

RESEARCH TITLE

The Effect of the (STAD) Strategy on the Achievement of Fifth-Grade Literary Female Students in Philosophy and Psychology, and the Development of Their Cognitive Curiosity

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Abstract

The aim of the present research is to examine the effect of the (STAD) strategy on the achievement of fifth-grade literary female students in the subjects of philosophy and psychology, and the development of their cognitive curiosity. The researcher adopted a partially controlled experimental design with two equivalent groups: an experimental group and a control group, which was deemed suitable for the current research. The researcher purposefully selected female students from the fifth literary grade at Al-Zuhur Secondary School for Girls in the Tikrit Education Department. Randomly, section (B) was chosen to be the experimental group, which was taught using the (STAD) strategy, while section (A) became the control group, taught using the traditional method. The research sample consisted of 62 students after excluding those who failed. The researcher determined the content to be taught, which included the two chapters from the philosophy and psychology textbook for the fifth literary grade. Based on this content, the researcher developed behavioral objectives across five levels and prepared 16 model lesson plans for both groups. The results were as follows:

1. There was a statistically significant difference at the 0.05 level between the mean scores of the experimental group and the control group in the achievement test, favoring the experimental group.
2. There was a statistically significant difference at the 0.05 level between the mean scores of the experimental group and the control group on the post-cognitive curiosity scale, favoring the experimental group.
3. There was a statistically significant difference at the 0.05 level in the mean differences between the pre-test and post-test scores of the experimental group on the cognitive curiosity scale, favoring the post-test.

Based on the results, the researcher drew a set of conclusions, recommendations, and suggestions.

Key Words: STAD strategy, philosophy and psychology, cognitive curiosity development.

1. Research Problem

The use of traditional teaching methods in our schools, which focus on rote learning of scientific material while neglecting crucial aspects of students' personal development—such as fostering critical thinking skills, creativity, and curiosity—along with the low academic achievement of students, especially at the secondary school level, led the researcher to conclude that the reasons behind students' poor performance in philosophy and psychology are not solely due to the difficulty of the subjects or the methods used to teach them. Therefore, there is a clear need to develop the teaching process for these subjects by adopting the most modern and effective strategies. This motivated the researcher to select a contemporary strategy from social constructivist theory, one that aims at educational progress and development: the (STAD) strategy, which educational literature highlights as significant in achieving essential and desirable objectives.

To investigate the methods employed by teachers in teaching philosophy and psychology and their satisfaction with student achievement, as well as the extent to which teachers' teaching methods stimulate cognitive curiosity, the researcher conducted an open survey. The results revealed that 95% of teachers follow conventional or common teaching methods, 80% are dissatisfied with their students' achievement, and 90% believe that traditional teaching does not foster students' cognitive curiosity.

Thus, the research problem is defined by the question: "What is the effect of the (STAD) strategy on the achievement of fifth-grade literary female students in philosophy and psychology, and the development of their cognitive curiosity?"

2. Research Significance

Several educational studies highlight the importance of interaction in learning. These studies show that this form of interaction significantly increases students' academic achievement, motivates them, and enhances interpersonal relationships among students (Johnson & Johnson, 1988, p. 103). Moreover, cooperative learning can enhance students' skills for collaboration, especially when students from diverse ethnic, cultural, and special needs backgrounds work together to achieve common group goals, thus increasing friendships and creating an egalitarian sense of value among them (Banks, 1991, p. 47). Wheeler and Ryan indicate that the (STAD) strategy promotes positive relationships among learners, enabling them to benefit from each other (Wheeler & Ryan, 1973, p. 402). Additionally, (Rubin) argues that this strategy eliminates boredom and makes learning engaging and exciting (Rubin, 1987, p. 46).

Christion describes the (STAD) strategy by using the Chinese proverb: "Tell me and I forget, show me and I remember, involve me and I learn," which aligns with findings from other studies stating that we learn: 10% of what we read, 20% of what we hear, 30% of what we see and hear, 70% of what others explain to us, 80% from personal experiences, and 90% from teaching others (Al-Qaud, 1995, p. 134).

Johnson & Johnson found that classroom interaction under the (STAD) strategy outperforms competitive classroom interaction in terms of achievement outcomes, self-esteem of the participants, and their interpersonal relationships (Abu Helal et al., 1993, p. 355). Furthermore, (Hila, 1999) emphasized that the significance of the (STAD) strategy extends beyond improving outcomes such as academic achievement, positive attitudes toward learning, and critical thinking skills. The ability to apply knowledge and skills in cooperative interactions with others is crucial (Hila, 1999, p. 335).

Previous studies generally agree on the effectiveness of the (STAD) strategy in achieving

cognitive objectives, including academic achievement, which remains a primary concern in education, psychology, and among parents, especially in societies that place great value on academic success. This shared interest in academic achievement has led both families and educational institutions to collaborate in optimizing students' academic performance (Alam, 2000, p.305).

Moreover, students' awareness of their progress in academic achievement is an important factor that motivates them to strive for further improvement. Academic achievement also helps teachers assess their students' response to the teaching process and the effectiveness of their strategies. Furthermore, achievement results are used to evaluate teaching strategies, as effective teaching strategies lead to better academic outcomes (Abu Alam, 1987, pp. 53-54). Cognitive curiosity plays a crucial role in adapting to different life situations, whether in the workplace, home, or a changing environment. It drives individuals to explore new concepts and develop various types of interactions. Cognitive curiosity is essential for overcoming difficulties, adapting, and learning. It helps individuals recognize risks in their surroundings through discovery. Key outcomes of cognitive curiosity include acquiring knowledge about new and unknown topics and situations (Litman,2006,p.86).

Cognitive curiosity is a powerful human motivation and is considered a key driver of scientific discoveries and cultural advancement. It is also a necessary condition for expanding knowledge. Maslow (1970) regarded curiosity as a crucial factor in determining psychological well-being, while Fosse & Keeler (1983) emphasized that curiosity and exploratory behavior are vital for human development, as they facilitate flexible adaptation to changes in the environment. Giambra (1992) argued that experiences gained through curiosity and exploratory behavior allow for the natural development of cognitive patterns in adults, making cognitive curiosity a desire for knowledge and one of the most important human motivations across different life stages (Giambra,1992,p.74).

Based on the above, the significance of the current research can be summarized as follows:

1. The importance of the (STAD) strategy as a significant cooperative learning strategy.
2. The importance of academic achievement as a key cognitive variable used to evaluate students.
3. The importance of philosophy and psychology as the first psychological subjects studied by secondary school students.
4. The importance of cognitive curiosity as an essential skill related to acquiring knowledge.

3. Research Objectives

The present research aims to achieve the following objectives:

1. To examine the effect of the (STAD) strategy on the achievement of fifth-grade literary female students in philosophy and psychology.
2. To investigate the effect of the (STAD) strategy on the development of cognitive curiosity among fifth-grade literary female students.

4. Research Hypotheses

The research objectives will be tested through the following null hypotheses:

1. There is no statistically significant difference at the 0.05 level between the mean achievement scores of the experimental group of students who study philosophy and

psychology using the (STAD) strategy and the mean achievement scores of the control group who study the same subject using the traditional method.

2. There is no statistically significant difference at the 0.05 level between the mean cognitive curiosity scores of the experimental group of students who study philosophy and psychology using the (STAD) strategy and the mean cognitive curiosity scores of the control group who study the same subject using the traditional method.
3. There is no statistically significant difference at the 0.05 level between the pre-test and post-test mean cognitive curiosity scores of the experimental group of students who study philosophy and psychology using the (STAD) strategy.

5. Research Delimitations

1. Female students of the fifth literary grade in secondary and preparatory schools under the supervision of the Salah al-Din Directorate of Education – Al-Dulu'iyah Education Department.
2. The philosophy and psychology chapters to be taught to the fifth literary grade students, consisting of two chapters in the academic year (2021-2022) from the Philosophy and Psychology textbook, edition 12 (2019).
3. The second semester of the academic year (2021-2022).

6. Definition of Terms

(STAD) Strategy

Al-Khafaf (2013) defines it as "a form of cooperative learning that uses multi-ability learning teams to study a specific content area, including facts, concepts, generalizations, principles, academic rules, and skills" (Al-Khafaf, 2013, p. 95).

Atiya (2016) defines it as "a strategy based on forming heterogeneous cooperative groups, where group members share their differences in achievement levels at the end of the learning process" (Atiya, 2016, p. 227).

Operational Definition: It refers to the set of procedures implemented by the teacher during the educational setting to assess its impact on the experimental group. This is done with the help of the teacher to make the learning process easier and more effective. It includes steps such as group distribution, whole-class instruction, individual and brief tests, measuring improvement points, redefining the team, and reinforcing behaviors with rewards.

Achievement

Hussein (2011) defines it as "the knowledge, facts, concepts, and principles students acquire through a prepared program aimed at making them more adaptable to the social environment to which they belong" (Hussein, 2011, p. 176).

Operational Definition (Researcher): Achievement is the amount of knowledge, facts, and concepts that students in the research sample acquire when studying the topics of philosophy and psychology in the fifth literary grade. This is measured by their scores on the achievement test administered by the researcher at the end of the experiment.

Cognitive Curiosity

Slater (2009) defines it as "the desire to seek knowledge and integrate it about the individual's environment to enhance or stimulate mental work" (Slater, 2009, p. xi).

Theoretical Definition: Since the researcher has adopted Litman's (2006) perspective, the theoretical definition is the same as the one proposed by Litman, as mentioned above.

Operational Definition: It is represented by the total score obtained by the respondents on the cognitive curiosity scale.

Chapter Two

Theoretical Framework and Previous Studies

1. Theoretical Framework

Achievement Teams Method (STAD)

This method was developed by Robert Slavin and his colleagues at Johns Hopkins University in 1980. It is one of the simplest methods of cooperative learning, as it is direct and clear. In this method, the teacher presents new knowledge to students each week using oral presentations or written texts. The students in the class are divided into learning teams, with each team consisting of 4-5 members who vary in achievement levels—some are high achievers, others are medium, and others are low achievers. The students use worksheets or any other tools for the lesson and review to master the academic content. They help each other learn, and each student individually takes short weekly tests, or tests twice a week, which cover the knowledge being taught. These tests are corrected, and each individual is assigned an improvement score. This score is based on how much the student has improved compared to their previous scores. A weekly report is published, announcing the teams with the highest scores and the students who have shown the greatest improvement. The winning teams are rewarded (Zaitoun, 2007, p. 561).

The STAD strategy can be used when the educational content is divided into small, organized units, where repeated cycles of direct instruction, team study, and assessment are applied. Teachers may modify some of their subject matter or prepare instructional materials in advance, either by faculty members or specialists, to encourage students to engage and collaborate with each other in achieving the desired goals. The STAD strategy consists of the following main steps:

1. Distribute students into teams.
2. Teach the entire class.
3. Team study.
4. Individual short tests.
5. Calculate improvement points.
6. Redefine the team.
7. Award symbolic and material prizes to the team with the highest score (Al-Saeed, 2007, p. 67).

Cognitive Curiosity

The literature affirms that cognitive curiosity is a theoretical concept that refers to the internal psychological state that drives a person to examine and explore their environment, gather information, and acquire knowledge. Satisfying this state is essential for mental health across all age groups. In educational contexts, cognitive curiosity is considered a vital factor in learning, as it is "the driving force behind an individual's desire for information." Possessing knowledge and being open to new information can be one of society's most urgent needs. Maw and Maw (1964) define cognitive curiosity as the desire to understand and explore the new, unknown, and ambiguous elements of the environment. Kashdan (2004) notes that cognitive curiosity is an emotional system concept, accompanied by a desire to learn, seek knowledge, and organize oneself in relation to creativity, novelty, and challenge (Kashdan, 2004, p. 792).

Day and Berlyne have pointed out that a state of uncertainty and ambiguity often accompanies the individual, which generates a motivational state known as "cognitive curiosity." This curiosity arises from the discomfort of uncertainty through non-symbolic stimulation or specific environmental stimulation. If the uncertainty is caused by symbolic stimuli (such as language or ideas), it leads to what is called "cognitive curiosity." Both cognitive curiosity and perceptual curiosity motivate individuals to engage in activities aimed at acquiring cues, information, or knowledge on a specific topic they are seeking (Day & Berlyne, 1971, pp. 99-112).

Chapter Three Research Methodology and Procedures

1. Research Methodology

Given the nature of the current research, which aims to investigate the effect of the STAD strategy on the academic achievement of female students in the fifth literary grade in the subjects of philosophy and psychology and its impact on their cognitive curiosity, the researcher adopted an experimental research methodology.

2. Experimental Design

The researcher used a quasi-experimental design with two groups: an experimental group and a control group. The design involves pre- and post-test assessments for both academic achievement and cognitive curiosity, as illustrated in Figure 1.

Figure (1) Experimental Design for the Research Groups

Group	Pre-test	Independent Variable	Dependent Variable	Post-test
Experimental	Cognitive Curiosity	STAD Strategy	Achievement	Achievement Test
			Cognitive Curiosity	Cognitive Curiosity Scale
Control		Conventional Method		

3. Defining the Research Population and Sample:

• Research Population:

The research population consists of female students in the fifth literary grade at morning secondary and preparatory schools in the Al-Duluiyah district, affiliated with the education department of Tikrit, for the academic year 2021-2022. The researcher obtained the necessary data for the research population from the Al-Duluiyah Education Department and acquired a list of schools based on the statistics conducted by the Educational Planning Department of the General Directorate of Education.

• Sample Selection:

The researcher selected Al-Zawra Girls' High School to conduct the experiment. Upon visiting the school, the researcher found the administration eager to cooperate and facilitate the research process. The researcher used a simple random sampling method and chose Section B to represent the experimental group, which would study using the STAD strategy. Section A was selected as the control group, which would be taught using the traditional method. The total number of students in both sections was 62. No students were excluded from either group since both groups were homogeneous in terms of the data provided about the students, and there were no failed students. As a result, the distribution of the sample was as follows: 30 students in Section B (experimental group) and 32 students in Section A (control group). The details are shown in Table 1:

Table (1) Number of Students in the Research Groups Before and After Exclusion

Group	Number of Students Before Exclusion	Number of Excluded Students	Number of Students After Exclusion
Experimental	30	0	30
Control	32	0	32
Total	62	0	62

4. Equivalence of the Research Groups

Before starting the research, the researcher ensured statistical equivalence between the two research groups in certain variables that may influence the results of the study. These variables include: age (measured in months), last year's average, intelligence test, and parents' academic achievement. The details are as follows:

1. Age: After calculating the mean and standard deviation for the age variable (in months) for both the experimental and control groups, and using the t-test for independent samples, the results showed no statistically significant difference at the 0.05 significance level with 63 degrees of freedom for the age variable. The calculated t-value was 1.50, which is less than the critical t-value of 2.00. This indicates that the two groups (experimental and control) are equivalent in terms of age. The results are shown in Table 2.

Table(2) Mean, Standard Deviation, and t-value for the Age Variable in Both Research Groups

Group	Sample Size	Mean	Standard Deviation	Degrees of Freedom	t-value Calculated	t-value Table	Statistical Significance at 0.05 Level
Experimental	32	201.72	7.27	63	1.50	2.00	Not Significant
Control	33	199.33	5.41				

2. Parental Education Level: The researcher obtained information regarding the educational level of the parents of the students in both groups through an information form distributed to the students. The data was classified into three categories: below intermediate, intermediate and diploma, and university and higher. This was done to ensure a sufficient frequency of responses (5 or more). The data was then statistically analyzed using the Chi-square test to compare the parental education levels between the two groups, as shown in Table (3).

Table(3) Chi-square Results for Parents' Education Level for Both Research Groups

Parents	Group	Education Level	Chi-square Value	Calculated Value	Table Value	Statistical Significance at 0.05 Level
Father	Experimental	Below Intermediate	7	0.174	5.99	Not Significant
		Intermediate/Diploma	11			
		University/Higher	14			
	Control	Below Intermediate	9			
		Intermediate/Diploma	9			
		University/Higher	15			
Mother	Experimental	Below Intermediate	12	1.124		Not Significant
		Intermediate/Diploma	12			
		University/Higher	8			
	Control	Below Intermediate	13			
		Intermediate/Diploma	9			
		University/Higher	11			

From Table (3), it is evident that the Chi-square value for the fathers of both the experimental

and control groups was 0.174, which is less than the table value of 5.99. This indicates that there is no statistically significant difference between the two groups in terms of the father's education level. Similarly, for the mothers, the Chi-square value was 1.124, which is also less than the table value of 5.98, indicating no statistically significant difference between the two groups in terms of the mother's education level. Thus, the groups are equivalent in this variable.

3. Intelligence Test:

The researcher calculated the mean and standard deviation of the intelligence scores for both the experimental and control groups. Using the independent samples t-test, the results showed no statistically significant difference between the students in the two groups in terms of intelligence at the 0.05 significance level. Table (4) illustrates this.

Table(4)

Mean, Standard Deviation, and t-value for the Intelligence Variable in Both Research Groups

Group	Sample Size	Mean	Standard Deviation	Degrees of Freedom	t-value Calculated	t-value Table	Statistical Significance at 0.05 Level
Experimental	32	33.40	4.74	63	0.51	2.00	Not Significant
Control	33	33.94	3.69				

4. Previous Year's Academic Achievement:

The researcher obtained the general average grades of the students from the fourth-grade literary track for the previous academic year (2021-2022) from the grade records. After calculating the mean and standard deviation for the grades of both the experimental and control groups, the t-test was applied for independent samples to compare the two groups, as shown in Table (5).

Table(5)

Mean, Standard Deviation, and t-value for the Academic Achievement in the Previous Year in Both Research Groups

Group	Sample Size	Mean	Standard Deviation	Degrees of Freedom	t-value Calculated	t-value Table	Statistical Significance at 0.05 Level
Experimental	32	70.91	7.38	63	0.44	2.00	Not Significant
Control	33	69.91	10.55				

5. Pre-test Cognitive Curiosity Scale:

The researcher applied the Cognitive Curiosity Scale, which was prepared by the researcher, to both research groups before the start of the experiment. The mean and standard deviation for both groups were calculated. The independent samples t-test was used, and the results

showed no statistically significant difference at the 0.05 significance level with 63 degrees of freedom. Thus, the two groups are equivalent in the Cognitive Curiosity Scale variable, as shown in Table (6).

Table(6)

Mean, Standard Deviation, and t-value for the Pre-test Cognitive Curiosity Scale in Both Research Groups

Group	Sample Size	Mean	Standard Deviation	Degrees of Freedom	t-value Calculated	t-value Table	Statistical Significance at 0.05 Level
Experimental	32	72.13	2.14	63	0.12	2.00	Not Significant
Control	33	72.06	2.30				

4. Control of Extraneous Variables (Internal and External Validity):

A. Internal Validity

To ensure internal validity, the researcher controlled the following variables:

1. Sample Selection:

To eliminate the effect of individual differences between the students in the experimental and control groups, the researcher selected the research groups randomly using a lottery method and ensured equivalence between the groups.

2. Maturation:

Maturation refers to biological, mental, or emotional changes that occur in participants during the experiment, such as fatigue or growth. These changes can positively or negatively affect the results. This was controlled by ensuring that the duration of the experiment was short enough to avoid significant maturation effects.

3. Accompanying Factors:

The time duration of the experiment may allow for external factors to influence the dependent variable. In this study, no significant external factors affected the experiment. The duration of the experiment was the same for both groups, a full semester.

4. Tools Used:

The researcher used the achievement test and the cognitive curiosity scale as research instruments.

5. Teacher of the Subject:

The researcher taught both the experimental and control groups throughout the experiment.

6. Experimental Attrition:

Experimental attrition refers to the loss of participants during the experiment. This did not occur during the study.

7. Testing Situation:

The effect of this variable was minimized by providing a time gap between the pre-test and post-test applications. The students were not informed in advance about the retesting.

8. Curriculum Content:

The same curriculum was taught to both groups in both sections, consisting of the first and second chapters of the philosophy and psychology book for the fifth literary grade. The researcher ensured that the content delivered was equal in both groups for each lesson.

9. Distribution of Classes:

A weekly schedule was organized in cooperation with the school administration to ensure that both groups studied the philosophy and psychology subjects on the same days (Wednesday and Thursday).

B. External Validity:

To ensure external validity and the ability to generalize the results to the population, the researcher controlled the following factors:

1. Selection-Testing Interaction:

The effect of this variable was minimized by selecting the experimental and control groups randomly.

2. Testing-Treatment Interaction:

The researcher applied the pre-test Cognitive Curiosity Scale, which might have informed the students about the nature of the experiment. To minimize this effect, the teacher administering the test informed the students that it was for research purposes only.

3. Effect of Experimental Procedures:

The researcher herself conducted the experiment with both groups, ensuring that confidentiality and experimental integrity were maintained.

5. Research Requirements:

1. Determining the Study Material:

Before starting the experiment, the researcher determined the academic content to be taught during the experiment for both the experimental and control groups, based on the philosophy and psychology book designated for the fifth literary grade in the 2021-2022 academic year.

2. Formulating Behavioral Objectives:

The researcher formulated 82 behavioral objectives based on Bloom's taxonomy for the cognitive domain across five levels (remembering, understanding, applying, analyzing, synthesizing). These objectives were presented to a group of experts and reviewers with experience and specialization in teaching methods, assessment, and statistics to assess the accuracy of the objective formulation and the extent to which they covered the educational content. Each objective was also evaluated for the level it assessed. Based on the feedback from the experts, objectives that received an agreement of 80% or higher were adopted, with some adjustments made to the wording and cognitive levels. As a result, the final number of objectives remained 82.

3. Preparing Daily Teaching Plans:

The researcher prepared daily teaching plans for the three chapters of the philosophy and psychology book for the fifth literary grade. A total of 14 teaching plans were created for the experimental group and the same number for the control group. A sample of these plans was presented to a group of experts and reviewers to gather their opinions and suggestions. Based

on their feedback, some minor adjustments were made to the plans, and the final version was adopted after receiving 80% or higher agreement from the experts and reviewers. Sample plans can be observed.

5. Research Tools

To achieve the current research goal and test its hypotheses, two tools were used: the achievement test and the cognitive curiosity scale. Below is the detailed description of each of these tools:

1. Achievement Test:

The researcher constructed an achievement test to measure a portion of the research goal, following these steps:

- Determining the Goal of the Test:

The goal of the test was to measure the academic achievement of fifth-grade literary students in psychology.

- Determining the Number of Test Items:

The researcher consulted with several teachers of psychology for the fifth literary grade to determine the appropriate number of test items. It was agreed that 35 items would be suitable for the test, consisting of 30 multiple-choice items and 5 essay questions with specific answers.

- Test Instructions:

The researcher provided specific instructions for the students explaining how to answer the test items, how the scores would be distributed, the time limit for the test, and other important considerations. The multiple-choice items were awarded one point for each correct answer and zero for incorrect or unanswered items. The essay questions were awarded three points for each correct answer, resulting in a total score of 45 points for the test.

- Determining the Content:

The test content was based on the first and second chapters of the philosophy and psychology book for the fifth literary grade for the 2022-2023 academic year.

- Creating the Test Blueprint (Specification Table):

The researcher created a test blueprint as shown in Table (7).

Table(7)

Test Blueprint for the Achievement Test Items

Chapters	Number of Lessons	of Relative Importance	Behavioral Objectives	Number of Items
		Recall 30%	Understanding 30%	Application 30%
First	6	40%	4	4
Second	10	60%	6	6
Total	16	100%	10	10

- Test Validity:

The researcher verified both the face validity and content validity of the test:

1. Face Validity:

To verify the face validity, the researcher presented the test items, in their initial form, along with the behavioral objectives, to a group of experts in teaching methods and psychology. This was done to ensure the clarity and appropriateness of the test items for the intended objectives. Based on the experts' feedback, some items were rephrased or adjusted. The test items achieved an agreement rate of 80% or higher, calculated using Cohen's Kappa coefficient for agreement, confirming the test's face validity.

2. Content Validity:

The researcher presented the test, behavioral objectives, specification table, and content to a group of experts and specialists to ensure the test's comprehensive coverage of the intended content. Items that achieved 80% or higher agreement were retained, and the final version of the test was adjusted according to the experts' suggestions, ensuring its content validity.

- Pilot Testing of the Test:

- **First Pilot Test:**

The achievement test was administered to a preliminary sample of 30 students from the fifth literary grade to determine the time needed for completing the test, evaluate the clarity of the items and instructions, and identify any ambiguities. The average time taken by the first and last five students to complete the test was 35 minutes.

- **Second Pilot Test:**

After confirming the clarity of the test items and instructions and determining the appropriate time for completion, the test was administered to a second sample of 100 students from the fifth literary grade to analyze the test items and confirm their psychometric properties. After correcting the students' answers, the researcher ranked the scores from highest to lowest and selected the top and bottom 27% of the responses to form the upper and lower groups for statistical analysis.

A. Difficulty Index of the Items:

The researcher calculated the difficulty index for all test items and found that it ranged from 0.33 to 0.72. An item is considered acceptable if its difficulty index falls between 0.20 and 0.80 (Bloom, 1971: 66). This means that all test items were within the acceptable range.

B. Discrimination Index:

The researcher calculated the discrimination power for each test item and found that it ranged from 0.30 to 0.56. Therefore, the discrimination power of the items is considered acceptable.

C. Effectiveness of the Wrong Alternatives:

The effectiveness of the incorrect alternatives for the multiple-choice questions was calculated using the formula for the effectiveness of incorrect alternatives. The researcher applied this formula to all 30 multiple-choice items in the test. It was found that the effectiveness of all incorrect alternatives was negative, meaning they attracted more answers from the lower group of students compared to the higher group. This indicates that the incorrect alternatives were more effective in attracting responses from the lower group than the higher group, so the researcher decided to keep all the items as they were.

D. Test Reliability:

The reliability of the test was verified using the internal consistency method by applying the Kuder-Richardson 20 formula after administering the test to a sample of 40 students. The reliability coefficient was found to be 0.83, which indicates that the test has good reliability. Therefore, the test was considered ready for final application to the research sample.

2. Cognitive Curiosity Scale:

The researcher reviewed several cognitive curiosity scales, such as the one by Al-Daraji (2018), but found they were not suitable for the sample and the context of this experiment. Therefore, the researcher developed a new scale for cognitive curiosity, following these steps:

A. Preparation of the Scale Items:

After reviewing the previous scales, the theoretical background, and theories explaining cognitive curiosity, the researcher prepared a scale consisting of 34 items. Each item had three alternatives: (1) "Applies to me greatly," (2) "Applies to me moderately," and (3) "Does not apply to me."

B. Validity of the Scale:

After preparing the scale, it was presented to a group of experts and reviewers specializing in educational and psychological sciences to offer suggestions and opinions regarding the formulation and content of the items. The results showed that the agreement rate on the scale items was 86%, with some minor revisions to the wording of certain items. Therefore, the scale was deemed valid based on the experts' opinions regarding its formulation and content.

C. Pilot Application of the Scale:

The researcher applied the cognitive curiosity scale to a pilot sample of 30 students, which was the same sample used for the achievement test. The purpose was to check the accuracy of the scale's instructions, determine the time needed for the students to answer, and ensure clarity of the scale's items. The time spent answering the scale was 30 minutes.

D. Pilot Testing of the Cognitive Curiosity Scale:

The researcher applied the cognitive curiosity scale to a sample of 100 students from secondary and preparatory schools within the research population. The instructions for the scale were read and clarified before the students began answering. After correcting the responses, the researcher ranked the scores in descending order and selected the top and bottom 27% of students to calculate the discrimination power of the scale items.

E. Discrimination Power of the Scale Items:

After calculating the discrimination power of the items using the t-test for independent samples, the t-values for discrimination ranged from 3.85 to 9.38.

F. Correlation Between the Items and the Total Score:

To calculate the correlation coefficient, the researcher used Pearson's correlation coefficient. It was found that all correlation coefficients were statistically significant at the 0.05 level, with 98 degrees of freedom and a table value of 0.19.

G. Reliability of the Scale:

After applying the scale to the statistical analysis sample, the internal consistency reliability of the responses was calculated using Cronbach's Alpha formula, yielding a reliability coefficient of 0.86. This indicates good reliability for the scale, making it ready for final application.

6. Procedures for Implementing the Experiment:

To implement the experiment properly, the researcher followed these steps:

The experiment was conducted in the first semester of the 2021-2022 academic year, starting on Sunday, November 28, 2021, and continuing until Thursday, January 20, 2022, for a total of 14 weeks for each group (experimental and control) in each school.

- The experimental group was taught using the STAD strategy, according to the prepared lesson plans based on this model.
- The control group was taught using the traditional method, following the prepared lesson plans for that approach.
- The cognitive curiosity scale was administered to both groups before the experiment to ensure equivalence between the two groups.
- The achievement test was administered to both groups on Sunday, January 23, 2022, with the help of the subject teachers at both schools and under the researcher's supervision. The students were informed about the test one week prior to the scheduled date, and they were instructed to read the instructions carefully before answering the test items. The answers were then corrected according to the ideal answer key.
- The cognitive curiosity scale was administered to both groups of students on Monday, January 24, 2022, and the responses were corrected based on the approved correction method.

7. Statistical Tools:

The researcher used the SPSS program (Statistical Package for the Social Sciences) for data analysis.

Chapter Four

Presentation and Discussion of Results

1. Presentation of Results:

The researcher presents the results according to the variables of the study and its hypotheses after obtaining the scores of the students in both research groups, as follows:

Results for the First Null Hypothesis:

To test the first null hypothesis, the researcher performed the following:

- A t-test for independent samples was used to determine the significance of the difference between the experimental and control groups. The results showed that the mean score for the experimental group was 33.91 with a standard deviation of 3.90, while the mean score for the control group was 26.45 with a standard deviation of 3.66. After applying the t-test for independent samples, the calculated t-value was 7.95, which is greater than the critical t-value of 2.00 at the 0.05 significance level with 63 degrees of freedom, as shown in Table (8).

Table(8)

Results of the t-test for the difference between the mean scores of the students in the achievement test for the research groups

Group	Number	Mean	Standard Deviation	t-value (calculated)	t-value (table)	Significance Level (0.05)
Experimental	32	33.91	3.90	7.95	2.00	Significant
Control	33	26.45	3.66			

Results for the Second Null Hypothesis:

To test the second null hypothesis, the researcher performed the following:

- A t-test for independent samples was used to determine the significance of the difference between the experimental and control groups. The results showed that the mean score for the experimental group was 78.19 with a standard deviation of 2.57, while the mean score for the control group was 72.88 with a standard deviation of 2.38. After applying the t-test for independent samples, the calculated t-value was 8.64, which is greater than the critical t-value of 2.00 at the 0.05 significance level with 63 degrees of freedom, as shown in Table (9).

Table(9)

Results of the t-test for the difference between the mean scores of the research groups in the cognitive curiosity scale

Group	Number	Mean	Standard Deviation	t-value (calculated)	t-value (table)	Significance Level (0.05)
Experimental	32	78.19	2.57	8.64	2.00	Significant
Control	33	72.88	2.38			

Thus, the null hypothesis is rejected, indicating a statistically significant difference at the 0.05 significance level.

Results for the Third Null Hypothesis:

To test the third null hypothesis, the researcher performed the following:

- A t-test for paired samples was used to determine the significance of the difference between the mean scores of the experimental group before and after the experiment. The results showed that the mean score for the experimental group before the experiment was 72.13 with a standard deviation of 2.14, while the mean score after the experiment was 78.19 with a standard deviation of 2.57. After applying the t-test for paired samples, the calculated t-value was 21.10, which is greater than the critical t-value of 2.04 at the 0.05 significance level with 31 degrees of freedom, as shown in Table (10).

Table (10)

Results of the t-test for paired samples between the pre-test and post-test for cognitive curiosity in the experimental group

Group	Mean	Standard Deviation	Mean Difference	Standard Deviation of Differences	t-value (calculated)	t-value (table)	Significance
Pre-test	72.13	2.14	6.06	1.63	21.10	2.04	Significant
Post-test	78.19	2.57					

Effect Size of the STAD Strategy on Achievement and Cognitive Curiosity:

The effect size was calculated using the Eta-squared formula as follows:

A. Effect Size for Achievement:

After applying the effect size formula using Eta-squared, it was found to be 0.50. According to Table (11), this effect size is considered large.

Table(11)

Reference for determining effect size levels based on Eta-squared in psychological and educational sciences

Effect Size	Small	Medium	Large
Eta-squared	0.01	0.06	0.14

Compared to Table (11), the effect size is large.

B. Effect Size for Cognitive Curiosity:

After applying the effect size formula using Eta-squared, it was found to be 0.54. Comparing this value to Table (11), the effect size is large, as shown in Table (12).

Table(12)

Effect size of the STAD strategy on achievement and cognitive curiosity using Eta-squared

Variable	t-value (calculated)	Eta-squared (n ²)	Effect Size
Achievement	7.95	0.50	Large
Cognitive Curiosity	8.64	0.54	Large

2. Interpretation of Results

Based on the results of this study, the experimental group, which was taught using the STAD strategy, outperformed the control group, which was taught using the traditional method, in both achievement and cognitive curiosity. These results can be attributed to the STAD strategy for the following reasons:

- The strategy helped shift students from being passive recipients of information to active seekers by encouraging them to ask questions, explore various perspectives, and investigate topics independently. This contrasted with the traditional method, where the teacher is the focal point, and students only passively receive information.
- The use of the STAD strategy encouraged students to write, participate, and overcome fears or shyness, boosting their self-confidence and allowing them to express their feelings and ideas without the direct criticism that might stifle creativity.
- The STAD strategy supported the development of cognitive curiosity by focusing on analyzing reasons, justifications, and evidence, which helped students generate new ideas and conclusions based on the concepts they explored.
- It fostered a supportive atmosphere for problem-solving through constructive dialogue and helped train students' minds to persuade others.
- It enhanced student participation in idea discussion and generation by grouping them into teams, facilitating the exchange of ideas, and leading to more responses, which improved their understanding of the material and reduced forgetfulness.
- The strategy was engaging and sparked students' interest in the subject matter, contributing to increased academic performance. It provided an educational experience that enriched their cognitive development and made them more independent in acquiring knowledge.

- It aligned with the cognitive development of students, improving their understanding of the material.
- The STAD strategy increased the experimental group's motivation to research, explore, and construct new ideas, fostering the development of their cognitive curiosity.

3. Conclusions

1. The STAD strategy is more effective in improving achievement and cognitive curiosity among fifth-year literary students.
2. Teaching psychology using the STAD strategy had a positive impact on achievement among fifth-year literary students.
3. Teaching psychology using the STAD strategy had a positive impact on cognitive curiosity among fifth-year literary students.

4. Recommendations

Based on the findings of the study, the researcher recommends the following:

1. The importance of teaching psychology in various educational stages using the STAD strategy due to its positive impact on achievement and cognitive curiosity.
2. The organization of training courses to train teachers on how to use the STAD strategy in teaching psychology, facilitated by the Training and Development Directorates in the Ministry of Education.

5. Suggestions

To extend this research, the researcher suggests conducting the following studies:

1. A study examining the impact of the STAD strategy in other educational stages and subjects.
2. A similar study applied to other educational stages with other variables such as creative thinking skills, critical thinking skills, communication skills, or behavioral variables like attitudes towards psychology or student preferences.

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