

Lee's Cognitive Strategy and Its Role in Achievement and Positive Thinking in General Teaching Methods

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General Background: Educational research increasingly considers learners' internal cognitive processes and information processing during learning. **Specific Background:** In the General Teaching Methods course, students may experience difficulties in acquiring educational concepts and maintaining focused attention. Brainstorming and cognitive feedback are presented within a constructivist framework as strategies for organizing ideas, connecting knowledge, correcting misconceptions, and supporting attention. **Knowledge Gap:** The study addresses the need to examine these two strategies through a comparative three-group design involving a traditional teaching condition. **Aims:** The study aims to identify the effectiveness of brainstorming and cognitive feedback in educational concept acquisition and reducing cognitive wandering among third-year History students. **Results:** The quasi-experimental study involved 93 students divided into two experimental groups and one control group. The educational concept acquisition means were 61.13 for the first experimental group, 56.10 for the second experimental group, and 45.60 for the control group. The cognitive wandering reduction means were 82.28, 75.84, and 65.33, respectively. ANOVA results showed significant differences among the groups for both outcomes, with further comparisons favoring the first experimental group. **Novelty:** The study compares brainstorming and cognitive feedback simultaneously with a traditional teaching condition across two learning outcomes. **Implications:** The findings support consideration of these strategies in Teaching Methods courses and provide a basis for further research and teacher training concerning active learning, cognitive self-regulation, and attention guidance.

Key Findings Highlights:

The first experimental group recorded a mean of 61.13, compared with 56.10 and 45.60 in the other groups.

Post-test means for the second outcome were 82.28, 75.84, and 65.33, respectively.

One-way ANOVA showed significant differences among the three groups for both measured outcomes.

Keywords: Brainstorming Strategy, Cognitive Feedback, Educational Concepts, Cognitive Wandering, Teaching Methods

First: The Research Problem:

Based on the researcher's awareness of the problem and his experience teaching the General Teaching Methods course to students in faculties of education, along with his continuous observation of their academic performance, it became clear that a large number of students face difficulty in understanding the educational concepts, principles, and foundations included in the course. This has an adverse effect on their academic performance. He also found that a lot of students tend to memorise and recite the information without understanding the meaning or being able to apply it in different educational situations. In addition, the nature of the course with its various concepts, theories and teaching strategies requires the use of contemporary teaching methods leading to a thorough comprehension of the knowledge and its connection with educational applications.

According to Faraj (2026), students' poor performance in the General Teaching Methods course was the consequence of dependence on traditional teaching methods that emphasised memorisation, the large number of educational concepts and terminology within the course content, the weak link between theoretical and practical applications, and the low level of student participation in active learning activities. This had a negative impact on their comprehension of the material and their comprehension of the scientific content [1].

The researcher also found that some students showed a decrease in positive thinking, which was characterised by low self-esteem, fear of making mistakes, and an unwillingness to participate in discussion and classroom activities. Other students developed negative attitudes toward a wide variety of academic situations. This was confirmed by Ghadab (2022) who found that several factors contributed to the decline in positive thinking including higher academic pressure and the use of traditional teaching methods that did not provide students enough opportunities for interaction, active participation and expressing their opinions. This negatively affected their positive thinking and limited their ability to deal with educational situations confidently and effectively [2].

From the foregoing, it is clear the urgency of searching for modern and effective teaching strategies for the General Teaching Methods course, such as the Lee cognitive strategy, as it may contribute to raising the level of achievement and positive thinking among the students of the College of Education. The research problem is the following question:

The effectiveness of Lee cognitive strategy in the achievement of students of the College of Education in the General Teaching Methods course and their positive thinking.

Second: The Importance of the Research:

The present era is marked by rapid scientific progress, continuous expansion of human knowledge and considerable development of scientific and technological innovations and their various applications in different spheres of life. This has placed greater responsibilities on educational institutions and their staff to prepare and equip students with knowledge and skills needed to keep pace with these cognitive transformations and adapt to their demands in an effective manner [3].

The relevance of the university appears as an academic institution responsible for the training of scientifically and intellectually qualified human resources. This is considering the role of science and knowledge in the progress of societies. It contributes to the character building of the students and development of cognitive and skills orientated abilities as per the needs of the times. Furthermore, the university is a center for the production and dissemination of knowledge, and a fundamental contributor to the development of scientific and cultural awareness, and is one of the most influential institutions to achieve comprehensive societal development [4].

The university role in the different eras and in answer to the changing societal needs has been a remarkable evolution in its nature and functions. It is no longer limited to the training of specialists in various fields of knowledge, but has become a pivotal institution, serving to meet the economic and social needs of society. In the modern age, universities have become essential for development and progress by preparing qualified human resources capable of contributing to leading political, economic, and social changes, thus strengthening their pioneering role in serving society and achieving its developmental aspirations [5].

In light of the university's growing role in serving the community and meeting its needs, the importance of colleges of education becomes evident as specialized academic institutions for preparing and qualifying teachers scientifically and pedagogically. They serve as the foundation that provides educational institutions with qualified personnel capable of performing their duties efficiently. Their curricula include diverse courses in the fields of practical education, teaching methods, educational psychology, curricula, and measurement and evaluation tools, contributing to the development of students' skills and the refinement of their professional abilities. Thus, colleges of education contribute to preparing teachers who possess the necessary scientific and pedagogical competencies to engage in the educational field, particularly in schools at all levels, thereby achieving quality in the educational process and raising the level of its outcomes [6].

General teaching methods courses are considered core courses in colleges of education, as they represent the practical application of the educational knowledge that students acquire through other specialized courses. These courses aim to equip students with the scientific foundations and modern theories of teaching, develop their skills in

lesson planning, implementation, and evaluation, and train them in using diverse teaching strategies and methods that consider individual differences. Furthermore, these courses contribute to bridging the gap between theory and classroom practice, thereby enhancing students' professional competencies and preparing them for active participation in the educational field and the achievement of high-quality educational outcomes [7].

The importance of learning theories as the scientific basis on which modern teaching practices are based has been shown, considering the importance of general teaching methods courses in the preparation and professional qualification of teachers. Learning theories describe how learning occurs and what affects it, offering a theoretical framework that enables teachers to choose suitable teaching strategies and methods depending on the learners' characteristics and needs. Moreover, the learning theories help the creation of educational situations, structure experiences that can boost students' achievement levels and different skills and augment the effectiveness of learning [8]. One of the most popular theories explaining how learning occurs and guiding teaching practices, considering the importance of learning theories in this sense, is the cognitive theory that focuses on the internal mental processes of the student. It deals with the process of learning, organising, processing, storing and retrieval of knowledge. This theory views the student as an active participant in the construction of his or her knowledge by interacting new experiences and previous cognitive structures, resulting in more meaningful, lasting and impactful learning [9].

Based on the principles of cognitive theory, its teaching strategies have gained significant importance in the educational field. These strategies focus on activating the student's mental processes and making them an active participant in the learning process. They contribute to organizing knowledge, linking new experiences to prior knowledge, and developing thinking, comprehension, analytical, and problem-solving skills. Furthermore, they enhance meaningful learning and its long-lasting impact. Therefore, cognitive theory strategies have become modern teaching approaches that help raise achievement levels and develop students' cognitive abilities more effectively [10].

Among the strategies of cognitive theory, Lee's cognitive strategy stands out as one based on the principles of cognitive learning. It focuses on developing students' abilities to understand, analyze, and plan solutions to problems in an organized and logical manner. This strategy draws its foundations from Piaget's theory of cognitive development, while also utilizing the social aspects of learning emphasized by Vygotsky. This allows it to combine the student's mental activity with interaction with the learning environment [11].

Lee's cognitive strategy is particularly important in contemporary educational settings because it shifts the student from a passive recipient of information to an active researcher and thinker. It encourages students to analyze learning situations, identify their components and the relationships between them, and then select appropriate procedures for addressing and evaluating the results. Furthermore, this strategy contributes to developing higher-order thinking skills, enhancing students' confidence in their ability to learn independently and solve problems, and helping them to help students organize their thoughts systematically, which positively impacts their understanding of the subject matter, their grasp of its concepts, and their academic achievement [12].

Given the role of modern teaching strategies in stimulating student learning and developing their mental abilities, achievement is crucial as a key indicator for assessing the effectiveness of the educational process and the degree to which its objectives are achieved. Achievement reflects the amount of knowledge, skills, and experiences a student acquires through various learning situations. Furthermore, it represents the culmination of efforts exerted by both the teacher and the student. Therefore, achievement receives significant attention in educational studies due to its connection to student learning levels and success, as well as its importance as a criterion for evaluating the effectiveness of different teaching strategies [13]. In addition to focusing on developing students' cognitive and academic aspects, positive thinking is also important as a psychological and educational variable that contributes to enhancing learning effectiveness. Positive thinking helps students face challenges and different situations with confidence and optimism, and enhances their ability to solve problems and make appropriate decisions. It also plays a role in developing motivation for learning and achieving success [14].

Furthermore, the importance of positive thinking increases in the university environment due to its impact on building a student's personality and developing their ability to adapt to various academic and life changes. Students with positive thinking are more capable of engaging in dialogue and objective discussion, more inclined to accept and respect different opinions, and possess a higher degree of intellectual flexibility and self-confidence [15].

The researcher believes that students in faculties of education represent the cornerstone of preparing future educational personnel, given their educational responsibility in building generations and developing their cognitive, skill-based, and value-based abilities at various educational levels. From this perspective, faculties of education are keen to prepare them scientifically and pedagogically by equipping them with specialized knowledge, professional experience, and the necessary teaching competencies. This qualifies them to perform their educational roles efficiently and effectively, and to contribute to developing the educational process and achieving its desired goals.

In view of the above, the significance of this research can be summarised in the following points:

1. The role of universities and faculties of education in the training of educational personnel scientifically and pedagogically qualified to keep up with developments in science and technology and contribute to achieving comprehensive development of society.
2. The importance of learning theories, especially the cognitive theory, in clarifying the learning processes and guiding modern teaching practices in a way that helps in the development of intellectual and cognitive abilities of students and the achievement of meaningful learning.
3. The importance of Lee's cognitive strategy as a modern teaching strategy that develops thinking and problem-solving skills, and helps students organize knowledge and understand learning situations more effectively.
4. The importance of achievement as a key indicator for measuring the extent to which educational objectives are met and the effectiveness of teaching strategies in developing students' knowledge and academic skills.
5. The importance of positive thinking in boosting students' self-confidence, developing their motivation to learn, and enabling them to face various educational and life situations efficiently and effectively.

Third: Research Objective and Hypotheses:

This research aims to identify the effectiveness of Lee's cognitive strategy in the achievement and positive thinking of students in the College of Education in the General Teaching Methods course. In light of this objective, the researcher formulated the following two null hypotheses:

1. "There is no statistically significant difference at the (0.05) level between the mean scores of the experimental group students who will study the General Teaching Methods course using Lee's cognitive strategy and the mean scores of the control group students who will study the same material using the traditional method on the achievement test."
2. "There is no statistically significant difference at the (0.05) level between the mean scores of the experimental group students who will study the General Teaching Methods course using Lee's cognitive strategy and the mean scores of the control group students who will study the same material using the traditional method on the Positive Thinking scale."

Fourth: Research Limitations: The research is limited to the following:

1. Human Limitation: Third-year students at the College of Education, Al-Qadisiyah University.
2. Knowledge Limitation: The content of the General Teaching Methods course.
3. Timeframe: First semester of the academic year (2025-2026).
4. Location: Al-Qadisiyah University – College of Education/Department of Educational and Psychological Sciences.

Fifth: Defining Terms:

1. Effectiveness is defined by:
 - a. (Saleh, 2014) as: "Bringing about the intended positive change in students' behavior, knowledge, or attitudes, which contributes to achieving the set educational objectives with a high degree of success" [16].
 - b. (Dakhel, 2023) as: "The extent to which teaching methods and strategies achieve the desired educational and pedagogical outcomes by improving students' performance and developing their cognitive, emotional, and skill-based abilities in accordance with the predetermined objectives" [17].
 - c. Operational Definition: The extent of the impact of the Lee cognitive strategy on the achievement of students in the College of Education in the General Teaching Methods course and on their level of positive thinking. This is measured through statistical differences between the scores of the two groups in the achievement test and the positive thinking scale.
2. **The Lee cognitive strategy is defined by:**
 - a. (Caple & Burky, 2008) define it as: "A problem-solving-based teaching strategy, designed to align with the characteristics of students in the concrete operational stage according to cognitive theory, and focusing on developing their ability to understand the problem and analyze its data to solve it in an organized and systematic way" [18].
 - b. (Yilmaz, 2011) defines it as: "A set of sequential and organized procedures and steps that contribute to helping students address and solve verbal problems, and it was developed based on the Polya strategy after being reorganized and reformulated to suit the characteristics and abilities of students" [11].
 - c. Operational Definition: A teaching strategy adopted by the researcher in teaching students in the experimental group of the General Teaching Methods course, through a set of organized steps that include (□ Understanding

the problem, □Developing a plan, □Implementing the plan, □Reviewing). It aims to improve student learning outcomes, and its effectiveness is verified based on the results of the achievement test and the Positive Thinking Scale.

3. Achievement is defined by:

- a. (Shehata & Zeinab, 2003) as: "The amount of knowledge, concepts, skills, and experiences that a student acquires as a result of their interaction with organized educational situations, which is reflected in their level of academic performance in a specific subject area." [19]
- b. (Al-Tabari, 2018) as: "The level of progress achieved by the student in the targeted learning outcomes within a specific time period, demonstrated through their ability to comprehend and apply knowledge and achieve the established educational objectives." [20].
- c. Positive Definition: The amount of knowledge, concepts, and skills acquired by students in the experimental group of the College of Education in the General Teaching Methods course after being taught according to Lee's cognitive strategy. This is measured by the total score obtained by the student on the achievement test prepared by the researcher for this purpose.

4. Positive Thinking: It has been defined by:

- a. (Aspinwall, 2010) as: "A pattern of mental thinking that focuses on the constructive and positive aspects of situations and experiences, and works to replace negative thoughts with more optimistic ones that help the student adapt and solve problems" [21].
- b. (Parkinson, 2023) as: "A voluntary mental process in which the student directs their thoughts and beliefs toward optimism and productivity, which contributes to enhancing their ability to cope with pressures and challenges and achieve psychological and social adjustment." [22].
- c. Operational Definition: A set of responses given by students of the College of Education in the experimental group to the statements of the Positive Thinking Scale, after they were taught according to Lee's cognitive strategy in the General Teaching Methods course. It is measured by the total score obtained by the student, which consists of five areas: (positive expectations towards the future, positive self-concept, life satisfaction, positive feelings, and positive resilience), and was prepared by the researcher for the purposes of this research.

Chapter Two: Theoretical Framework and Previous Studies

First Axis: Theoretical Framework:

First: Cognitive Theory: One of the modern trends in educational psychology that focuses on studying the internal mental processes that occur in students during learning, such as (perception, attention, thinking, memory, and problem-solving). This theory posits that learning is not limited to observable behavior but depends on how information is processed, organized, stored, and retrieved within the student's mental structure. Furthermore, it emphasizes that knowledge is actively constructed by the student through their interaction with new experiences and linking them to prior experiences, leading to the formation of more organized and developed cognitive structures. The theory indicates that effective learning occurs when the student is able to understand information, not merely memorize it [23], as the focus is on deep understanding and meaning. It also considers the role of mental strategies used by the student in learning, such as (organization, analysis, comparison, and inference). It further emphasizes that the student's cognitive development progresses gradually through stages related to age and experience, necessitating consideration of individual differences among students. Thus, education, in light of this theory, aims to develop thinking and activate higher-order mental processes. Instead of rote learning, it views the student as the focus of the educational process and an active creator of knowledge, not a passive recipient. It emphasizes the importance of interaction between new and prior knowledge in building meaningful and sustainable learning for the student [24].

Second: Lee's Cognitive Strategy:

1. **Its Concept:** Lee's strategy is one of the cognitive theory strategies used in teaching word problem-solving in mathematics. It is based on a reformulation of the Poly strategy to suit the characteristics of students and involves four stages: understanding the problem, developing a solution plan, implementing the plan, and reviewing. It aims to develop organized thinking through data analysis, selecting appropriate strategies, and connecting prior experiences to new situations. It also relies on methods such as diagrams, tables, and pattern recognition, and contributes to developing logical and analytical thinking and improving students' problem-solving performance [25].
2. **The Teacher's Role in Lee's Cognitive Strategy:**
 - a. The teacher prepares suitable learning situations and presents word problems in a clear manner appropriate to the students' level.

- b. The teacher guides students toward understanding the problem and analyzing its data without directly presenting the solution.
- c. The teacher uses thought-provoking, exploratory questions that help students choose appropriate solution strategies.
- d. The teacher encourages collaborative work, the exchange of ideas, and discussion of different solution approaches.
- e. The teacher monitors student performance, evaluates their steps in the solution process, and provides appropriate feedback.[26].

3. The Student's Role in Lee's Cognitive Strategy:

- a. The student actively participates in understanding the problem, analyzing its data, and precisely defining what is required.
- b. The student uses appropriate exploratory techniques such as drawing, tables, or representations to clarify the elements of the problem.
- c. The student develops a suitable solution plan based on their understanding of the relationships between the data.
- d. The student implements the solution steps in an organized and sequential manner according to the plan they developed.
- e. The student reviews the final solution and suggests alternative solutions or other methods for solving the problem when necessary.
- f. The student verifies the validity of the solution steps during and after implementation. [27]

4. Steps for Applying Lee's Cognitive Strategy:

- a. Understanding the Problem, which includes: (What is the content of the problem? What is the relationship between the elements contained within the problem? What questions will we answer?)
- b. Developing a Plan, which includes: (Can I draw a helpful image or diagram? Can I draw a helpful map or table? Take a specific case and look for patterns? Take one condition and then add another? Have you solved a similar problem before?)
- c. Implementing the Plan, which includes: (Implement the step you arrived at? Verify the correctness of each step?)
- d. Reviewing, which includes: (Is your solution logical? Try to find another way to solve the problem? Formulate a similar problem[28].

Third: Positive Thinking:

1. Its Concept: Positive thinking is a mental pattern that directs a student's thought processes toward a constructive interpretation of events and situations, enhancing their ability to adapt and succeed. It focuses on positive aspects rather than negative ones while maintaining balance in judging situations. It also contributes to reorganizing thoughts in a way that supports motivation and positive behavior. It does not mean ignoring problems but rather understanding and analyzing them and seeking realistic solutions. This pattern contributes to enhancing mental health, reducing anxiety and stress, developing self-confidence, and improving quality of life by replacing negative thoughts with more optimistic and flexible ones. This makes it an integrated approach to achieving psychological balance and personal and social success [29].

2. Areas of Positive Thinking:

- a. Positive Expectations for the Future: These are constructive expectations aimed at achieving gains in various aspects of a person's social and professional life in the future.
- b. Positive Emotions: This refers to a person experiencing emotions centered around empathy, happiness, and tranquility in personal and social relationships with others.
- c. Positive self-concept: The student's positive view of their diverse thoughts, strengths, beliefs, and abilities.
- d. Life satisfaction: The student's evaluation of their quality of life according to their thoughts, beliefs, and values, through which they compare their life circumstances to what they consider the ideal.
- e. Positive flexibility: The student's positive mental capacity to modify their thoughts and beliefs to suit the situation, its characteristics, and its pressures, enabling them to cope with it. [30]

Second Axis: Previous Studies:

1. Study (Jabbar and Ahmed, 2020):

The Effect of Lee's Cognitive Strategy on the Achievement of Fifth-Grade Literary Students in History

This study aimed to identify the effect of Lee's cognitive strategy on the achievement of fifth-grade literary students in history. It employed an experimental design with quasi-controls. The research population consisted of girls' daytime secondary schools in Al-Karkh 1 district. The sample comprised 45 students: an experimental group of 21 students who were taught through Lee's cognitive strategy and a control group of 24 students who were taught using the traditional method. An achievement test of 50 items with reliability coefficients of 0.82 was prepared. Statistical methods were appropriately used and the results showed a statistically significant difference at the 0.05 level in favour of the experimental group. This proves the effectiveness of Lee's cognitive strategy in improving academic achievement [31].

2. Al-Jubouri's study (2025):

The Impact of Lee's Cognitive Strategy on the Achievement and Attitudes of Art Education Students in Music Appreciation

This study aimed to identify the impact of Lee's cognitive strategy on the achievement and attitudes of art education students in music appreciation. The sample consisted of 70 third-year students. To achieve the study's objectives, an achievement test consisting of 40 items and an attitude scale consisting of 30 items, distributed across three axes, were developed. The results showed a positive impact of Lee's cognitive strategy on both achievement and attitudes toward music appreciation, favoring the experimental group.[32]

3. Study (Baktash, 2025):

Positive Thinking among Students of the College of Education for Human Sciences

The study aimed to measure the level of positive thinking among students of the College of Education for Human Sciences, and to reveal the differences in it according to the variables of gender, department and academic year. The research population was (3308) male and female students, and the sample consisted of (200) male and female students. The Positive Thinking Scale prepared by Al-Lahibi (2024) consisting of (40) items was used, and it was chosen because it had high validity and reliability. The results showed that the level of positive thinking among the sample was high, with no statistically significant differences according to the studied variables [33].

Chapter Three: Research Methodology and Procedures

This chapter presents the methodological procedures of the research, including its methodology and experimental design, its population and sample, its instruments and their validity and reliability, as well as the steps for conducting the experiment and the statistical methods used in analyzing the data and extracting the results, as follows:

First: Research Methodology: The researcher adopted the experimental method to achieve the research objectives, due to its ability to control variables and study the effect of the independent variable on the dependent variable, thus contributing to obtaining accurate and objective results.

Second: Experimental Design: Given that the current research includes an independent variable (Lee's cognitive strategy) and two dependent variables (achievement and positive thinking), the researcher adopted a quasi-experimental design based on two independent groups: an experimental group taught according to Lee's cognitive strategy, and a control group taught using the traditional method. Diagram (1) illustrates this.

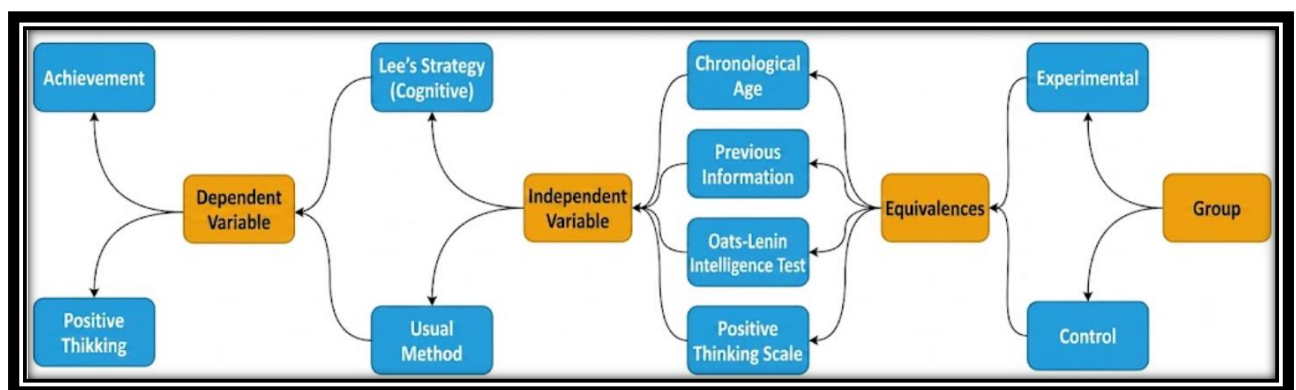


Diagram (1): Experimental Design of the Research

Third: Defining the Research Population: The research population consists of all colleges of education in Iraqi public universities for the academic year (2025–2026), which include departments of educational and psychological sciences. These colleges represent the framework within which the study is conducted, as they comprise the target group that possesses the characteristics related to the research variables.

Fourth: Selecting the Research Sample: The researcher divided the research sample into two parts:

1. College Sample: (Al-Qadisiyah University - College of Education/Department of Educational and Psychological Sciences) was selected to implement the experiment.
2. Student Sample: The number of third-year students in the Department of Educational and Psychological Sciences was (61) students, distributed across two sections, (A) and (B), with (30) students in section (A) and (31) students in section (B). Section (A) was randomly selected to represent the experimental group, which was taught the General Teaching Methods course according to Lee's cognitive strategy, while section (B) represented the control group, which was taught the same course using the traditional method. Table (1) illustrates this:

Table (1): Number of students in the two research groups before and after elimination

The group	Division	Number of students		
		Before exclusion	Excluded	After exclusion
Experimental	A	33	3	30
control	B	32	1	31
the total		65	4	61

Fifth: Equivalence of the two research groups: The researcher ensured equivalence between the two research groups in several relevant variables to enhance the internal validity of the experiment, guarantee the soundness of the results, and confirm that any differences that might appear between the two groups in the dependent variables are due to the effect of the independent variable (Lee's cognitive strategy), and not to other factors or variables that might influence the research results. The following is an explanation of the procedures for statistical equivalence of the variables between the two groups:

Table (2): Results of the independent samples t-test for equivalence of the two research groups

Variable	The group	number	average	deviation	Degree of freedom	Calculated	The schedule	Significance
Chronological Age	experimental	30	253.481	9.415	59	0.802	1.97	Not significant
	control	31	254.069	9.768				
Prior Information	experimental	30	12.691	3.067	59	0.634	1.97	Not significant
	control	31	11.876	3.519				
Otis Lennon Intelligence Test	experimental	30	26.714	4.765	59	0.511	1.97	Not significant
	control	31	25.904	5.123				
Positive Thinking	experimental	30	97.536	7.934	59	1.035	1.97	Not significant
	control	31	95.124	8.304				

Sixth: Controlling Extraneous Variables: To ensure the accuracy of the experiment and the reliability of its results, the researcher controlled for extraneous, non-experimental variables that might affect the dependent variables. This was done to avoid interference between their effects and the effect of the independent variable, thus contributing to a more objective and accurate presentation of the results. The control procedures included: (experimental incidents, experimental extinction, maturation factor, measurement instruments, and experimental procedures).

Seventh: Research Requirements: The researcher prepared the necessary requirements and tools to conduct the current research and accurately and objectively measure its variables. These requirements are outlined below:

1. Identifying the Scientific Material: The researcher identified the scientific material to be included in the experiment, which will be taught to third-year students in the two research groups. This material comprises (9) items from the General Teaching Methods course, in accordance with the research objectives and requirements for the academic year (2025-2026), namely: (teaching theories, teaching terminology, teaching skills, effective and creative teaching, teaching diversification and strategies, commonly used teaching methods, research-based teaching methods, cooperative learning, and teaching methods for mastery and creativity).
2. Formulating Behavioral Objectives: The researcher formulated (160) behavioral objectives according to Bloom's six levels of cognitive development. These objectives were presented to experts to verify their accuracy and comprehensiveness. Objectives that achieved an agreement rate of (80%) or higher, according to Cooper's formula, were adopted after making the necessary adjustments to reach their final form.
3. Preparing Lesson Plans: The researcher prepared lesson plans for the (15) modules of the General Teaching Methods course. These plans were implemented with the experimental group using Lee's cognitive strategy, while the control group was taught using the traditional method. The plans were adopted after achieving an agreement rate of (80%) or higher, according to Cooper's formula.

Eighth: Research Instruments:

1. Achievement Test:

- A. Identify the test object: The purpose of the achievement test is to measure the achievement level of the third year students in the general teaching methods course for the academic year (2025-2026).
- B. for Determining the number and type of test items: The researcher has determined that the achievement test includes (50) multiple choice items based on previous relevant studies and the opinions of the reviewing experts.
- C. Preparation of table of specification The researcher prepared a table of specification for the achievement test. Table 3 presents the distribution of items by learning objectives and content.

Table (3) Table of achievement test specifications

Topics	Number of hours	Relative importance	Behavioral objectives						the total %100
			remember	understand	implementation	analysis	composition	evaluation	
			%23.76	%19.85	%18.64	%13.96	%12.78	%11.01	
Teaching Theories	2	%6.67	1	1	1	0	0	0	3
Teaching Terminology	4	%13.33	2	1	1	1	1	1	7
Teaching Skills	3	%10	1	1	1	1	1	0	5
Effective and Creative Teaching	2	%6.67	1	1	1	0	0	0	3
Diversifying Instruction and Strategies	4	%13.33	2	1	1	1	1	1	7
Commonly Used Teaching Methods	6	%20	2	2	2	1	1	1	9
Inquiry-Based Teaching Methods	4	%13.33	2	1	1	1	1	1	7
Cooperative Learning	3	%10	1	1	1	1	1	1	6
Teaching Methods for Mastery and Creativity	2	%6.67	1	1	1	0	0	0	3
the total	30	%100	13	10	10	6	6	5	50

3. **Instructions to answer the achievement test:** The researcher provided clear instructions to the test to assure the accuracy of the results. The instructions included an explanation of the purpose of the test and the type of items, and stressed the importance of reading the questions carefully before answering.

4. **Test Validity To test the validity of the achievement test,** the researcher used two types of validity;

- A. Face Validity: The behavioural objectives and specifications table of the achievement test was administered to a group of experts. Based on their comments, some items and alternatives were changed a bit. Based on Cooper's formula, the rate of agreement was 80% and above, thus all the test items were adopted in their final form which consisted of 50 items.
- B. Content Validity: Content validity was determined by the researcher, using the specifications table to ensure that the items adequately represented and covered the curriculum content.

5. Pilot Application of the Achievement Test:

- a. First Pilot Application: The achievement test was administered in its first pilot phase to a sample of (30) third-year students (excluding the research sample) to verify the clarity of the instructions and items, assess their comprehension, and determine the appropriate time for answering. The average performance time was (58) minutes.

Second Pilot Application: The achievement test was administered in its second pilot phase to a sample of (100) third-year students (excluding the research sample) to conduct statistical analysis through:

4. Item Difficulty Index: The results of the statistical analysis showed that the difficulty indices of the test items ranged between (0.31–0.69), which is within acceptable limits.
5. Item Discrimination Index: The discrimination indices of the test items ranged between (0.30–0.59), indicating the items' ability to differentiate between students of varying abilities.
6. Effectiveness of Incorrect Alternatives: The results showed that the effectiveness coefficients of incorrect alternatives ranged from (–0.4 to –0.3), indicating the effectiveness of the alternatives and their ability to distract students who are not proficient in the material.

7. Test Reliability: The test's reliability was verified using the Kuder-Richardson (20) formula, yielding a reliability coefficient of (0.849), indicating a high degree of reliability.

Third: Developing a Positive Thinking Scale:

1. Defining the Scale's Objective: The Positive Thinking Scale aims to measure the level of positive thinking among third-year students (the research sample) and to identify the extent to which they possess positive attitudes and ideas that reflect on their self-perception and their ability to deal with different situations.
2. Defining the Scale's Domains and Number of Items: The Positive Thinking Scale comprises five domains: (positive expectations of the future, positive emotions, positive self-concept, life satisfaction, and positive resilience). The scale's domains were presented to a panel of experts, and those that achieved an 80% or higher level of agreement were adopted as the standard for the scale's validity.
3. Formulating the Scale Items: After defining the domains of the Positive Thinking Scale, the researcher formulated 30 items, equally distributed across the five domains, with 6 items per domain. The items were carefully selected to ensure their suitability for the research sample, clarity of wording, and ease of understanding.
4. Determining Scale Alternatives: The researcher used the five-point Likert scale, designing response alternatives for each item: (Always applies to me), (Often applies to me), (Applies to me), (Never applies to me), and (Always applies to me). Scores of (⑤,④,③,②,①) were assigned respectively, resulting in a maximum possible score of 150 and a minimum of 30, with a theoretical mean of 90.
5. Test Validity, which includes:
 - a. Face Validity: To verify the face validity of the Positive Thinking Scale, its items were presented to a group of experts. Items that achieved an agreement rate of 80% or higher were considered valid for measuring the targeted trait.
 - b. Construct Validity: The researcher verified the construct validity of the Positive Thinking Scale to determine the following:
8. The relationship between item scores and the total scale score: To verify the internal consistency of the scale, the correlation coefficients between its items and the total score were calculated using Pearson's correlation coefficient. The values ranged from (0.300–0.594), indicating that all items possessed acceptable statistical significance. Table (4) illustrates this:

Table (4): Correlation Coefficients between Item Score and Total Scale Score

NO.	Correlation	NO.	Correlation	NO.	Correlation	NO.	Correlation	NO.	Correlation
1	0.471	7	0.516	13	0.386	19	0.507	25	0.476
2	0.506	8	0.456	14	0.405	20	0.300	26	0.313
3	0.398	9	0.528	15	0.336	21	0.483	27	0.534
4	0.443	10	0.351	16	0.410	22	0.507	28	0.317
5	0.302	11	0.550	17	0.533	23	0.453	29	0.594
6	0.557	12	0.403	18	0.324	24	0.387	30	0.442

9. Relationship between item score and total domain score: To verify the internal consistency of the scale, the correlation coefficients of each item with the total domain score were calculated using Pearson's correlation coefficient. The results showed that all items had acceptable statistical significance, as shown in Table (5):

Table (5): Correlation coefficients between item score and domain score

Positive expectations for the future		positive feelings		positive self-concept		Contentment with life		positive flexibility	
NO.	Correlation	NO.	Correlation	NO.	Correlation	NO.	Correlation	NO.	Correlation
1	0.668	7	0.723	13	0.512	19	0.699	25	0.674
2	0.711	8	0.651	14	0.614	20	0.521	26	0.547
3	0.598	9	0.703	15	0.551	21	0.692	27	0.732
4	0.645	10	0.532	16	0.620	22	0.711	28	0.556
5	0.536	11	0.756	17	0.741	23	0.658	29	0.784
6	0.767	12	0.600	18	0.579	24	0.584	30	0.639

10. Relationship between domain scores and the total scale score: To verify the construct validity, correlation coefficients between domain scores and the total scale score were calculated using Pearson's correlation

coefficient. The results showed statistically significant correlations, confirming the correlation between the domains and the scale as a whole. Table (6) illustrates this.

Table (6): Correlation Coefficients between Domain Score and Total Scale Score

Correlation	Positive expectations for the future	positive feelings	positive self-concept	Contentment with life	positive flexibility
	0.875	0.891	0.886	0.843	0.852

6. Applying the Scale to the Pilot Sample:

- a. First Pilot Application: The Positive Thinking Scale was administered to a pilot sample of (30) third-year students (excluding the main research sample) to verify the clarity of the items and instructions and to determine the response time. The results showed the scale to be clear, with an average response time of (57) minutes.
 - b. Second Pilot Sample: The Positive Thinking Scale was administered to a second pilot sample of (100) third-year students (excluding the main research sample) to conduct statistical analysis of the scale items and verify their psychometric properties, as explained in the following analysis procedures:
11. Item Discrimination Power: The discrimination power of the scale items was calculated, and the t-values ranged between (2.302 – 6.547), indicating the validity of all items and their ability to differentiate between the different levels of students.
 12. Scale Reliability: The reliability of the Positive Thinking Scale was verified using Cronbach's alpha coefficient on the second pilot sample, which reached (0.864), indicating that the scale possesses a good degree of reliability.

Ninth: Statistical Methods: The researcher used SPSS 24 and Microsoft Excel 2010 software to analyze and statistically process the data and draw conclusions.

Chapter Four: Presentation and Interpretation of Results

First: Presentation of Results

Results related to the first null hypothesis: “There is no statistically significant difference at the (0.05) level between the mean scores of the experimental group students who will study the General Teaching Methods course according to the Lee cognitive strategy and the mean scores of the control group students who will study the same material in the usual way in the achievement test.” To verify the validity of the first null hypothesis, the arithmetic means, variances, and standard deviations of the scores of the students of the two research groups in the achievement test were calculated. The arithmetic mean for the experimental group was (44.692) with a variance of (34.822) and a standard deviation of (5.901), while the arithmetic mean for the control group was (32.791) with a variance of (38.614) and a standard deviation of (6.214). Differences were analysed for significance using an independent samples t-test. The t-value obtained (6.937) was higher than the critical value (1.97) at 0.05 level of significance with 59 degrees of freedom. This shows a statistically significant difference in favour of the experimental group as shown in Table (7).

Table (7) Independent Samples T-Test Results for Students of the Two Research Groups in the Final Achievement Test

The group	number	average	variance	deviation	Degree of freedom	T value		Significance
						Calculated	The schedule	
Experimental	30	44.692	34.822	5.901	59	6.937	1.97	Significance
Control	31	32.791	38.614	6.214				

The results indicated that there was a statistically significant difference between the mean scores of the two groups of students on the final achievement test in favour of the experimental group. The effect size of the independent variable on the dependent variable was calculated using Cohen's d-value, which was 1.96. This value indicates a large effect size, which confirms the effectiveness of Lee's cognitive strategy and its clear impact on increasing the academic achievement of the students of the experimental group.

1. **Results related to the second null hypothesis:** “There is no statistically significant difference at the (0.05) level between the mean scores of the experimental group students who will study the general teaching methods course according to the Lee cognitive strategy and the mean scores of the control group students who will study the same material in the usual way on the positive thinking scale.” To verify the validity of the second

null hypothesis, the results showed that the arithmetic mean of the experimental group that was taught using the Lee cognitive strategy was (132.976) with a variance of (90.003) and a standard deviation of (9.487), while the arithmetic mean of the control group was (121.748) with a variance of (99.521) and a standard deviation of (9.976). To determine the significance of the differences, an independent samples t-test was used. The calculated t-value (6.108) was greater than the critical value (1.97) at the significance level (0.05) and at (59) degree of freedom. This indicates a statistically significant difference in favour of the experimental group in positive thinking as shown in Table (8).

Table (8)'' Results of the T-Test of Independent Samples for the Students of the Two Research Groups on the Final Scale of Positive Thinking''

The group	number	average	variance	deviation	Degree of freedom	T value		Significance
						Calculated	The schedule	
Experimental	30	132.976	90.003	9.487	59	6.108	1.97	Significance
Control	31	121.748	99.521	9.976				

The results showed a statistically significant difference in positive thinking favoring the experimental group, with a large effect size (Cohen's $d = 1.15$).

Second: Interpretation of Results:

1. Discussion of the Results for the First Hypothesis:

- A. Lee's cognitive strategy was based on recalling past experiences and knowledge and linking them with new information. This helped students to construct new meanings for the course content, made learning more stable and continuous, and contributed to raise their achievement level.
- B. Lee's approach created an environment of active learning through dialogue, discussion and exchange of ideas among students. This increased their motivation to learn and encouraged their positive involvement in educational activities which was shown in their academic performance.

2. Interpretation of Results Related to the Second Hypothesis:

- a. Lee's cognitive strategy provided a learning environment based on participation, dialogue, and the exchange of ideas. This created an atmosphere of cooperation and positive interaction among students and contributed to developing feelings of satisfaction, reassurance, and confidence during learning.
- b. Lee's cognitive strategy helped students achieve repeated learning successes through active participation and systematic problem-solving, which enhanced their satisfaction with their performance and learning experiences, and was reflected in a higher level of life satisfaction.

Third: Conclusions:

1. Lee's cognitive strategy contributed to raising the achievement level of students in the College of Education in the General Teaching Methods course, as the students in the experimental group who studied according to this Lee cognitive strategy outperformed their peers in the control group.
2. Lee's cognitive strategy proved effective in developing positive thinking among students in the College of Education by strengthening its components (positive expectations about the future, positive emotions, positive self-concept, life satisfaction, and positive resilience).

Fourth: Recommendations:

1. It is necessary for those responsible for teaching in the Ministry of Higher Education and Scientific Research to familiarize themselves with modern teaching strategies, especially Lee's cognitive strategy, through holding training courses and seminars and issuing specialized publications, which will contribute to developing teaching performance and raising the efficiency of the educational process.
2. The need to focus on developing positive thinking among university students by employing educational activities that rely on positive expectations for the future, fostering positive emotions, developing a positive self-concept, increasing life satisfaction, and promoting positive resilience in various educational situations.

Fifth: Recommendations:

1. The impact of Lee's cognitive strategy on the acquisition of educational concepts among students in the Colleges of Basic Education in the Teaching Methods course and the development of their future-oriented thinking.

2. Positive thinking and its relationship to academic achievement among students in the Colleges of Education in the General Teaching Methods course.

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