

The Role of Thinking Power Strategy in developing Deep Understanding Skills among EFL Preparatory School Students in English

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Abstract

The current study aims to investigate the role of Thinking Power strategy in developing deep understanding skills among EFL preparatory school students in English. Its significance stems from the need to develop modern teaching methods that help students move beyond rote learning to learning based on understanding, analysis, and deep thinking. The researcher has adopted the experimental approach due to its suitability for the nature of the study and used the design of two equivalent groups with pre- and post-tests. The research sample has been consisted of (64) 4th preparatory grade students from Al-Noor Secondary School for Boys that relates to the Directorate of Education in Anbar during the academic year (2025–2026), divided into two groups. Equivalence between the groups has been ensured based on some variables, such as age, previous achievement, intelligence level, and language proficiency. To achieve the study aims, the researcher has constructed a test to measure deep understanding skills, included skills like analysis, interpretation, inference, application, evaluation, connection, and asking deep questions. The validity of the instruments have been verified by exposing it to specialists. The experiment lasted for six (6) weeks, during which the experimental group has been taught using Thinking Power Strategy through analytical activities, open-ended questions, classroom discussions, and organizing ideas hierarchically, while the control group has been taught by the traditional method. The results have showed significant differences in favor of the experimental group in the post-test of deep understanding, indicating the effectiveness of the Thinking Power Strategy in developing students' deep understanding skills showing that the strategy has contributed to developing higher-order thinking skills, increasing classroom interaction, linking new knowledge to prior experiences, and transforming the student's role from a passive recipient to an active participant in the educational process.

Keywords: Thinking Power Strategy, Deep Understanding Skills, English Language, EFL Preparatory Students

دور استراتيجية قوة التفكير في تنمية مهارات الفهم العميق لدى طلاب المدارس الإعدادية في اللغة الإنجليزية

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الملخص

تهدف الدراسة الحالية إلى التعرف إلى دور استراتيجيات قوة التفكير في تنمية مهارات الفهم العميق لدى طلبة المدارس الإعدادية في مادة اللغة الإنجليزية. وتتبع أهمية الدراسة من الحاجة إلى تطوير طرائق تدريس حديثة تساعد الطلبة على تجاوز التعلم القائم على الحفظ والاستظهار إلى التعلم القائم على الفهم والتحليل والتفكير العميق، واعتمد الباحث المنهج التجريبي لملاءمته لطبيعة الدراسة، واستخدم تصميم المجموعتين المتكافئتين ذات الاختبار القبلي والبعدي، إذ تكونت عينة البحث من (64) طالباً من طلاب الصف الرابع الإعدادي في ثانوية النور للبنين التابعة لمديرية تربية الأنبار للعام الدراسي (2025-2026)، ووزعوا إلى مجموعتين وقد تم التكافؤ بين المجموعتين في بعض المتغيرات، مثل العمر الزمني، والتحصيل السابق، ومستوى الذكاء، والمستوى اللغوي. ولتحقيق أهداف البحث، قام الباحث ببناء اختباراً لقياس مهارات الفهم العميق، شمل مهارات: التحليل، التفسير، الاستنتاج، التطبيق، التقويم، الربط، وطرح الأسئلة العميقة، كما تم التحقق من صدق الأداة عن طريق عرضها على المختصين. واستمرت التجربة مدة (6) أسابيع، حيث درست المجموعة التجريبية باستخدام استراتيجيات قوة التفكير من خلال الأنشطة التحليلية، وطرح الأسئلة المفتوحة، والمناقشات الصفية، وتنظيم الأفكار بصورة هرمية، في حين درست المجموعة الضابطة بالطريقة التقليدية، وأظهرت النتائج وجود فروق ذات دلالة إحصائية لصالح المجموعة التجريبية في اختبار الفهم العميق البعدي، مما يدل على فاعلية استراتيجيات قوة التفكير في تنمية مهارات الفهم العميق لدى الطلاب. كما بينت النتائج أن الاستراتيجيات أسهمت في تنمية مهارات التفكير العليا، وزيادة التفاعل الصفّي، وربط المعرفة الجديدة بالخبرات السابقة، وتحويل دور المتعلم من متلقٍ سلبي إلى مشارك نشط في العملية التعليمية. **الكلمات المفتاحية:** استراتيجيات قوة التفكير، الفهم العميق، اللغة الإنجليزية، طلبة المرحلة الإعدادية

1. Introduction

The twenty-first century witnesses rapid changes in various fields of life because of technological and scientific developments, which has imposed new challenges on educational systems. The goal of education is no longer limited to provide students with information only; it has become focused on preparing individuals who has the ability for critical and creative thinking, problem analysis, making appropriate decisions, and applying knowledge in various life situations. In light of these transformations, the need has emerged to adopt modern teaching strategies that make the student the core of the process and contribute to the development of their mental and cognitive abilities in an integrated manner (UNESCO, 2021).

Thinking is considered one of the most important mental processes that humans rely on to understand the world around them. It represents the main tool that enables an individual to process information, analyze it, interpret it, and make judgments about it. Modern educational literature has emphasized that developing thinking skills should be a fundamental goal of contemporary education, because merely memorizing information and recalling it is no longer sufficient (Paul & Elder, 2020).

The English language is considered one of the academic subjects that requires the continuous employment of higher mental processes; because it is not limited to learning vocabulary and grammatical rules only, but requires a deep understanding of written and spoken texts, the ability to interpret implicit meanings, analyze ideas, and connect previous information with new information (Richards & Rodgers, 2014).

Deep understanding (DU) is highly important in the field of teaching English language because it helps students comprehensively grasp texts, analyze main and secondary ideas, and connect the content of the text with their previous experiences. The results of many studies indicate that students who has high levels of DU achieve better academic performance compared to those depend on memorization and rote learning (Biggs & Tang, 2011).

Despite the importance of deep understanding, the reality of teaching English in many educational environments still suffers from reliance on traditional methods that focus on transferring information directly from the teacher to the student. This has led to a weakness in understanding English texts among a number of students (Phan, 2011).

In order to address these challenges, some modern educational strategies has emerged that aim to develop thinking and enhance the role of the student, including Thinking Power Strategy (TPS). This strategy is based on a set of educational principles that emphasize the importance of engaging the student in advanced cognitive processes, and encourage them to reflect, analyze, interpret, infer, and solve problems.

Educational literature indicates that employing thinking strategies in foreign language teaching leads to an improvement in students' linguistic and cognitive performance, and increases their ability to process information in a deep manner. A study conducted by Phan (2011) found a positive relationship between deep learning strategies, higher-order thinking levels, and academic achievement.

In light of what mentioned earlier, the significance of the current study becomes clear as it seeks to investigate the role of TPS in developing deep understanding skills (DUS) among preparatory school students in English. This is in response to the increasing need to develop the teaching methods used in schools and guide them towards fostering thinking and understanding in a way that aligns with the requirements of modern education and efficiently deals with the challenges of the era.

1.1. Problem of the study

English language subject is considered one of the core subjects in the preparatory grade, as it is expected to contribute to develop students' abilities in understanding, analysis, and communication. However, the educational reality indicates that many students in the fourth preparatory grade suffer from weak deep understanding, as their learning is often limited to memorization and recall without the ability to interpret meanings, connect ideas, or apply what they have learned in new situations.

Despite the efforts made in curriculum development, traditional teaching methods still dominate in teaching English, focusing more on knowledge transfer than on developing thinking, which negatively reflects on the level of DU among students. This is evident of their weak ability to analyze texts, interpret grammatical rules, and use them correctly in different contexts.

The results of the semester tests, the reports of educational supervisors and some studies such as Muter (2023) and Ali (2025) indicate a decline in students' achievement levels in analysis and inference skills when dealing with English texts, due to reliance on superficial memorization of information without getting a DU that enables them to analyze texts, interpret ideas, deduce meanings, and apply them in various life situations.

Through the researcher's experience in teaching English language, it has been observed that phenomena indicating a weak level of DU among students are evident in their reliance on memorizing rules and texts without truly understanding their meanings or being able to interpret and analyze them. Additionally, students' roles are limited to listening and answering direct questions, with little participation in deep discussions and minimal use of strategies that foster thinking, such as discussion, problem-solving, or active learning. All these observations point to a weakness in students' deep understanding, which necessitates the use of modern teaching strategies such as TPS to improve this level and develop their thinking skills. TPS emerges as one of the modern educational strategies aims at activating higher mental processes in students through posing deep questions, encouraging dialogue, and stimulating critical and analytical thinking, which may contribute to raising the level of DU among students.

Despite the increasing interest in modern strategies based on developing thinking, studies that deals with TPS and its relationship to develop DUS in English language are still limited, which calls for studying the role of this strategy in addressing this problem. Therefore, the problem can be formulated with the following question:

What is the role of TPS in developing DUS among EFL preparatory school students in English?

1.2. Aims of the Study

This study aims at:

1. Identifying the role of the TPS in developing DUS among preparatory school students in English.
2. Revealing statistically significant differences between the mean scores of the experimental group students who study according to the TPS and the control group students who study using the traditional method in the post-test.
3. Determining the effectiveness of the TPS in improving students' level of understanding of texts and linguistic concepts in English language.

1.3. Hypotheses of the study

1. There is no significant difference between the mean scores of the experimental group students who study according to the TPS and the mean scores of the control group students who study using the traditional method in the post-test of deep understanding.

2. There is no significant difference between the mean scores of the experimental group students in the pre-test and post-test of DUS.
3. There is no significant difference between the mean scores of the control group students in the pre-test and post-test of DUS.
4. There is no effectiveness of the TPS in developing DUS EFL preparatory school students.

1.4. Limits of the Study

The current study is limited to 4th preparatory students in schools affiliated with the Directorate of Education in Anbar during the academic year (2025–2026), and to the topics prescribed in English language book, in addition using TPS and developing DUS.

2. Theoretical Background

2.1. Thinking Power Strategy

TPS is one of the modern strategies which focuses on the student to be the center of the process in education, since it is considered an active strategy in learning. It helps students take notes down ideas when they deal with the text, organize information, and comprehend the major and minor ideas. TPS is considered one of the strategies that deals with organizing relying on the hierarchical arrangement of ideas from general to specific, where the educational content is transformed into an organized structure consisting of main ideas branching into sub-ideas using hierarchical numbering (e.g., 1, 1.1, 1.2...). It can be defined as it one of the educational strategies that aim in improving the skills of higher thinking among students by organizing, connecting, and analyzing ideas in a hierarchical and logical manner that helps to achieve DU instead of memorization. This strategy is used to help students understand the relationships between concepts rather than memorizing them separately, which enhances DU and analytical thinking. This strategy has been associated with the works of McWhorter on study and thinking skills, as well as with cognitive structuring methods in constructivist theory (Khawam, 2016).

2.1.1. Objectives of Thinking Power Strategy

Al-Qawasmeh and Muhammad (2013) mention some objectives as follows:

- It helps students gain a greater understanding and enables them to control what occurs and work on increasing achievement and mental processes.
- It helps students to gain social skills.
- It develops students' basic thinking skills, which affects all other cognitive functions and skills.
- It achieves high accomplishment for students at school and developing their lives to make suitable decisions.

- It helps students acquire confidence and enabling them to consider various alternatives.

2.1.2. Steps of Thinking Power Strategy

There are several sequential steps when using TPS as follows:

- The strategy must be modeled for the students by training them and using simple examples that assists their understand.
- Put various concepts and ideas on cards without specifying the number of the major or manor ideas.
- Divide the students into small heterogeneous groups.
- Classify the concepts and ideas based on their strength.
- Students read the lesson, the chapter, or the unit and find out the ideas in the text, organize them depending on the strength and generality of the ideas, then note down them on small colored papers so that each one has a number, and these cards can be attached to the students' work board in the classroom. (Khawam, 2016)

2.1.3. Teacher's Role in the Thinking Power Strategy

The teacher is considered the pivotal element in the success of the TPS, as their role is not limited to transmitting knowledge, but goes beyond that to being a guide and facilitator for building and organizing knowledge in a hierarchical way that helps students achieve a DU of the educational content.

In light of the fact that DU is a dependent variable, the teacher's role is represented in a set of teaching practices that directly contribute to enhancing it, which can be clarified as follows:

1.Preparing a Learning Environment that Supports Thinking

The teacher prepares a positive classroom environment that encourages thinking and analysis, allowing students to ask questions and discuss ideas freely. This environment is considered an essential condition for achieving deep understanding, as it shifts learning from memorization to comprehension and interpretation.

2. Providing a Model for Organizing Ideas

The teacher plays an important role in modeling how to use the TPS by:

- Identifying the main idea
- Explaining how to branch out ideas
- Building a hierarchical diagram in front of the students

This helps student

s understand the mechanism of organized thinking, thereby enhancing their ability to build a DU of the content.

3.Guiding Students Towards Analysis and Synthesis

Instead of presenting information ready-made, the teacher guides students to:

- Analyze texts or concepts

- Compare ideas
- Connect information with each other

This contributes to develop higher-order thinking skills, which are considered a foundation for deep understanding.

4.Presenting Deep Questions

The teacher relies on questions that require thinking such as: Why? How? What is the relationship between...?

These questions push students to go beyond surface understanding towards interpreting meaning and building conceptual relationships.

5. Supervising for Constructing Hierarchical Diagrams

The teacher works with students while they build hierarchical diagrams of ideas, and does the following:

- Correcting misunderstandings
- Strengthening the connections among ideas
- Supporting proper cognitive organization

This contributes to consolidating knowledge in an organized way in long-term memory.

6- Enhancing Classroom Discussion and Interaction

The teacher encourages collaborative work and classroom discussions, which allow students to:

- Exchange viewpoints
- Rephrase ideas
- Deepen understanding through dialogue

This interaction is an important factor in achieving deep understanding.

7- Providing Feedback

The teacher provides continuous feedback on:

- Accuracy of organizing ideas
- Correctness of relationships among concepts
- Quality of understanding and analysis

This helps students gradually improve their cognitive performance.

(Abbas, 2014).

2.1.4.The Role of the Student in the Thinking Power Strategy

According to TPS, the student is considered a discoverer of what he/she learns, practicing thinking. The student is a seeker of meaning, as well as someone who builds knowledge and participates in the responsibility of managing and assessing learning. According to this strategy, the student is more active and plays the role of a scientist in a research to explore suitable solutions to the problems they face. The student is the focal point and the center of attention of this strategy.

Hamad (2011) mentions the student's role in TPS, as follows:

1.The Active Student

Knowledge and understanding are acquired actively. The student discusses, debates, asks questions, researches, investigates, observes, predicts, and listens to the viewpoints of others, and does not perform tasks routinely.

2.The Social Student

Knowledge and understanding are built through social work, through discussion and social dialogue with peers, which does not negate the individuality of the student.

3.The Creative Student

Knowledge and understanding are built through active work, creativity, and invention. Understanding means creativity.

4. Organizing knowledge hierarchically

The student works on reconstructing the content in the form of a hierarchical diagram (Power Structure) using organized numbering (1, 1.1, 1.2...).

This organization contributes to clarify the relationships among concepts, understanding the sequence of ideas, and building a comprehensive cognitive picture.

5. Practicing analytical and critical thinking

During the strategy application, the student practices comparison, interpretation, and inference skills, which pushes them to move beyond superficial knowledge toward deep thinking based on understanding and analysis.

6. Interaction and discussion

The student participates in discussing ideas with classmates, presenting their hierarchical diagrams, and comparing their cognitive organization with others.

This social interaction contributes to continuously expanding and modifying understanding.

2.1.5. The Importance of the Thinking Power Strategy

TPS is considered one of the effective educational strategies in organizing knowledge and developing higher-order thinking skills. Its importance lies in its contribution to transform the student from a passive recipient into a researcher and organizer of knowledge. Its significance can be explained in the following aspects:

A. Developing a Deep Understanding of Content

It helps students move from superficial memorization to DU by analyzing information into main and sub-ideas and connecting them through logical relationships. Thus, learning becomes meaningful rather than just an accumulation of information.

Ausubel confirmed that learning becomes more effective when knowledge is organized hierarchically, linking new concepts to prior experiences.

B. Developing Higher-Order Thinking Skills

It contributes to develop the skills of:

- Analysis
- Synthesis

- Evaluation

This is because the student disassembles the content and reconstructs it, which enhances their higher mental abilities according to Bloom's Taxonomy.

C. Improving Cognitive Organization of Information

It relies on building hierarchical schemes that help the student to:

- Classify information
- Organize it
- Link it together

This contributes to reduce cognitive dispersion and increasing the clarity of concepts.

The information processing theory pointed out that organizing knowledge helps in storing and retrieving it more easily .

D. Increasing Interaction and Classroom Participation

It makes the student an active participant in the lesson by:

- Identifying ideas
- Discussing the relationships among concepts
- Building hierarchical schemes

This enhances interactive learning and reduces reliance on rote teaching.

E. Raising the Level of Academic Achievement

Many studies have shown that using cognitive organization strategies, such as the Power of Thinking, leads to:

- Improved comprehension
- Increased information retention
- Enhanced academic performance

This is because they connect visual and logical learning.

F. Developing Autonomy Skills in Learning

It helps students rely on themselves in:

- Analyzing content
- Organizing ideas
- Summarizing lessons

Thus, the learning process becomes a self-directed activity guided by the student.

G. Reducing Cognitive Load

By organizing information hierarchically, the pressure on working memory is reduced, making it easier to process and understand information.

This idea is supported by Sweller's Cognitive Load Theory, which asserts that proper organization of information contributes to improving learning.

H. Supporting Active and Collaborative Learning

This strategy can be applied individually or in groups, which enhances:

- Dialogue among students
- Exchange of ideas
- Collaborative knowledge building.

(Mayer, 2009).

2.2.Deep Understanding

DU is defined as a mental activity that elevates students' abilities from levels of superficial thinking to higher levels such as interpretation and decision-making (Zouin: 2018).

The current era has experienced subtle and serious transformations and changes in all fields of knowledge and sciences, which has necessitated securing the future of present and future generations. This requires significant efforts to build the student's personality so that they can face these challenges with awareness and insight, based on a DU of information with neutrality, moderation, and balance, combining authenticity and modernity, and between preserving constants and being open to contemporary achievements. Therefore, there must be great attention to educational curricula so that creative activities, scientific accomplishments, and developmental economic achievements can be realized, which ensure a dignified life for every student in society.

DU means the student's ability to ask profound questions and provide appropriate translations, interpretations, and conclusions during learning; translation represents the ability to communicate linguistically from one symbolic form to another non-symbolic form or vice versa. Interpretation represents the ability to connect knowledge with skills by discovering a relationship or using a relationship between two or more ideas through comparative relations; whereas inference represents the ability to apply ideas that lead to reaching solutions (Al-Jahouri, 2012).

DU is considered a pathway of mental processes that go beyond the student's simple knowledge to indicate an exploration of the student's thinking in a complementary, multidimensional, and complex manner within their cognitive framework. Although the observable conception of DU is attributed to the student's own role, the teacher has two tasks in this regard:

First: Presenting new concepts and strategies to students in an interactive manner, providing guidance and support, and creating an appropriate learning environment.

Second: It involves uncovering and analyzing the depth of knowledge available to the student and what they already know, as well as identifying the tools that contain explanations of activities and scientific explorations to achieve a deeper and more comprehensive understanding. Accordingly, learning for DU should occur through real academic work based on research, investigation, and scientific explorations to grasp the meaning of educational ideas rather than receiving pre-prepared knowledge, as this helps the student construct the meaning of what they have learned and enhances confidence in their ability to find suitable solutions (Al-Jahoori, 2012).

2.2.1. Deep comprehension skills

DUS are higher cognitive abilities that enable the student to analyze knowledge, interpret it, connect it, apply it in new contexts, and critically evaluate

it, going beyond superficial memorization and recall. Ahmed (2012) and Wiggins & McTighe (2005) state these skills as follows:

1. Analysis

It is the student's ability to study information accurately and systematically, not merely memorizing it or understanding it superficially, but rather breaking it down and understanding its parts and the relationships between them to reach a deeper meaning. This includes the following:

- Breaking down information into its basic elements
- Understanding the relationships between ideas
- Distinguishing between facts and opinions

2. Interpretation

It is the student's ability to understand the meanings inherent in information or texts, and then clarify and explain them in their own style, indicating their true comprehension of the content, not just repeating it literally. This includes the following:

- Explaining the meanings and rephrasing them
- Clarifying ideas in a personal style
- Understanding implicit meanings

3. Inference

It is the student's ability to reach ideas or results that are not explicitly mentioned, based on the evidence and data available in the text or educational situation. This includes the following:

- Drawing conclusions from evidence
- Predicting events
- Reading between the lines

4. Application

It is the student's ability to use what they have learned in terms of knowledge, skills, and concepts in new or real-life situations, instead of merely memorizing information theoretically. This includes the following:

- Using knowledge in new situations
- Solving real-life problems
- Transferring the effect of learning to different contexts

5. Evaluation

It is the student's ability to examine information and ideas critically, and then make judgments or decisions based on clear criteria and logical evidence, not solely on personal opinions. This includes the following:

- Making critical judgments about information
- Evaluating the credibility of sources
- Making decisions based on evidence

6. Connection

It is the student's ability to establish relationships between previous and new knowledge and experiences, and to organize ideas in a coherent way that helps

form a comprehensive and integrated understanding of the subject. This includes the following:

- Linking new knowledge with previous knowledge
- Integrating ideas within a coherent framework
- Building a conceptual network

7. Asking Deep Questions

It is the student's ability to formulate questions that go beyond memorization and recall, focusing on research, interpretation, analysis, and inquiry; with the aim of reaching a deeper understanding of knowledge and educational situations, and this includes the following:

- Asking questions such as: Why? How? What if?
- Stimulating critical and investigative thinking

2.2.2. The Importance of Deep Understanding

DU has a crucial educational significance, as Al-Jahouri (2012) , and Ahmed (2012) point out the importance of deep understanding, which can be summarized as:

1. The process of linking causes and effects, which requires awareness of planning, exploration, monitoring, and control processes that provide great opportunities to understand the relationship between processes, strategies, ideas, and final outcomes.
2. Participation in decision-making, problem-solving, research and investigation, and evaluation.
3. Identifying meaningful cognitive patterns, so that the resulting knowledge becomes more connected and has a higher probability of being remembered, recalled, used, and applied in new areas.
4. Achieving meaningful learning and linking new knowledge with prior knowledge in the form of concepts within the student's cognitive structure, leading to the interconnection of ideas, the ability to compare and distinguish, and understand different ideas.
5. Investing mental effort and the ability to increase academic achievement.

3. Previous Studies

A. Al-Alqawi (2018)

The study aimed to find out the impact of TPS in developing divergent thinking among second-year middle school female students in Islamic History. The sample consisted of (70) female students from the second-year middle school, with (35) students in the experimental group and (35) in the control group. The researcher selected an experimental design for two equivalent groups. The study tool consisted of Divergent Thinking Test. The results revealed the superiority of the experimental group, that followed TPS, compared with the control group in the post-test of divergent thinking.

B. Al-Hasnawi (2019)

This study dealt with identifying the effectiveness of using P.E.C.S strategy in achievement and DU among second intermediate students. A random sample of 61 students was selected, with 30 students in the experimental group and 31 students in the control group. To achieve the aim of the study, the researcher adopted the experimental method. The researcher himself taught both groups during the experiment, which lasted one semester. He constructed a DU test consisting of 28 items. The researcher used statistical means such as t-test for two independent samples. The results showed the superiority of the experimental group students, who studied the topics using P.E.C.S strategy, over the control group students in the DU test.

C.Talib (2022).

The current study conducted check the effect of the network analysis strategy on achievement and the development of DUS among second intermediate students in Social Studies. The researcher adopted the experimental method as it is suitable for the nature and objectives of his research. The sample was chosen randomly, consisting of (80) students, distributed as (40) students in the experimental group and (40) students in the control one. The researcher constructed a DUS test composed of (20) items covering (4) skills: questioning, mental fluency, interpretation, and decision-making. The tool was presented to a group of experts and specialists to verify its validity before the experiment was conducted. After collecting and analyzing data using SPSS statistical package, the results indicated a significant difference between the experimental and control groups in the variable of DUS in favor of the experimental one.

D.Gherkan (2024)

This study aimed to identify the effect of TPS on relational thinking among second middle school female students. The researcher used an experimental design, and according to this design, the researcher randomly selected Al-Ishaa School for girls to represent the research sample, which included 44 students. The researcher prepared a test consisting of 24 items, and after verifying its validity and reliability, calculating the difficulty coefficient, discrimination coefficient, effectiveness of the wrong alternatives, and the relationship of each item's score with the total test score, the results were processed statistically using statistical program. The results showed the superiority of the experimental group students, who studied according to the TPS, over the control group students, who studied according to the conventional method, in the relational thinking test, with a statistically significant difference.

3.Methodology

The researcher relied on the experimental approach because of its suitability to the nature and objectives of the current study, as it allows for the verification of the causal relationship between variables in a precise scientific manner, and to reveal the impact of the independent variable on the dependent one under organized and controlled conditions. This method was used to identify the effect of the TPS on the development of DUS among preparatory stage students in English. TPS in this study has represented the independent variable, while DUS has represented the dependent variable, which included a set of higher cognitive skills, such as analysis, interpretation, inference, application, evaluation, making connections, and posing deep questions.

3.1. Experimental Design

The researcher has followed the experimental design depends on two groups (experimental and control) with pre-test and post-test as illustrated in Figure (1); because it is one of the most common and suitable experimental designs for educational studies that aim to check the impact of an independent variable on a dependent one. This design allows for precise comparison between the performance of individuals in both groups before and after the experiment, and thus determining the amount of change caused by the experimental treatment.

Figure (1)
Experimental Design

Group	Pre test	Manipulation	Post test
EX.	✓	TPS	✓
CO.	✓	Traditional Method	✓

The researcher has conducted the process of equivalence between the two groups relying on some variables that may affect the study results, such as: age, previous academic achievement, intelligence level, parents' educational attainment, and some other related demographic variables.

Both groups also underwent a pre-test to measure the level of DUS before the experiment, with the aim of ensuring their equivalence in the dependent variable. Then, the experimental treatment has been applied to the experimental group over a specified period, while the control group continued studying according to the traditional method. After the experiment period has ended, the post-test has been applied to both groups to measure the extent of development in DUS, and then the results have been analyzed to reveal the effect of the TPS.

This design helps control external factors that may affect the study results and also gives the researcher a greater ability to interpret the differences between the two groups as resulting from the effect of the independent variable.

3.2. Study Population and Sample

The population consists of preparatory school students (fourth preparatory grade) in public schools affiliated with the Directorate of Education in Anbar Governorate / Al-Habbaniyah city during the academic year (2025–2026).

The sample has been selected by simple random method from Al-Noor Secondary School for boys, where the number of sample individuals has reached (64) students and they have been distributed as follows:

- o 32 students in the experimental group
- o 32 students in the control group

3.3. Instrument of the study

The researcher has constructed a test to measure DUS in English, consisting of (30) items, with each of the skills below having (5) ones, and the total score for the test became (60).

3.4. Instrument Validity

The test has been presented to a group of experts specialized in teaching methods and English language to verify its face and content validity.

3.5. Instrument Reliability

The reliability coefficient has been calculated using Cronbach's Alpha through the Test-Retest method, and it has been found that the reliability score (0.84) is considered high and acceptable.

3.6. Instrument of Observation for Thinking Strength Strategy

An observation form has been prepared to measure the extent of applying the strategy, consisting of (18) items distributed over (6) areas. To verify its validity, it has been exposed to experts and then its reliability calculated using appropriate statistical means.

3.7. Procedures of the study

1. Selecting the sample and dividing it into two groups.
2. Conducting the pre-test for both groups.
3. Teaching the experimental group using TPS.
4. Teaching the control group using traditional method.
5. Continuing the experiment for 6 weeks.
6. Conducting the post-test.
7. Collecting and analyzing data.

3.8. Experimental Treatment

The students of the experimental group have been taught according to TPS through posing open-ended questions, stimulating discussion, using analytical and

interpretive activities, and problem-solving method. While the students of the control group have been taught using the traditional method.

3.9. Statistical Means

The following statistical methods have been used:

- T-test for two independent samples to compare the two groups
- T-test for paired samples to compare pre- and post tests
- Cronbach's alpha coefficient for checking reliability
- Mean and standard deviation

3.10. Controlling variables

The researcher has taken care to control extraneous variables such as:

- The same teacher
- The same subject
- The same time
- The same classroom environment

4.Data analysis and Results

After applying the test of DUS by the experimental and control groups, and statistically processing data using t-test for independent samples and paired samples, the researcher has found the following results:

4.1. Results of the First Hypothesis

"There is no statistically significant difference between the mean scores of the experimental group students who study according to the TPS and the mean scores of the control group students who study using the traditional method in the post-test of deep understanding".

To verify this hypothesis, T-test for two independent samples has been used to compare the mean scores of the students of both groups in the post-test. The finding have revealed the following as shown in table(1):

Table (1)
Scores of the experimental and control groups in the post-test

Group	N	Mean	Std. Deviation	C-value	T-value	S. Degree
Experimental	32	48.72	5.14	6.83	2.00	62
Control	32	38.41	6.27			

It is evident from Table (1) that the mean scores of the participants in experimental group has gotten (48.72), which is higher than the mean of the participants in control group, which is (38.41). The calculated t-value also states (6.83), which is greater than the tabulated t-value of (2.00) at a significance level of (0.05), indicating that there is a statistically significant difference between the

two groups in favor of the experimental group. So, the first null hypothesis is rejected, and the alternative hypothesis is accepted, indicating the presence of a positive effect of the TPS in developing DUS among preparatory stage students in English.

This superiority is attributed to relying on the TPS, which focused on:

- Activating analytical and critical thinking,
- Organizing ideas in a hierarchical manner,
- Encouraging discussion and dialogue,
- Asking deep questions,
- Connecting prior knowledge with new information.

4.2. Results of the Second Hypothesis

" There is no statistically significant difference between the mean scores of the experimental group students in the pre-test and post-test of DUS."

To verify this hypothesis, paired-sample t-test has been used to compare the scores of the experimental group students in the pre-test and post-test, see table (2):

Table (2)
Results of the T-test for the experimental group in the pre-test and post-test

Test	N	Mean	Std. Deviation	C-value	T-value	S. Degree
pre	32	27.56	4.82	14.27	2.04	62
post	32	48.72	5.14			

Depending of the information shown in table (2), that there is a statistically significant difference concerning the students' scores in the experimental group in the pre-test and post-test, as the mean increased from (27.56) in the pre-test to (48.72) in the post-test. The calculated t-value becomes (14.27), which is higher than the tabulated value of (2.04), indicating a significant improvement in the level of DUS among the experimental group students after using TPS. Thus, the second null hypothesis is rejected.

This improvement is attributed to the effectiveness of the educational activities adopted by the strategy, such as:

- Analysis and interpretation,
- Problem-solving,
- Classroom discussions,
- Building connections among concepts,
- Active and cooperative learning.

4.3. Results of the Third Hypothesis

" There is no statistically significant difference between the mean scores of the control group students in DUS pre- and post-tests"

To verify this hypothesis, a paired t-test has been utilized to compare the scores of the control group students in the pre-test and post-test, see table (3):

Table (3)
Results of the T-test for the control group in the pre-test and post-test

Test	N	Mean	Std. Deviation	C-value	T-value	S. Degree
Pre	32	28.03	5.11	1.87	2.04	58
Post	32	38.41	6.27			

The results of table (3) indicate a limited improvement in the scores of the control group students, as the mean increases from (28.03) to (38.41); however, the calculated t-value of (1.87) is lower than the tabular value (2.04), indicating that this improvement does not reach the level of statistical significance. Accordingly, the third null hypothesis is accepted, and this is attributed to the reliance on the traditional method which focused on:

- Direct explanation,
- Memorization and rote learning,
- Lack of mental activities,
- Weak classroom interaction and discussion.

4.4. Results of the Fourth Hypothesis

"There is no effectiveness of the TPS in developing DUS among EFL preparatory school students"

To verify the effectiveness of the strategy, the effect size has been extracted using the (Eta Square) formula, see table (4):

Table (4)
Effectiveness of TPS in Developing DU

Variable	T-value	Effect size (η^2)	Level
DUS	6.83	0.43	High

The results have shown that the effect size becomes (0.43), which indicates high effectiveness of the TPS in developing DUS.

This means that a large proportion of the variance in students' scores is attributed to the use of the TPS, which confirms its success in:

- Developing analytical thinking,

- Enhancing interpretation and inference,
- Improving application and evaluation,
- Building conceptual links,
- Developing students' ability to ask deep questions.

Thus, the fourth null hypothesis is rejected, and the results confirm the effectiveness of the TPS in improving the level of DU among EFL preparatory school students in English.

5. Conclusions

In light of the results obtained, the following conclusions can be drawn:

1. The TPS has proved effective in developing deep DUS among EFL preparatory school students in English, as the experimental group achieves better results compared to the control group.
2. The superiority of the experimental group is attributed to the reliance on the TPS, which focuses on activating higher mental processes such as analysis, interpretation, inference, and evaluation.
3. The strategy contributes to transforming the student's role from a passive recipient to an active participant, which leads to increased classroom interaction and achieving a deeper understanding of the study content.
4. Activities based on posing open-ended questions and discussion enhance students' ability to think critically and connect new information with prior knowledge.
5. The TPS provides a stimulating learning environment that helps students express their opinions freely, which positively reflects on the level of deep understanding.
6. The results show that using the strategy leads to a noticeable improvement in all DUS.
7. The study reveals that the traditional method does not achieve the same level of development in deep understanding, due to its reliance on rote learning and limited student engagement in thinking processes.
8. Using TPS contributes to achieving meaningful and sustainable learning, as students are able to apply what they have learned in new situations.

6. Recommendations

Based on the results and conclusions obtained, the researcher recommends the following:

1. Adopting TPS in teaching English at the preparatory stage, due to its clear impact on developing students' DUS.
2. Training English teachers on using the TPS through courses and workshops, with the aim of improving their teaching performance and developing students' thinking skills.
3. Including learning activities based on thinking in the curricula, such as open-ended questions, problem-solving, and group discussions, to enhance DU.

- 4.Focusing on DUS (analysis, interpretation, inference, application, evaluation, connection) as fundamental educational goals, instead of limiting to memorization and recall.
- 5.Preparing an interactive classroom environment that encourages students to participate and express their opinions freely, contributing to the development of critical thinking.
- 6.Reducing reliance on traditional teaching methods, due to their limited impact on developing thinking skills and deep understanding.
- 7.Using modern assessment methods that measure higher-order thinking skills, such as open-ended tests, projects, and performance tasks.
- 8.Encouraging students to engage in self-directed learning and inquiry by assigning them tasks that require research, analysis, and interpretation.

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