reading comprehension scores increased from an average of 55.7 on the pre-test to 63.5 on the post-test following the implementation of schema-based strategies, according to a study that involved 60 junior high school students (Hidayatullah et al., 2019). This rise shows that after receiving instruction that triggered their prior knowledge, pupils' comprehension and interaction with the text significantly improved. Activities including guessing content based on titles and visuals, talking about comparable personal experiences, and going over important language before reading were all part of the study's schema-based techniques. These techniques lessened cognitive load and improved understanding by assisting students in making mental connections between the new material in the text and what they already knew. According to the study, even a brief application of schema activation techniques can result in quantifiable gains in reading outcomes, indicating that these methods are useful and feasible for use in the classroom, especially in EFL settings where students might not have been exposed to the prior knowledge needed for comprehension of the entire text. In

addition to comprehension, schema activation fosters the development of critical thinking. According to (Rozy & Pd, n.d.), 69.2% of seventh-grade pupils agreed that schema-based techniques enhanced their ability to analyze texts. Students showed improved attention and critical engagement when they engaged in pre-, during-, and post-reading activities designed to draw on their existing knowledge.

The effectiveness and broad application of schema techniques are further supported by meta-analyses. (Daulay et al., 2020) consistently found improved reading results across a range of situations when evaluating linguistic, formal, and content-based schema forms. This demonstrates how schema strategies can be adjusted in EFL environments to meet a variety of student demands.

Additionally, pre-reading strategies like inquiry and visual assistance enhance schema activation. In a study involving 46 students, (Susmiati, Fitri, setiyadi, Bambang & Suparman, 2017) discovered that these tactics effectively help students connect new information with prior knowledge, as demonstrated by a 7.8-point improvement in post-test scores.

Digital tools have also been successfully integrated into schema-based learning. Despite certain challenges with time management and technology deployment, (Yan & Kim, 2023) demonstrated that digital mind mapping significantly improved reading comprehension among Chinese EFL learners. This suggests that combining technology with schema strategies can enhance learning outcomes.

However, there are certain challenges in applying schema activation strategies. Students' varied origins, limited vocabulary, and lack of educational resources often present difficulties for teachers. To overcome these obstacles, instructional designs must be adjusted to accommodate the distinct needs of different learner groups.

Schema activation improves reading comprehension and critical thinking, which aligns with constructivist teaching principles. By encouraging students to draw connections between new material and what they already know, schema techniques promote better comprehension and greater critical engagement with texts. This comprehensive approach prepares students for both academic and real-world challenges.

Therefore, the goal of this study is to learn more about how schema activation tactics, particularly those that incorporate critical thinking exercises, impact EFL students' reading comprehension. It seeks to provide important viewpoints and encourage the development of schema-based pedagogy in English language instruction.

Review of literature

Reading comprehension is a crucial ability for individuals studying English as a foreign language (EFL). However, EFL learners usually have a very difficult time understanding texts because of their limited vocabulary, unfamiliar grammar structures, and lack of contextual information. Schema activation has emerged as a powerful method for enhancing reading comprehension by leveraging students' prior knowledge and forging meaningful connections with novel content in order to get over these challenges.

Schema Theory and Its Implications for Reading Comprehension

Schema theory states that interacting with pre-existing mental models, or schemas, is necessary in order to interpret new information in a text. These schemas aid readers in anticipating, organizing, and deducing textual content. (Carrell and Eisterhold, 1983) first emphasized the significance of schema activation in supporting EFL learners' understanding by demonstrating how readers may assimilate texts more rapidly when they possess prior knowledge.

The importance of schema activation in EFL contexts has been validated by more recent research. (Hidayatullah et al., 2019), for instance, showed how schema activation techniques greatly increased inferencing skills and comprehension accuracy. Similarly,

interactive schema-focused tasks like brainstorming and group discussions improved students' comprehension and engagement with challenging material, according to (Benbellal, 2020).

A quasi-experimental study with Iranian EFL learners by (Maghsoudi, 2012) provides additional supportive evidence. According to their research, students who engaged in pre-reading activities that triggered cultural schema, such analyzing pictures or talking about real-life situations, did noticeably better on reading comprehension exams than those who did not. These results highlight the ability of schema activation to bridge cultural divides between text and learner as well as to help comprehend information.

The comparative effects of teaching reading strategies and schema activation to Korean university students were investigated by (Cho & Ma, 2020). Their findings showed that while both strategies enhanced comprehension, schema-based education was particularly successful in increasing student motivation and fostering short-term textual knowledge. This demonstrates how students can handle material more confidently and effectively by drawing on existing knowledge.

Furthermore, (Keshavarz et al., 2007) found that linguistic, formal, and content schema activation techniques all regularly led to better reading results in a variety of EFL scenarios. Regardless of learner background, text complexity, or age group, their analysis validated the robustness of schema-based approaches.

(Yan & Kim, 2023)highlighted the pedagogical advantages of schema theory in Chinese junior high classrooms most recently. Students showed more independent reading methods and deeper connections to the text when linguistic and content-based schema were consistently activated through visual aids, real-world issues, and guided predictions.

The current study, which aims to investigate the useful application of schema activation approaches in EFL reading instruction, is supported by these theoretical and empirical underpinnings. This study, which is based on schema theory, examines how improving understanding and learner engagement can be achieved by using organized activities to activate pertinent past knowledge. This study's significance and timeliness in enhancing reading pedagogy for EFL learners are shown by the consistent success of schema-based approaches in a variety of educational environments.

Strategies for Schema Activation

Students' schemas can be activated through a range of teaching strategies. By drawing students' attention to pertinent prior knowledge and encouraging purposeful reading, pre-reading exercises that use leading questions, brainstorming, and K-W-L (Know Want to Know Learned) charts have been demonstrated to improve schema activation. By assisting students in creating mental models prior to engaging with the material, these techniques act as cognitive scaffolding tools that improve their ability to construct hypotheses, predict content, and make connections between new and preexisting knowledge.

Additionally, it has been demonstrated that visual aids and multimedia tools work well to bring students' prior knowledge to life. By giving students access to context-specific background information and assisting them in creating a more coherent mental model of abstract concepts, multimedia such as pictures, animations, and video clips improves reading comprehension and student engagement. These resources facilitate reading, particularly for children with little prior knowledge or vocabulary.

Additionally, technology is a key component of contemporary schema activation techniques. (Yan & Kim, 2023) claim that interactive presentations and concept maps helped new EFL learners better organize and activate their schemas. Prior to reading, these resources helped students make visual connections between ideas and themes, which improved their comprehension accuracy and information retention. According to (Monica et al., 2023) virtual learning environments that included interactive tasks, digital annotation, and simulation provided fresh and exciting chances for schema activation.

These settings gave students the opportunity to investigate material in a variety of ways, supporting a range of schema types and enhancing the reading experience's depth and significance.

The current research, which aims to apply and assess schema activation strategies in EFL reading instruction, is directly supported by these theoretical and empirical discoveries. The study places itself at the nexus of theory and practice by utilizing data from both conventional and technologically advanced approaches. Schema theory states that when new information is connected to structured existing knowledge, comprehension improves. This is supported by the use of tools like concept maps, multimedia input, and K-W-L charts. These strategies also help the study achieve its objective of finding workable, scalable ways to improve the reading outcomes of EFL students by means of systematic schema activation.

Cultural Relevance in Schema Activation

One important component of schema activation is cultural relevance. According to research, students find it simpler to understand texts when they are connected to their cultural origins and experiences. By bridging the gap between what they already know and what they are about to read, materials that represent recognizable places, values, and real-life circumstances aid students in engaging with the material more successfully. In addition to improving understanding, this congruence between the text and the learner experience also encourages motivation and a sense of community.

Mousa & Ali (2022) went on to show how culturally appropriate materials greatly enhanced students' reading comprehension and engagement when combined with schema activation techniques like conversations, visual cues, and backdrop building. According to their research, when the material connected with their cultural frames of reference, students were more eager to engage with the book and shown a deeper level of comprehension. This method also encourages inclusivity and recognizes students' identities as strengths in the educational process in classrooms with a varied student body.

These results have a direct bearing on the ongoing study, which attempts to investigate efficient schema activation techniques in EFL reading instruction. The cultural presumptions ingrained in English texts may be very different from the prior knowledge and schema structures of EFL learners, who frequently come from diverse sociocultural origins. As a result, incorporating culturally sensitive content is crucial to improving the efficacy of schema activation techniques. This study aims to confirm that cultural relevance increases the cognitive and affective effects of schema activation on reading comprehension by making sure that texts are relatable and contextually meaningful to students. This viewpoint is also consistent with the overarching goal of creating equitable, learner-centered, and successful instructional techniques.

Impact of Schema Activation on Reading Comprehension

The beneficial effects of schema activation on EFL learners' reading comprehension have been shown in numerous studies. According to (Hernan, 2019) students were better equipped to deduce significant ideas and comprehend texts' implicit meanings when they were encouraged to draw on their past knowledge. This research emphasizes how higher order thinking abilities like interpretation and inference-making which are critical for academic reading are fostered by schema activation.

Furthermore, (Jahangard, Ali, Moinzadeh, A & Karimi, 2011) demonstrated that schema activation techniques, especially when paired with guided reading activities, greatly increased reading comprehension and speed. Students were able to comprehend material more quickly and confidently when organized reading instruction and background knowledge activation were combined. These techniques further demonstrated the cognitive advantages of schema-based approaches by assisting students in traversing challenging

terminology and complicated sentence patterns.

Additionally, it has been demonstrated that cooperative schema activation activities, including group or pair talks prior to reading, promote a deeper comprehension of challenging content (Susmiati, Fitri, setiyadi, Bambang & Suparman, 2017). Students can expand their interpretive framework and increase their engagement with the material by sharing and creating shared schemas through collaborative learning. Additionally, these collaborative environments offer social scaffolding that improves understanding and motivation.

The current research, which attempts to investigate how schema activation might be methodically used to enhance EFL students' reading comprehension, is directly supported by these findings. These findings give the research both theoretical and empirical support by confirming that enhancing learners' prior knowledge enhances their capacity to decode meaning, draw conclusions, and process texts more smoothly. In order to address frequent comprehension issues and improve students' general reading competency, the study expands on these discoveries by examining how schema activation techniques particularly those involving guided and collaborative activities can be applied in EFL situations.

METHOD

This study uses a quasi-experimental design with a non-equivalent control group pre-test and post-test to evaluate the impact of schema activation techniques on EFL (English as a Foreign Language) learners' reading comprehension. This method is seen to be suitable for natural educational settings since it allows for the measurement of learning outcomes comparing two current classroom groups, even if it does not include random assignment. While the therapy (X) is only given to the experimental group, data is gathered for both groups utilizing a pre-test (Y1) and post-test (Y2).

Table 1. Two Groups

Group	Pre-Test	Independent Variable	Post-Test
A (Experimental Group)	Y_1	x	Y_2
B (Control Group)	Y_1	-	Y_2

- Prior to reading exercises, the experimental group (A) is given schema activation techniques. To activate prior knowledge, these techniques include pre-reading talks, K-W-L charts, word previews, and guided brainstorming.
- The control group (B) is given normal reading comprehension exercises like text-based questions and teacher-led explanations in place of any systematic schema activation.

Random assignment is not feasible due to practical limitations in classroom settings and school schedules, which supports the choice of the quasi-experimental design. Nonetheless, when baseline equality is evaluated, this methodology remains successful in demonstrating causal links between instructional tactics and student results.

The application of schema activation in reading comprehension is supported by empirical data. Schema-based pre-reading exercises greatly enhance EFL learners' analytical and inferencing skills, according to (Training, 2025). This demonstrates how combining schema activation with critical thinking activities boosts student interest and encourages deeper comprehension.

Population and Sample of the Study

Students in Grade X who were enrolled in a required English as a Foreign Language (EFL) course in vocational high schools (SMK) were the study's participants. Because of their usefulness in examining the development of reading comprehension in technical and vocational education environments, this student group was deemed suitable for the study.

The sample was chosen using a purposive sampling strategy, which complies with the requirements of a quasi-experimental design in which particular attributes like subject relevance and instructional context are crucial. A total of 68 students participated, split equally between two groups:

- The experimental group was made up of 34 students from Ship Welding Engineering program (Teknik Pengelasan Kapal). They were taught to read using critical thinking exercises and schema activation techniques.
- The 34 students in the control group, who were enrolled in the Ship Machining Engineering program (Teknik Pemesinan Kapal), were instructed in conventional reading comprehension approaches devoid of schema-based pre-reading strategies.

Based on previous scores on the school's standardized English tests, the baseline equivalency between the two groups was determined. According to these findings, the two groups' levels of English proficiency were comparable, guaranteeing that any variations in post-test results were due to the instructional interventions and not the participants' starting language skills (Mousa & Ali, 2022). Additionally, the study was carried out completely in accordance with ethical research guidelines. The appropriate institutional authorities provided ethical approval, and participants provided their informed permission. The secrecy of their answers and their freedom to leave the study at any time without facing repercussions on their academic record were guaranteed to the students. The integrity and legitimacy of the study process were guaranteed by this rigorous adherence to ethical protocols.

Instruments

This study used two main research tools a Reading Comprehension Test and an Observation Sheet to guarantee the validity and reliability of the data gathered. Every tool was thoughtfully created to meet the goals of the study and precisely measure how schema activation techniques affected students' reading comprehension skills. Each of the 25 multiple-choice questions on the test had four possible answers and only one right response. Narrative texts, which are especially useful for analyzing how students use schema knowledge and use interpretive reasoning when reading, served as the basis for the questions. To represent both lower-order (literal understanding) and higher-order (analytical and inferential) thinking abilities, the comprehension indicators and their corresponding weightings were carefully balanced.

Data Collection Technique

The purpose of this six-week quasi-experimental study was to investigate how schema activation techniques affected the reading comprehension of EFL students by involving both an experimental and a control group. A pre-test phase, a four-week educational treatment phase, and a post-test phase comprised the three primary stages of the intervention. To ensure fidelity of execution and to capture developmental changes in comprehension, each week of the intervention was planned with a defined instructional purpose and meticulously planned activities.

Week 1 – Pre-Test Administration

All participants in both groups finished a pre-test at the beginning of the study in order to gather baseline information on the reading comprehension skills of the students. The 25 multiple-choice questions in the test covered a variety of comprehension markers, such as:

a. Finding the main concepts and illustrative details,
b. recognizing the context of vocabulary,
c. Making deductions and judgments, and
d. identifying coherent and grammatical devices.

The outcomes of this pre-test were used as a benchmark to assess how well the teaching techniques used during the treatment period worked.

Week 2 to 5 – Treatment Phase

The primary educational component of the study was the treatment phase, which ran from Week 2 to Week 5 and was intended to operationalize the theoretical concepts of schema activation in an actual classroom environment. Each group received unique instructional treatments during this phase that were in line with the research framework of the study: the control group was taught traditional formal schema procedures, while the experimental group was given schema-based reading skills. In order to reflect the sequential growth of comprehension and higher-order thinking, the experimental group's weekly lessons were designed using a progressive and scaffolded instructional paradigm. These lessons included pre-, while-, and post-reading activities.

a. Experimental Group: Schema Activation Strategy

The guiding concept of the experimental group's educational program was that students' reading comprehension is most successful when they actively apply their existing knowledge (schemas) to new textual information (Anderson & Pearson, 1984). In addition to improving literal comprehension, the technique aimed to foster critical thinking, deep cognitive engagement, and a sense of personal connection to the material. Each week featured a specific instructional focus:

Week 2 – Activating Prior Knowledge and Setting Purposes

To extract their past knowledge and establish individual learning objectives, students used brainstorming sessions, vocabulary previews, and K-W-L charts. To help students get ready for the reading assignments both linguistically and cognitively, prediction exercises and contextual hint analysis were also included.

Week 3 – Linking Visual and Conceptual Schemas

Before reading, students were given the opportunity to create mental models using multimodal inputs like mind maps, diagrams, and visual aids. Reflective journaling and analytical comprehension questions promoted deeper engagement and enabled students to make connections between new textual content and what they already knew.

Week 4 – Deepening Critical Thinking through Case-Based Reading

In this phase, problem-solving books addressing real-world situations were introduced. Through group discussions, inference-based assignments, and ongoing reflective writing, students were able to assess and apply the concepts they came across by utilizing activated schema frameworks.

Week 5 – Synthesis and Application

The last week of education helped students integrate what they had learned. Academic debates, group presentations, and a review of K-W-L charts were among the activities. In order to strengthen student autonomy in using the schema approach, a consolidation session

was held to reinforce important terminology and schema-based techniques like questioning, anticipating, and connecting ideas.

b. Control Group: Formal Schema Technique

The control group was taught using a formal schema approach, a more conventional educational technique that places an emphasis on textual structure and order, whereas the experimental group received instruction based on content-based schema activation tactics. Without necessarily involving students in the activation of existing information or the development of higher-order thinking skills, this method concentrates on identifying the surface characteristics of text, such as patterns, logical groupings, and cohesive devices.

The control group's instructional design was purposefully created to replicate the text-centered, teacher-directed reading practices commonly found in classrooms, offering a helpful point of comparison. The following essential elements were included in the lessons from Weeks 2 through 5:

a) Text Structure Identification
   Students learned how to recognize narrative text openers, theme phrases, transitional signals, and conclusion markers.
b) Reading Aloud and Annotation
   Students were guided in reading aloud and marking formal elements during teacher-led sessions. To elucidate structural patterns, text dissection techniques and think-aloud modeling were used.
c) Literal Comprehension Tasks
   Post-reading activities that emphasized the memory of factual data and aided in the development of literal-level comprehension centered on the who, what, when, and where inquiries.
d) Limited Pre-Reading Activities
   Pre-reading involvement was low in contrast to the experimental group. Prior to text exposure, there was little focus on cognitive preparation, personal connection, or schema activation.
e) Focus on Format over Meaning Construction
   Lessons placed more emphasis on procedural comprehension of text formats than on involvement with interpretation or inference. There was minimal student inquiry or critical discussion, and the majority of the instruction was teacher-centered.

Week 6 – Post-Test Administration

The identical reading comprehension exam that was utilized for the pre-test was given to both groups once more during the last week. This made it possible to compare performance before and after the intervention directly and guaranteed measurement consistency. An internal consistency guarantee was strongly supplied by the test reliability, which was validated by a KR-20 value of 0.868. By separating the influence of schema activation approaches from other outside influences, the generated data made it possible to conduct a legitimate examination of the instructional impacts. This study was able to methodically evaluate how schema-based tactics affect EFL learners' reading comprehension development in a vocational education context by adhering to a planned weekly timeline and using both consistent instruments and unique instructional methods.

Data analysis

The significance of reading comprehension as one of the fundamental abilities in learning English as a foreign language (EFL) serves as the foundation for this study. The Schema Activation Strategy, which involves activating students' prior knowledge before engaging

with a text, is one instructional strategy that has been demonstrated to be successful in enhancing reading comprehension. The study used a quasi-experimental design with two groups to test the efficacy of this method: a control group that received standard schema-based instruction without explicit activation, and an experimental group that received instruction using the Schema Activation Strategy. The data analysis process included a number of statistical tests to guarantee the reliability and validity of the results:

Normality Test (Shapiro-Wilk)

The investigation began by determining if the data, specifically the pre-test and post-test results for both groups, fit a normal distribution. Because of its accuracy for small to medium sample sizes, the Shapiro-Wilk test was used. The use of parametric statistical tests, such the t-test, which imply normality, requires a normal distribution. One of the fundamental presumptions for additional analysis was met when the data had a significance value (p-value) greater than 0.05, which showed that the data were regularly distributed.

Homogeneity Test

The assumption of homogeneity of variances, which states that the variance within each group should be roughly equal, was tested after normality was confirmed. Levene's Test was used to test this. In subsequent hypothesis testing, the use of the independent samples t-test was validated by a p-value greater than 0.05, which demonstrated homogeneity. By ensuring that the two groups' score variability was comparable, this procedure reinforced the legitimacy of any performance differences that were found.

Initial Test

Determining whether the two groups started with comparable reading comprehension skills was crucial before the treatment was given. An independent samples t-test was used to compare the experimental and control groups' pre-test results in order to evaluate this. The argument that any post-treatment differences were caused by the intervention and not pre-existing disparities would be supported by a non-significant difference ($p > 0.05$) between the groups' beginning performance.

Within-Group Test

To evaluate improvement from the pre-test to the post-test, paired samples t-tests were performed independently for each group following the instructional intervention. To ascertain whether the pupils in each group profited from their individual therapy, this analysis was essential. Evidence that schema activation leads to better comprehension would be provided by a substantial improvement in scores ($p < 0.05$) in the experimental group. Score changes for the control group would show whether or not traditional education produced quantifiable improvements as well.

Hypothesis Testing (Independent Sample t-test)

An independent samples t-test comparing the experimental and control groups' post-test results was used to evaluate the study's main premise. Finding out if the Schema Activation Strategy had a statistically significant impact on students' reading comprehension was the goal of this phase. The null hypothesis would be rejected with a p-value of less than 0.05, indicating that the intervention was successful. The impact's magnitude was also assessed using effect size calculations, which added practical significance to the statistical findings.

RESULTS

Descriptive Statistics

Descriptive statistics were used before and after the instructional intervention to summarize the reading comprehension scores of the students in the experimental and control groups.

The table below displays these statistics, which include the number of participants (N), mean scores, and standard deviations:

Table 2. Descriptive Statistics

Group	Test Type	N	Mean	Std. Deviation
Experimental	Pre-test	34	79.06	19.312
Experimental	Post-test	34	89.00	19.170
Control	Pre-test	34	71.14	20.103
Control	Post-test	34	79.93	16.584

The table displays the descriptive statistics for the experimental and control groups based on the pre-test and post-test results. The 34 participants in the experimental group showed a relatively wide range of performance prior to the intervention, with an average pre-test score of 79.06 and a standard deviation of 19.312. With a little more uniform result distribution and a slightly smaller standard deviation of 19.170, the post-test mean score increased to 89.00 following the therapy, suggesting an overall improvement in performance.

However, the pre-test average score of the control group, which also comprised 34 people, was lower at 71.14 with a standard deviation of 20.103. This group likewise saw an improvement in their post-test results, with a mean score of 79.93 and a decreased standard deviation of 16.584. Although there was improvement, it was significantly more pronounced in the experimental group than in the control group. These descriptive findings indicate that the intervention had a favourable effect on the experimental group's performance, as evidenced by the higher post-test mean in comparison to the control group.

Test of Normality

The Shapiro-Wilk test was employed to determine the appropriate statistical tests for data processing by assessing the normality of score distributions. Assuming that the data is normally distributed is essential when running parametric tests such as the paired sample t-test and independent sample t-test, which are commonly used to evaluate data. The Shapiro-Wilk p-values for every group and test condition are shown in the table below:

Table 3. Normality Test

Group	Test Type	Statistic	df	Sig. (p-value)
Experimental	Pre-test	0.931	34	0.121
Experimental	Post-test	0.923	34	0.072
Control	Pre-test	0.923	34	0.282
Control	Post-test	0.931	34	0.469

The table displays the results of the Shapiro-Wilk normality test for the experimental and control groups throughout the pre-test and post-test periods. The purpose of the normality test is to determine if the data are regularly distributed. This is an important assumption for parametric statistical tests such as the independent sample t-test. With a p-value of 0.121 in the pre-test and a p-value of 0.072 in the post-test, the experimental group's Shapiro-Wilk statistic was 0.931 and 0.923, respectively. In both cases, the p-values are greater than 0.05, indicating that the data are regularly distributed.

The Shapiro-Wilk statistics for the control group were 0.923 with a p-value of 0.282 for the pre-test and 0.931 with a p-value of 0.469 for the post-test, respectively.

Because both p-values are above the 0.05 cut-off, the control group again meets the normality condition.

In result, both groups' pre-test and post-test results are normally distributed, satisfying the requirement for further parametric analysis.

Test of Homogeneity

Table 4. Levene's Homogeneity Test

Group	Levene's Statistic	Sig. (p-value)	Interpretation
Post-test Scores	0.742	> 0.05	Variances are homogeneous

To determine whether the data met one of the essential requirements for running an independent samples t-test, a Levene's Test for Equality of Variances was performed. This test's objective is to assess the experimental and control groups' statistical equality of variances, particularly with regard to their post-test results.

The table displays the Levene's test results. With a significance (p-value) above 0.05, Levene's Statistic was determined to be 0.742. A p-value larger than 0.05 indicates that there is no significant difference in variance between the two groups, according to the standard interpretation.

This suggests that the homogeneity of variances assumption was met, enabling us to regard the post-test score variances for the experimental and control groups as statistically identical. Therefore, under the presumption of equal variances, the independent t-test is appropriate for comparing the post-test scores with the conventional formula. Additionally, the result supports the reliability of the t-test findings about how the Schema Activation Strategy affects the reading comprehension of EFL students.

Test of Initial Equality

The experimental group's pre-test and post-test results were compared using a paired sample t-test to determine the extent to which the schema activation technique improved the students' reading comprehension. The findings, which are shown in the Table, demonstrate that pupils' performance has significantly improved.

Table 5. Initial Equality Test

N	Group	Mean	Standard Deviation	t	df	Sig. (2-tailed)
34	Experimental	79.06	19.492	1.770	66	0.081
34	Control	71.14	20.324			

The table displays the findings of the independent sample t-test, which was utilized to evaluate the initial equivalency between the experimental and control groups according to their pre-test scores. This analysis is essential to ensure that both groups began the study performing at a comparable level before the intervention was implemented. The experimental group (N = 34) did better than the control group (N = 34), which had a mean score of 71.14 and a standard deviation of 20.324, with a mean score of 79.06 and a standard deviation of 19.492. The independent sample t-test yielded a t-value of 1.770 with 66 degrees of freedom (df) and a two-tailed significance level (p-value) of 0.081. The p-value is greater than 0.05, indicating that there is no statistically significant difference between the pre-test scores of the experimental and control groups. By demonstrating that the two groups' initial vocabulary and reading proficiency levels were almost equal, this outcome supports the assumption of baseline equivalence prior to the therapy. Therefore, rather than

attributing significant differences in the experimental group's post-test outcomes to underlying disparities, it is better to attribute them to the intervention.

Within-Group Improvement

The findings of the paired samples t-test, which was given to each group, showed a significant difference between the reading comprehension abilities of the students before and after the treatment.

Table 6. Paired t-Test Results

Group	Mean (Pre)	Mean (Post)	Mean Gain	t	df	Sig. (2-tailed)
Experimental	79.06	89.00	9.94	31.068	33	< .001
Control	71.14	79.97	8.83	12.701	33	< .001

The experimental group's pupils' average reading comprehension scores increased from 79.06 on the pre-test to 89.00 on the post-test. This represents a noteworthy average improvement of 9.94 points. With 33 degrees of freedom, the paired t-test produced a t-value of 31.068 and a p-value of less than.001. This improvement is deemed statistically significant because the p-value is significantly lower than the standard alpha criterion of 0.05. This indicates that the Schema Activation Strategy significantly increased the reading comprehension of the students. It seems that when students use their prior knowledge before interacting with the text, they are better able to recognize, assess, and comprehend the reading materials. The control group's reading levels also improved, as seen by the post-test mean score rising from 71.14 to 79.97. This is an 8.83-point improvement on average. With 33 degrees of freedom, the statistical analysis produced a t-value of 12.701 and a p-value of less than.001.

This result also suggests that the control group's performance improved statistically significantly. The gain was only marginally less than that of the experimental group, though. Students' success with the previous teaching approach, which depended on formal schemata, was minimal in comparison to the Schema Activation Strategy. The findings indicate that while both teaching strategies enhanced students' reading comprehension, the Schema Activation Strategy was more successful in generating learning gains. By promoting critical thinking during reading exercises and helping students draw connections between new information and what they already know, this approach has proven to be a highly effective teaching tool for enhancing the comprehension skills of EFL learners. These results confirm the overall hypothesis that schema-based instruction can significantly improve the reading outcomes of EFL students.

Hypothesis Testing (Independent sample t-test)

To determine if the use of schema activation techniques led to a statistically significant difference in reading comprehension results when compared to traditional training, an independent sample t-test was performed on the post-test scores of the experimental and control groups. The table below provides a summary of the test's findings:

Table 7. Independent t-Test of Post-test Scores

Group	N	Mean	SD	t	df	Sig. (2-tailed)
Experimental	34	89.00	19.348			
Control	34	79.97	16.754	2.439	68	0.017

The table displays the findings of the independent sample t-test, which was used to determine whether there was a statistically significant difference between the experimental and control groups' post-test scores after the intervention was put into place.

The experimental group (N = 34) achieved a mean score of 89.00 with a standard deviation of 19.348 while the control group (N = 34) obtained a lower mean score of 79.97 with a standard deviation of 16.754. The t-test yielded a two-tailed significance (p-value) of 0.017 and a t-value of 2.439 with 68 degrees of freedom.

The finding is statistically significant and indicates a significant difference in post-test performance between the experimental and control groups because the p-value is less than 0.05. The results of the study showed that students in the experimental group, who were taught the Schema Activation Strategy, outperformed students in the control group, who were taught a more traditional, formal-schema-based method, on the post-test in reading comprehension.

The assertion that the Schema Activation Strategy enhances EFL students' reading comprehension more than conventional teaching methods is thus empirically supported by these findings. By utilizing their prior knowledge and offering structured pre-reading and critical thinking activities, this approach improves students' understanding and analysis of English literature.

DISCUSSION

Reading comprehension in EFL (English as a Foreign Language) situations is a complex cognitive process that encompasses textual analysis, interpretation, judgment, and inference-making in addition to literal knowledge. However, a lack of linguistic and cultural background knowledge prevents many EFL learners from engaging with texts at these deeper levels. The Schema Activation Strategy is suggested as a teaching method to address these issues by allowing students to utilize their existing knowledge, which promotes higher-order comprehension and critical interaction with texts.

Schema Theory, the foundation of this approach, views reading as an interactive cognitive process in which previously formed mental structures, or schemata, are merged with new information. Students can make predictions, contextualize new words, recognize text structures, and interact with the material more deeply if they activate pertinent prior knowledge before reading.

Both theoretical rationale and quantitative data are used to address the study question: What effects does the schema activation technique have on the reading comprehension and analysis skills of EFL students? The results of the paired samples t-test showed that students in the experimental group, who were taught using schema activation techniques like brainstorming, guided questioning, prediction, KWL charts, and semantic mapping, had a higher mean gain (9.94 points) than those in the control group (8.83 points). Although both groups showed improvement, the experimental group's greater gain indicates that, in contrast to conventional reading techniques, schema activation encourages deeper cognitive involvement.

These findings are in line with earlier studies that support the advantages of schema based learning. (Salmi, 2011), for instance, discovered that schema activation enhances students' capacity for inference and metacognitive thought when reading.

However, by integrating a broader range of schema activation techniques like semantic mapping and KWL charts into a structured intervention, the current study builds on earlier research. This study combined several types of schema activation, providing a more comprehensive approach than earlier research that tended to concentrate just on textual or visual pre-reading strategies. Additionally, this study employed schema techniques across different text kinds, which makes the findings more broadly, who largely focused on argumentative texts.

They show that schema activation is a cognitive catalyst that enables students to access deeper levels of comprehension, generate insightful predictions, and grasp latent ideas. It is not just a classroom routine. According to the results, deliberately activating prior knowledge helps EFL learners both linguistically and cognitively. This suggests that teaching critical reading rather than just decoding or literal comprehension requires schema-based education.

More significantly, the findings show a change in pedagogy from a passive learning approach that was frequently dominated by post-reading tests and vocabulary memorization to one that was participatory and focused on the needs of the students. This bolsters the constructivist theory, which holds that students actively create meaning from their prior knowledge. Thus, schema activation fosters critical literacy, cognitive flexibility, and metacognition all of which are key 21st-century skills in addition to improving test scores.

The study's original hypothesis that schema activation strategies greatly improve EFL students' reading comprehension and analysis is amply supported by the results. This theory is supported by the experimental group's quantitative gain as well as previous research. In addition to improving their literal comprehension, students demonstrated higher-order thinking skills, which is a key objective of contemporary literacy training.

Despite the encouraging results, other interpretations need to be taken into account. The novelty effect may have played a role in the improvement; students in the experimental group may have been more motivated or focused just as a result of being exposed to more interesting, interactive teaching methods. Furthermore, although statistically significant, the difference in improvement between the experimental and control groups was not very great. This implies that although schema activation has advantages, its full impact would require longer-term maintenance or augmentation with additional cognitive techniques.

Furthermore, cultural relevance is crucial for schema activation. Schema activation may be less successful if the texts are not in line with the cultural backgrounds of the students. To guarantee that schema-based training aligns with learners' actual experiences, materials and tasks should be chosen with context in mind.

The conceptual framework ends by describing how, rather than only being a teaching tactic, schema activation functions as a cognitive mechanism that enhances comprehension and analysis. It enhances critical thinking, promotes deeper textual processing, and equips EFL students with the skills necessary for success in the classroom and in the real world. The results provide compelling evidence for the use of schema activation as a transformative teaching strategy in EFL reading classrooms by fusing theory, empirical data, and real-world applications.

CONCLUSION

In the context of EFL instruction, it is best to think of reading comprehension as a sophisticated cognitive process that entails combining previously formed mental models, or schemata, with incoming material. Schema Theory highlights that students' comprehension, analysis, and inference of meaning are much enhanced when they draw on their existing knowledge before reading a text. In order to help students approach reading tasks with a firmer foundation and greater cognitive engagement, the Schema Activation Strategy operationalizes this theory into classroom practice through techniques like brainstorming, prediction, guided questioning, KWL charts, and semantic mapping.

The purpose of this study was to determine how the schema activation technique impacts the reading comprehension and analysis skills of EFL students. The answer is evident from the quantitative results: students who received training utilizing schema activation strategies showed higher gains in reading comprehension scores than those who received traditional instruction. Activating past knowledge results in more meaningful interaction with texts, improved inferencing abilities, and more contextual understanding,

as seen by the experimental group's higher mean gain. Therefore, the study's goal has been achieved: EFL learners' reading comprehension and analysis skills are enhanced by schema activation.

To reiterate the study's primary thesis: Through the activation of prior knowledge and the provision of cognitive tools to facilitate better text interpretation, schema-based training improves EFL reading comprehension. This was confirmed by earlier research that connected schema activation to enhanced inference-making, metacognitive awareness, and critical engagement with reading materials, as well as by the higher test scores in the experimental group.

This study's arguments are backed up by both theoretical and empirical data. The cognitive underpinnings for comprehending the interactions between new information and existing knowledge are provided by schema theory. The idea that students who are culturally and cognitively stimulated before reading have better understanding, especially in situations where language and culture are challenged, The study's findings, which have practical implications for teaching EFL reading, corroborate and build upon these conclusions.

The results of the study provide strong empirical support for the theoretical foundations of schema-based training. Descriptive statistics showed that both the experimental and control groups improved their reading comprehension scores; however, the experimental group, which received instruction using schema activation techniques, showed a greater mean gain (9.94 points) than the control group (8.83 points). This suggests that schema activation promotes deeper engagement with literature. Furthermore, the normality and homogeneity tests matched the statistical assumptions for analysis, and the initial equality among groups was confirmed, ensuring that the observed differences in post-test scores were caused by the intervention itself.

Significant differences between the two groups' post-test scores were revealed by the independent samples t-test ($t = 2.439$, $p = 0.017$), indicating that the Schema Activation Strategy performed better than traditional reading teaching. These findings show that, in addition to helping students grasp texts literally, schema activation enhances their ability to perform higher-order reading tasks including interpretation, assessment, and inference-making.

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