

## **The Effect of Cooperative Learning on the Academic Achievement and Retention of the Mathematics Concepts at the Primary School in Holy Makkah**

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**Abstract.** The purpose of this study was to identify the effect of cooperative learning on the academic achievement and retention of the mathematics concepts learning of sixth grade students at primary school in Holy Makkah in Saudi Arabia.

The study sample was 59 students divided into two groups: the control group (29 students) which have been taught the mathematics concept using the traditional method, and the experimental group (30 students) which have been taught using the strategy of cooperative learning. An achievement test was used as an instrument to collect information and study data. Frequencies, percentages, means, standard deviations as well as t-test were used for the analysis of the study data and information.

The results of the study showed that there is a statistical significance difference at the level (0.05) between the means of the performance of the experimental and control groups on the achievement and retention test for the benefit of the experimental group.

### **Introduction**

Mankind adapt to the community life since the beginning of creation. They are social and civilian in their tendencies. They rarely live or work alone, but they always tend to interact in a safety social medium which supplies them the necessary support to continue their life. Nowadays, many education and administration advocators advice teachers to use the cooperative learning. In most of the developed countries, education supervisors find that the concept of cooperative learning depends on developing educational work through improving the vocational performance and the leadership role of the teachers. The importance of the theoretical and applied concepts of cooperative learning and its impact on improving the programs of training teachers and the level of achievement of the educators have been carried out at the 19th century. It was adopted by Johnson *et al.* (1995) that the concept of cooperative learning was recently introduced in education, where the students work together in small heterogeneous groups for the completion of common goals. Students are divided into groups of 2-5 members. After they

receive the instructions and precise directions from the teacher, all members of the group participate to achieve their goals successfully. Johnson and his colleagues find that the cooperative work compared with the competitive work and individual work increases the achievement and productivity of students' performance, emphasizes the positive relations among the members, and improves mental health and self-esteem. Hajji (2000) mentioned that the students serve as sources of learning from each other, so the performance of an individual member depends on the other members of the group.

This study seeks to introduce the concept of cooperative learning as a new input to develop the educational achievement and retention of the studied information, and to help students have positive trends towards their educational environment. It also participates in improving teachers' cooperative learning skills in Saudi schools. The study simply compares the cooperative learning to the traditional learning—where each student works separately without the participation of others—to help students adapt to the professional organizations which enroll them to work after graduation.

### **Problem of the Study**

In Saudi schools, teachers need to develop effective methods of teaching, especially in science and mathematics. The Ministry of Education—especially in Makkah area—released different teacher training projects to improve their teaching methods, and the cooperative learning was one of them. To show some advantages of the cooperative learning, this study was conducted to survey the effect of the use of cooperative learning on the achievement in mathematics and retention of the impact of learning for the sixth graders from the primary school in the city of Holy Makkah.

The problem of the study can be abbreviated in the following main question as follows:

- What is the effect of cooperative learning on the academic achievement and retention of mathematics concepts at primary school in Holy Makkah?

The main question can be divided into the following two sub-questions:

- What is the effect of cooperative learning method on the mathematics achievement for the sixth grade students at primary school in Holy Makkah?
- What is the effect of cooperative learning method on the retention of the mathematics concepts for a longer period at primary school in Holy Makkah?

### **Importance of the Study**

The current study importance appears as follows:

1. The study contributes in identifying the effect of the use of cooperative learning to improve the mathematics achievement for primary school students and retention impact of learning for a longer period.
2. This study contributes to enlighten mathematics teachers to the basic role played by the cooperative learning and how to facilitate learning processes of mathematics concepts.
3. This study seeks to convince those who are officially concerned in the preparation of mathematics curricula to the importance of the role of cooperative learning in improving the level of the mathematics achievement.
4. The study exposes the important foundations for the use of cooperative learning method in mathematics.
5. This study is a response to the recommendations and suggestions of previous studies.
6. This study provides a series of recommendations and proposals, which seek to develop new ideas in

the field of the promotion of curricula and mathematics teaching methods.

7. This study is a contribution to improve the field of mathematics teaching methods in Saudi schools.

### **Purpose of the Study**

The purpose of this study is to compare the effect of the use of cooperative learning to the traditional learning method—in teaching mathematics—on academic achievement and the retention of mathematics concepts for sixth grade students from the primary school in Holy Makkah.

### **The Hypotheses of the Study**

- 1) There is no statistical significance difference at the level (0.05) in academic achievement between students who studied using the cooperative learning method (experimental group), and those who studied using the traditional method (control group).
- 2) There is no statistical significance difference at the level (0.05) in the retention of mathematical concepts learning between students who studied using the cooperative learning method (experimental group), and those who studied using the traditional method (control group).

### **Limitation of the Study**

The study was characterized by:

- 1) Sixth grade students from the primary school in Holy Makkah.
- 2) Decimal fractions from the sixth graders' book of mathematics.
- 3) Males.
- 4) Examine the effect of the use of cooperative learning method to improve the mathematics achievement at primary school students and retention of mathematics concepts for a longer period.
- 5) First semester of the academic year 1427/1428 H.

### **Terms of the Study**

#### **Cooperative learning**

Cooperative learning means a small dedicated group of students learn together and take advantages of each other's expertise to achieve a common goal (Amita, 2006).

#### **Traditional learning**

Traditional learning means that every student has to work alone during the explanation, discussion

and applications of the mathematics concepts during the classroom instructions.

### **Achievement**

Achievement means that a student meets the criteria of the standards to a level which demonstrates adequate understanding of the mathematics concepts tested.

### **Retention**

Retention means that a student has an ability to recall or recognize the mathematics concepts which have been learned before.

## **The Theoretical Background of the Study**

### **The concept of cooperative learning**

The use of cooperative learning strategies in the Western countries has begun since the early 20th century as part of John Dewey's social studies project, which have contributed greatly to the improving of learning in general, and helped to achieve the main objectives of the curriculum with great success and high accuracy (Slavin, 1992). The evolution of interest in cooperative learning, which appeared markedly during the 1980s, has been downloaded onto a large scale in the 1990s because of its substantial role in improving achievement in the academic and social aspects. It has become an appropriate substitute for the traditional learning, which do not focus on spreading the spirit of cooperation as the cooperative learning (Manning and Lucking, 1991). Cooperative learning is one of the most important strategies of teaching, which seeks to promote cooperation and interaction between students and remove the negative trend of competition among them, which leads to a kind of individuality, disincentives and lack of participation with others (Slavin, 1994).

Cohen (1994) introduced cooperative learning as the common work that has been in the form of small groups, through which students work with each other to ensure that each student participates sufficiently in the action or collective duty has been clearly identified. And, Johnson and Johnson (1992) introduced cooperative learning as the participation of students in the work to achieve the goals. And Saydawi (1992) introduced cooperative learning as "the establishment of a micro-heterogeneous group of students, work in an effective cooperation to achieve goals, in the framework of the acquisition of any academic or social return to them as a group and as individuals, the benefits will be greater than their total individual ones".

As defined by Al-Hashimi (1996), cooperative learning was "the type of classroom learning in which students learn together in small heterogeneous groups including students from various levels of performance (high, medium and low), but homogeneous in terms of the level of capabilities in the classroom as much as possible. And these groups work to achieve collective and unified goals".

### **Positive contributions for cooperative learning in the educational process**

The cooperative learning method of teaching is the most widespread and common method in Western countries for the time being because of its present characteristics which enabled it to contribute effectively to activate the role of the educational process more than other traditional instructional methods. Studies cited a series of positive contributions for cooperative learning in the educational field, the most important of which are Abu O'Meara (1997) and Guyton (1991):

- The possibility of covering more information about the study subject.
- Improving learning through active participation of students with each other.
- Provide a suitable educational environment of appropriate action to support and promote teamwork and collaboration between students and increase internal motivation.
- Provision of appropriate educational opportunities through which a combination of models and teaching methods are used.
- Promote respect for the opinions and views of others.
- Use more thought processes and enhance creative thinking.
- Raising the level of academic achievement and degrees rate of the students' tests.
- Retention of learning impact for a longer period.
- Developing of positive school teachers attitudes towards the education process, to feel comfortable and accept others.
- Increase in the collective communication between students and the strong sense of belonging to the group.
- Accept their colleague as a source of knowledge and information.
- The provision of social communication mechanisms, to allow exchange of ideas and ask questions freely.

### **Conditions for the cooperative learning application**

The educational specialists have pointed some important aspects to be considered when cooperative learning is used (Stahle, 1992). They are:

- Groups of students should be heterogeneous as much as possible.
- Teacher and students should prepare individual and collective objectives clearly and concisely.
- Determination of what is required to be done by everyone in each group.
- Motivating superior individuals and groups.
- Distributing students in small groups of 2-6 students in each one.
- The dialogue and debate within the group should be face to face.
- The teacher's role should be guidance and counseling only.

### **Previous Studies**

#### **Abdul Rahim and Al-Shakili study (2005)**

This study aimed to determine the impact of the cooperative education strategy on academic achievement and retention of information and trends of students. The students were given an achievement test, and a scale was distributed to measure trends. Then the achievement test was given to students to measure retained information after 3 weeks of the first test. Results showed that there was no significant statistical differences in the achievement or retention of information between the two groups of study (cooperative / traditional), while showed significant statistical differences in the trends towards the teaching method for the benefit of cooperative learning group.

#### **Atencio study (2004)**

This observational study examined the classroom dynamics occurring in a collaborative math lab activity in a third-grade classroom. Specific classroom interactions are identified as resources for cultivating children's interest and understanding of mathematical knowledge. Eisner's evaluation model of Educational Connoisseurship and Criticism is adopted. The results revealed that collaborative classroom activities impacted children learning and motivation.

#### **Baker and Campbell study (2005)**

This study examined the impact of both ability and self-efficacy on collaborative learning group success. Undergraduate college students in an

advanced math class were videotaped as they worked on three mathematical proofs. Findings indicated that both ability and self-efficacy were needed for collaborative learning group success.

#### **Benero study (2000)**

This study project aimed to generate more interest in math, reduce math anxiety, and make math more enjoyable for students through the use of cooperative learning. Results indicated that the use of cooperative learning generated more interest in math and made it more enjoyable for both students and teachers. Students improved academically, socially, and in self-esteem.

#### **Duncan and Dick study (2000)**

This study aimed to describe the Treisman model which involves supplemental workshops in which college students solve problems in collaborative learning groups. The results revealed a significant effect on achievement favoring Math Excel students.

#### **Hijazi study (2003)**

The study aimed to identify the effectiveness of collaborative learning strategy in science achievement of primary pupils and attitudes towards collective action. The study sample included 124 pupils, 67 were an experimental group, and 57 were a control group. The study used achievement test, and a scale to measure the fifth grade of primary school pupils' trend towards cooperative teamwork. The findings of the study showed that the differences are statistically significant between the means of pupils test, and trends towards collective action for the benefit of the experimental group.

#### **Hsu and Wang study(2002)**

This study aimed to develop an Internet Collaborative Learning Behavior Scale to measure the learning behavior of Taiwan's eighth graders in their learning of the "Pythagorean Theorem". The 44-item Internet collaborative learning behavior scale (ICLBS) was used for the analysis. The preliminary results revealed that a model with five factors deriving from 39 items was the best model.

#### **Hwang, Chen and Hsu study (2006)**

The purpose of this study was to create a new online mathematical learning model that students do not only use electronic whiteboard to write down their mathematical problem solving solutions, but also use voice recording tool to give oral explanations about their thinking behind the solutions to cultivate

students' critical thinking capability and encourage collaborative peer learning. The results showed that the multimedia whiteboard system helped students with learning fractional division. Most students were interested in studying mathematics with the multimedia whiteboard system and thought that this tool is particularly useful for doing collaborative learning.

#### **Liu study (2005)**

This study examined the usefulness of a networked portfolio assessment system for cooperative learning. Students answered a post questionnaire that measured their attitudes toward the system. The quantitative results revealed that the students' achievements increased significantly and more students were willing to join the learning activities similar to this study.

#### **Moore study (2005)**

This study investigated the impact of a cooperative learning calculus program on the first-year calculus experience of non-Asian ethnic minority engineering students. It addresses the issue of collegiate mathematics achievement of underrepresented minority students. Findings indicated that the cooperative learning calculus program has been successful in improving retention and academic success rates for colored freshmen engineering students.

#### **Obeidat study (2005)**

This study aimed to investigate trends in demand for English language teachers and teachers of Arabic language, science and mathematics to four areas associated with: (1) collaborative learning in terms of interest, (2) the role of the teacher, (3) characteristics of the group, and (4) sample size. The study sample was formed of 150 students from the area allocated to teachers in English language materials and the Arabic language, science and mathematics. The results of the survey indicated a lack of statistical significant differences between the trends in humanitarian items (English, Arabic) and science items (science, mathematics) to the four dimensions in general.

#### **Panitz study (2000)**

This study described one approach to implementing cooperative learning in mathematics classes virtually 100% of the time hoping that teachers will be encouraged to try cooperative learning at least part of the time in their classrooms. Results concluded that cooperative learning

techniques, when used extensively in mathematics classes, generate many advantages for students and teachers.

#### **Puntambekar study (2006)**

This research discussed the analysis of the process of collaborative interactions based on three dimensions—divergence of ideas, collaborative knowledge building and construction to understand how collaborative interactions develop over time: whether students raise new issues (ideas) more frequently as they become more familiar with the discussion and discussants, and whether shared knowledge building becomes richer over time, and subsequent evidence that students were able to construct their own understanding based on their interactions with others. Results showed that individuals bring divergent ideas into a collaborative environment, and created new understandings based on the discussions that they have had.

#### **Steelman study (2005)**

This study described the use of multimedia in collaborative student projects dealing with many subjects, including science, math, language arts, and art. Teachers involved in these projects stated that the students gained knowledge and applied critical thinking skills when involved in these projects, and the involvement in these projects gave them an audience, a purpose, and a direction.

#### **Yamaguchi and Maehr study (2003)**

This multi-method study showed how children conceptualize emergent leadership in collaborative learning groups, and whether emergent leadership was associated with student achievement motivation. Fourth and fifth grade students participated in a collaborative math activity. 294 students were surveyed on their achievement orientation and emergence of leadership. This study shows the importance of including emergent leadership in the study of collaborative learning groups to enhance student achievement motivation.

### **Procedure and Study Sample**

The study population was the total students in the sixth grade of primary school in Makkah during the first semester of the academic year 1427/1428 H. The selection of one school and two classes from the school has been done out because of the required qualification and experience of the teacher, student ages, the environment around, and the economic level. The students who remained in the sixth grade

class from the last year were kept away. The sample of the study was formed of 59 students from the sixth grade which were randomly distributed into two groups: Experimental group of 30 students, who had been teaching in a cooperative learning method, and control group of 29 students, who had been teaching in a traditional method. The t-test has been used to measure the differences between the average rates of the annual achievement at the school in the academic year 1426/1427H., as shown in Table 1 below.

**Table 1. Means, standard deviations and t value for cumulative academic achievement of the study groups**

The Group	No.	Mean	S.D.	t	Sig.
Control group	29	2.65	0.87	1.890	Not Sig.
Experimental group	30	2.43	0.72		

Table 1 shows that there is no statistical significance differences between the means of the annual achievement for the two groups. This indicates that the two groups are equal in their annual academic achievement.

To test the need of the two groups to study the decimal fractions chapter, the researcher used the achievement test—which is prepared by him—as a pre-test. The highest degree obtained by members of the experimental group) was 4 out of 25, compared to 4 out of 25 obtained by the control group. The lowest degree obtained by the members of the two groups of the study was zero. This shows the need of each group to study the decimal fractions chapter information. The researcher used the t-test to compare the differences between the two groups' means. The results of the t-test were showed in Table 2 below.

**Table 2. Means, standard deviations and t value for the performance on the pre-test by the study groups**

The Group	No.	Mean	S.D.	t	Sig.
Control group	29	1.64	0.48	0.909	Not Sig.
Experimental group	30	1.23	0.39		

Table 2 showed that there is no statistical significance differences between the means of the students performance on the pre-test. This indicated the need of the two groups to study the decimal fractions chapter information.

### The study instrument

The researcher used an achievement test which has been prepared as follows:

1. The achievement test consisted of 34 questions in its preliminary stage, which measures the levels of knowledge, comprehension and application.
2. The verification of the validity of the study instrument took place by holding the content validity by a jury of 10 experts in the fields of psychology, mathematics, curricula and teaching methods. With regard to the results of the arbitration, some paragraphs had been deleted and amendments are made to others. The achievement test at the final version consisted of 20 questions (the Appendix).
3. Mid-split method was used to establish the reliability of the test. The half correlation coefficient was 0.79. The application of the Spire Man Brown equation showed a consistency factor of 0.91, a high coefficient which confirms a high degree of reliability for the test.

### Experimental procedure

1. The experiment conducted at the beginning of the first half of the academic year 1427/1428 H. in the decimal fractions section of the book of mathematics for the sixth grade of primary school in Holy Makkah, Saudi Arabia.
2. The achievement test was applied at the beginning of the second semester by the study sample as a pre-test to ensure the equivalent of the groups and their need to study the experimental content.
3. The experimental group was taught by cooperative learning method through the rearrangement of the content to fit with the strategy of cooperative learning. The control group was taught by the traditional method. The experiment spent a period of four weeks.
4. The achievement test was applied after four weeks, by the experimental and control groups.
5. The achievement test was applied for the third time by the sample of the study after 30 days from the end of the experiment to determine the retention of students in the mathematics concepts that had been taught in advance. As it was stated in previous studies, the period of 30 days was considered as an appropriate period of time to know the extent of the mathematics concepts retention.
6. The researcher adopted a rating system on the basis of test degrees: one degree for the correct answer, and zero degree for the wrong one because it lined with the type of the test questions.

7. The researcher held three meetings before the starting of the experience with the teacher of the two groups in order to explain the content and how to implement the program. He also held two meetings during the follow-up of the experience to overcome difficulties that may be encountered.

### **The Results and Interpretations of the Study**

#### **The first hypothesis**

"There are no statistical significance differences at the level (0.05) in academic achievement between students who studied using the cooperative learning method (experimental group), and those who studied using the traditional method (control group)".

To verify the validity of this hypothesis, the statistical significance of the differences between the means of the experimental and control group had been calculated, and the value of *t* was extracted as shown in Table 3.

**Table 3. Means, standard deviations and t value for the achievement of the study groups**

The Group	No.	Mean	S.D.	t	Sig.
Control group	29	18.5	3.69	5.724	Sig.
Experimental group	30	23	2.85		

Table 3 shows a statistical significance difference at the level (0.05) between the means of performance at the achievement test by the experimental and control groups for the benefit of the experimental group, where the means of the experimental group was 23, and 18.5 for the control group. This result shows that the first hypothesis was rejected, and confirms the effect of the use of the cooperative learning method in teaching mathematics. The results showed a low level of performance for the control group in the achievement test compared with the level of performance of the experimental group. The researcher found that this might be due to several reasons including:

- It had been due to the fact that the teacher focuses on the traditional method in teaching the control group, which relies on putting information on a theoretical narrative without regulation, integration and arrangement for the concepts and scientific principles, incomplete tools and disorganized steps of the experiment, which

contributes greatly to the low level of students' achievement.

- Perhaps the low level of performance of the control group was because of the lack of the traditional method interest on the observance of the nature of the learner, needs, wishes and applications of scientific concepts. Focusing on the theoretical part of the work other than the applied one affects the students' desire to study it, which leads to the low level of performance.
- The traditional method does not deal with mathematics as integrated concepts and principles, but as different and divergent issues.
- It may be due to the lack of reinforcement and principle feedback in teaching the control group, which contributed to the low level of student achievement.
- Students who were taught through the traditional method did not find the opportunity to meet their needs and wishes.

Table 3 showed that education through cooperative learning was better than the traditional way of teaching in improving the academic achievement of students. This may be due to the advantages of the method of cooperative learning which are as follows:

- Addressing the scientific concepts through different activities makes students more interesting, more exciting and more participating.
- Diversity of introducing principles, concepts and skills.
- Providing opportunities for dialogue and free debate gave special consideration to the intelligence, abilities and inclinations of students at the primary stage.
- Pre-, mid- and final evaluations were considered.
- Direct reinforcement was considered during the process of implementing various activities for learning principles, concepts and skills.
- Providing an opportunity for group members to learn from each other.

Moreover, the results are consistent with previous studies (Atencio, 2004; Bernero, 2000; Duncan and Dick, 2000; Hijazi, 2003; Liu, 2005) and provide further evidence of the effect of cooperative learning on mathematics achievement. On the other hand, they are inconsistent with Abdul Rahim and Al-Shakili (2005) study results.

### The second hypothesis

"There is no statistical significance differences at the level (0.05) in the retention of mathematical concepts learning between students who studied using the cooperative learning method (experimental group), and those who studied using the traditional method (control group)".

To test the verification of this hypothesis, the researcher distributed the achievement test for the third time after 30 days from the end of the experiment. Then compared the results with the results of the final achievement test of each group to calculate the average retention by each.

The researcher used the t-test to compare the means of performance of the two groups of the study on the retention test. The results were as shown in Table 4 bellow.

**Table 4. Means, standard deviations and t value for the retention of the mathematical concepts by the study groups**

The Group	No.	Mean	S.D.	t	Sig.
Control group	29	12.04	2.52	2.925	Sig.
Experimental group	30	14.22	3.15		

Table 4 above showed that there was a statistical significance difference at the level (0.05) between the means of performance on the retention test for the benefit of the experimental group, where the mean of the experimental group in the retention test was 14.22, while it was 12.04 for the control group. This result clearly supports the rejection of the second hypothesis, and confirms the effect of the cooperative learning programs—which are applied by the study—in the retention of mathematical concepts. The results showed the low level of performance in the retention of mathematical concepts by the control group compared to the experimental group. The researcher believes that this is due to:

- The ability of the cooperative learning to develop the mathematics skills, and improve learning more than the traditional method.
- Lack of better connection between different mathematics concepts' information when using the traditional method.
- Teachers insure the understanding of the concepts in cooperative learning more than in traditional one.

Moreover, the results of this study are consistent with a previous study (Moore, 2005) and provide further evidence of the effect of cooperative learning

on mathematics concepts retention. On the other hand, they are inconsistent with Abdul Rahim and Al-Shakili (2005) study results.

### Recommendations and Proposals

Referring to the results of the study some recommendations and proposals could come up as follows:

- 1) Re-planning and organization of the contents of teaching math to include different activities that facilitate the operations of cooperative learning—together—with the concepts, principles and scientific skills.
- 2) Training courses for the rehabilitation of mathematical teachers in the area of cooperative learning to enable them to improve the standard of their students in the achievement of math.
- 3) Developing new ways of evaluation to measure the students' achievement in the subject of math, making use of the test prepared by this study to design similar mathematical tests.
- 4) Encourage other teachers to practice and use cooperative learning method in teaching all other subjects.
- 5) Conduct similar studies on a larger sample than the current study sample so as to reach better results.
- 6) Conduct studies in the following areas:
  - The impact of the use of cooperative learning in math on the creative thinking in all stages of basic education.
  - The role of cooperative learning strategic in the integration between the different branches of math.
  - The difficulties that face the use of cooperative learning in math at the primary school.

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## Appendix

### The Achievement Test

**1. Fill in the spaces using the appropriate number:**

- 1) .....  $\times 10 = 37.5$       2)  $400 \div 100 = \dots\dots\dots$   
 3)  $0.0025 \div 1000 = \dots\dots\dots$       4)  $10 \times \dots\dots\dots = 4.13$   
 5) .....  $\times 100 = 1.24$       6)  $0.02 \div \dots\dots\dots = 0.00002$
- 

**2. Put (T) next to the right statement and (F) next to the wrong one:**

- A)  $0.13 \times 5 = 0.65$     (    )      B)  $2.2 \div 2 = 1.1$     (    )  
 C)  $0.17 - 5 = 0$         (    )      D)  $0.17 + 5 = 6$      (    )  
 E)  $2.2 \times 2 = 0.44$     (    )
- 

**3. Circle the correct answer:**

- 1)  $5 \div 1000 =$   
 (a) 0.0005      (b) 0.005      (c) 0.05
- 2)  $11.52 \times 3.45 =$   
 (a) 9744      (b) 39.744      (c) 397.44
- 3)  $400 \div 100 =$   
 (a) 0.04      (b) 4      (c) 0.4
- 4)  $28 \div 40 =$   
 (a) 0.14      (b) 0.7      (c) 0.07
- 

**4. Attach from Column (A) with the appropriate from Column (B):**

(A)

0.0912
0.912
0.00912
9.12
91.2
912

(B)

$9.12 \times 0.1$
$9.12 \times 100$
$9.12 \times 10$
$9.12 \times 0.01$
$9.12 \div 1000$

**The End**

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(قدم للنشر في ٢٧/٠٤/١٤٢٨هـ؛ وقبل للنشر في ١٥/٠٣/١٤٢٩هـ)

: التعلم، الأثر، التعاوني، التحصيل، الرياضيات، المفاهيم، الاحتفاظ، المدرسة، الابتدائية.

. هدفت هذه الدراسة إلى التعرف على أثر التعلم التعاوني على التحصيل الدراسي والاحتفاظ بأثر تعلم المفاهيم الرياضية لدى تلاميذ الصف السادس من المرحلة الابتدائية بمدينة مكة المكرمة بالمملكة العربية السعودية. هذا وقد اشتملت عينة الدراسة على ٥٩ تلميذاً موزعين على مجموعتين: المجموعة الضابطة (٢٩ تلميذاً) وقد تم تدريسها المفاهيم الرياضية باستخدام الطريقة التقليدية، والمجموعة التجريبية (٣٠ تلميذاً) وقد تم تدريسها المفاهيم الرياضية باستخدام إستراتيجية التعلم التعاوني. واستخدم الباحث اختبار تحصيلي كأداة لجمع معلومات الدراسة وبياناتها، ثم استُخدمت التكرارات والنسب المئوية والمتوسطات الحسابية والانحرافات المعيارية واختبار (ت) (t-test) لتحليل معلومات الدراسة وبياناتها.

تلخصت أهم النتائج في أنه توجد فروق لها دلالة إحصائية عند مستوى الدلالة (٠.٠٥) في التحصيل الدراسي وفي الاحتفاظ بأثر التعلم بين التلاميذ الذين درسوا باستخدام أسلوب التعلم التعاوني (المجموعة التجريبية) والتلاميذ الذين درسوا باستخدام الطريقة التقليدية (المجموعة الضابطة) لصالح المجموعة التجريبية.



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