

The Impact of Using Cooperative Learning Strategy on Achievement of Students with Math Learning Disabilities

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Abstract The present study is an attempt to identify the impact of using cooperative learning strategy on the achievement of students with Math Learning Disabilities. The authors selected two units in the second grade primary Mathematics book, then made an achievement test, whose reliability and validity were verified. Sampling consisted of (34) male and female students in Zarqa, Jordan. They were equally divided into two groups: control (8 male students and 9 female students) and experimental (8 male students and 9 female students). Pre and post achievement test was applied. Students of the experimental group were taught for nine weeks using cooperative learning strategy, while students of the control group were taught using traditional method. Results of T Test and One-way Analysis of Variance (ANOVA) showed no statistically significant differences at significance level of achievement test due to the experimental and control group's variable. This result supposes both groups' equivalence prior to application, there are no statistically significant differences between means of both groups on post-total scale due to gender, there are statistically significant differences between means of both groups in post achievement test due to (experimental and control) variable, and these differences were in favor of the experimental group.

Keywords: learning disabilities, cooperative learning, resource room, Mathematics

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1. Introduction

Recently, teaching the individuals with special needs has greatly increased. Paying them attention has become a challenge for communities because disability is comprehensively prevalent within them. Results indicate that 10% of the community members suffer from disability. Thus, it's essential to provide them with special learning programs and to use teaching methods and strategies appropriate for them [15]. Since its emergence, Special Education distinctively focused on individual differences, convenience of learning and environment and teaching strategies to enable the students to do their best according to their potential. Teaching delivered for students with special needs is different from that delivered for students without special needs who are in the same age and grade [23].

1.1. Definition of Learning Disabilities

Various definitions of learning disabilities have emerged; the most famous one is that of the Federal Government in the USA: They are disorders in one or more of basic psychological processes involved in grasping and using written or spoken language which express itself through lack of the capability of listening,

thinking, speaking, writing, spelling or doing mathematical operations. The definition also involves cases of cognitive disability, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. It doesn't involve learning problems that result from sensory, motor and mental disability, emotional disorder and environmental, cultural and economic disorder [28]. Although the individuals with special needs represent heterogeneous groups, they suffer from the same problem; they can't learn efficiently as their normal peers. They have normal mental capabilities, but their academic performance is remarkably lower than their normal mental capabilities. Additionally, some have many problems in learning mathematics, reading or writing [19].

1.2. Classification of Learning Disabilities

I. Developmental Learning disabilities:

They stand for cognitive processes, such as: attention, perception, memory, thinking and language, which involve the most significant bases on which the individual's cognitive mental activity is based. Thus any disorder that occurs in one process or more, results in several academic disabilities [2].

II. Academic Learning disabilities:

Ads [17] indicates that academic learning disabilities refer to reading disabilities which result from lack of

concentration and attention, thereby approximately 85% of students were classified as individuals with learning disabilities. Paying more attention to learning reading rather than the other courses resulted in this high rate.

1.3. Characteristics of Students with Learning Disabilities

They are classified into four major problems as follows:

I. Academic Achievement Problems: They are noticeable problems among students with learning disabilities. If it weren't for them, there wouldn't be a group suffering from learning disabilities. Students have learning disabilities in reading, written and spoken language and arithmetic.

A. Reading Problems: It is the biggest problem for those students. Students often face main problems related to reading process, such as: disassembling characters, fluency and reading comprehension [19].

B. Written Language Problems: They involve problems related to handwriting, spelling and dictation [23].

C. Spoken (Oral) Language Problems: Students with learning disabilities have problems with grammar of language as well as grasping meanings of some words [21].

D. Math. Problems: Students with learning disabilities substantially face problems related to quantitative thinking which is essential for finding out quantities, concepts and significance of numbers. They also have problems with doing mathematical operations, defining ascending and descending order of numbers and distinguishing between similar numbers with different direction such as (2, 6) [3].

II. Cognitive and Memory Problems: Botrus [4] indicates that students with learning disabilities have memory problems, so they can't remember a lot of information, assignments and facts.

III. Emotional and Social Problems: Students with learning disabilities have problems with defining social customs, refusing peers and making friends.

IV. Motivation Problems: Those students show Learned Helplessness which stands for tendency to despair, submission and optimism because they see that they will certainly fail if they try [19,23].

1.4. Resource Room

The team which makes the individual learning plan for the student with learning disability has to provide him with learning environment that involves all essential opportunities to meet his academic, social and emotional needs. Researchers disagree on the most appropriate environment for him. Defining the most appropriate environment is based on the student's capability of learning with his normal peers without harming them, on the other hand, the student's achievement level, skills and mental performance and the teacher's capability of dealing with him [21]. Kauffman and Hallahan [23] argues that various terms have recently appeared on alleviation in learning environments, such as Mainstreaming and Least Restrictive Environment and other rules which urge to teach students with learning difficulties in least restrictive environments and transfer them from normal classrooms because their disability hinders meeting their needs in

such classes. According to Ellala, et al [15], resource room is a classroom where educational services are provided to those students for a definite time during the day, and then they return to normal classroom. A teacher, specialized in Special Education or learning difficulties, teaches in such classroom and discusses the student's state with normal teacher. Accordingly, they design a individual and appropriate educational program. Resource rooms are equipped with teaching aids and tools appropriate for teaching such students. They have the following advantages:

- Student socializes with his classmates who are the same age and benefit from the exercises of resource room.
- They are less costly and provide service for many children with learning difficulties.
- They have no stigma when dealing with such students.
- They contain equipment, devices and aids essential for teaching and assessing such students [10].

Reports of The American Council on Education (ACE) in 2000 indicate that 44% of those students, aged 6 to 12, get their education in normal classrooms, 39% learn in resource rooms and 16 % learn in special separated classrooms [19,21]. Accordingly, resource room is one of special education alternatives, provided for those with learning difficulties, and a good choice for students who can't learn in normal classrooms.

1.5. Cooperative Learning

Recently, educators have paid more attention to the activities that make student the main focus of learning process. Cooperative learning method is the most remarkable activity. Mercer [25] claims that teachers of special and general education paid more attention to cooperative learning in the last few years. Recent studies indicated that cooperative learning greatly and significantly affects the conditions that make inclusion programs, designed for students with special needs at normal schools, successful. Elkhateeb [9] indicates that it's normal for special education educators to used cooperative model instead of competitive one because it's appropriate for students with special needs and normal ones. Development of communities necessitates cooperation among its members to achieve common objectives.

1.6. Definition of Cooperative Learning

According to Johnson et al. [5], cooperative learning is learning with small groups; (2-6) students to be able to work cooperatively and effectively help each other to improve their level, and achieve their common learning objective. It also involves that students are compared pre-prepared criteria to stimulate their advance and development in their assigned tasks.

Principles of Cooperative Learning:

To achieve its objectives, Cooperative Learning should involve the following principles:

1. Positive Mutual Reliance: Each individual is in charge of the others' achievement. Thus, participants have to coordinate their efforts to carry out their task successfully [11].

2. Team Individual Responsibility: Each individual is in charge of his learning and the other participants to achieve their common objectives effectively [18].
3. Direct Motivating Interaction: Cooperative Learning necessitates direct interaction among students to enhance their learning and success [7].
4. Team and individual accountability: Main principle of Cooperative Learning is individual accountability which assesses each student's performance and attributes success to the individual and group.
5. Making sure of each individual's responsibility for the final result: When it's hard to define the responsibility of each participant, some may flag, attempting to obtain success for free.
6. Individuals' social skills: Teaching the participants social skills which cooperation necessitates communicating with each other confidently support each other and settle their disputes positively [13].
7. Treating Groups' Work: Individuals discuss and analyze their success in achieving objectives, define their obstacles and make relevant decisions [20].

1.7. Advantages of Cooperative Learning

Johnson and Johnson [22] point out that result of recent academic researches indicated that cooperative learning is more beneficial than individual and competitive learning in terms of relations between students with special needs and normal students, academic achievement and motivation. Many academic evidences verify that cooperative learning develops positive associations among students and provides them with various benefits such as: Positive interaction among students, being academically successful, acceptance of themselves as the others' and feeling motivated [8]; increasing academic achievement and motivation, and memorizing information for a long time [5]; training students on solving problems, teamwork and cooperation, getting rid of routine and creating activity and liveliness in classrooms, increasing the attention of the students with special needs and forming better attitudes towards school and teachers [13].

1.8. Forms of Cooperative Learning

Cooperative Learning comprises many forms, which enable learners to cooperate, such as:

1. Student Teams-Achievement Divisions (STAD): This method is used most and can be applied in all educational stages. It involves dividing students into groups (2-6 students) with different achievement. After the teacher provides the material, participants of the group cooperate and help each other to master it well. It also involves providing tests in which no one helps the other. Student's score is attributed to his team. The team, which gets the highest score, gets moral and financial rewards [14].
2. Cooperative Integration of Separated Information (Jigsaw Strategy): The pioneer of Jigsaw strategy is called Aronson Jigsaw (1987). It is based on dividing students into heterogeneous groups, each group consist of 4-5 participants. Content of the course is divided into parts. In each group, students aren't provided the same information, so each

student will be specialized in a specific portion of the study subject. Then, the members of different groups assigned the same part hold a discussion meeting. After that, each member joins his original group to explain to them what he has learned from his specific assignment. As a result, they will be cooperative and exchange information. Assessment is individual and collective [7].

3. Learning Together: In this strategy, learners are divided into heterogeneous groups, each group consists of 3-6 participants working together and are in charge of the whole group. They help each other and exchange ideas not only with the participants of the same group but also with those of the other groups. Teacher distributes assignments to all participants, and then they cooperate to achieve common objectives. Accordingly, learning is based on the concept that the participants' learning is a collective responsibility; the participant cooperatively works and feels that he is in charge of his/her learning and his peers'

2. Literature Review

Shihab [27] aimed to investigate the impact of using cooperative learning strategy on the achievement of students with learning difficulties in Mathematics in Amman. Sampling consisted of 50 sixth primary grade male and female students. They were distributed into two experimental groups and two control groups involving both genders. Results showed that there are differences in the students' achievement test favoring the experimental groups which applied cooperative learning strategy, and there are no differences attributed to gender variable (males and females) in performance. Al Hassan [6] aimed to identify the impact of peer teaching as supportive and additional method to the traditional one used by teachers in classroom on learning, memorizing and generalizing the most frequent words in language among the first elementary grade students. Sampling consisted of 6 first elementary grade male and female students with low achievement and reading disabilities. Results showed that there is functional relation between peer teaching and learning words, students learned more words during teaching stage and this method helped to memorize and generalize them. Obidat [16] investigated the impact of using cooperative learning strategy on the achievement of students with low achievement in mathematics and their social interactions. Sampling consisted of 20 male and female students with learning difficulties and 80 normal students in the fifth grade. Results showed that there are differences in the mean of students' achievement and social interactions between the experimental and control groups favoring students applying cooperative method strategy. After the follow-up test, performance of the experimental group in the achievement test and social interactions' scale hasn't changed. Kuntz, Mclaughlin and Howard [24] aimed to compare the impact of using cooperative learning versus the normal strategy (participant) on the performance of students with learning difficulties in answering mathematic problems from the third to the sixth grade in a school in Washington.

Sampling consisted of 8 students, aged (9-12) with learning difficulties. They were distributed to cooperative learning groups. Results revealed that there are statistically significant differences between both methods in favor of the cooperative one where students' performance was higher. Xin [29] aimed to investigate the impact of using computer based-cooperative learning strategy in teaching mathematics in an American school. Sampling consisted of 39 normal students and 25 ones with learning difficulties. They were randomly distributed to six groups; three applied the cooperative strategy and the others applied the traditional one. Results revealed that the experimental group excelled the control one in achievement. In addition, normal students of the traditional group don't favor the presence of students with learning difficulties unlike those of the experimental one. However, students with learning difficulties strongly favored cooperating with normal ones of the experimental group. Using computer improved the arithmetic skills of both groups, but its impact on the cooperative group was greater.

2.1. Commentary

The authors claim that most pieces of literature review are experimental ones. They also attempted to investigate the impact of using the strategy of cooperative learning in teaching either mathematics or other courses. Studies, such as those of Al Hassan [6], Obidat [16], Kuntz [24], Xin [29] revealed the positive impact of the strategy on the academic achievement of the students with learning difficulties.

The present study distinctively uses the the strategy of cooperative learning with students with learning difficulties because resource room is the most used alternative for the educational adaptation of students with learning difficulties in Jordan at the present. In addition, students' learning in normal classroom is still low due to the large numbers of students. Sometimes, students study in resource room. Using sampling consisting of students with learning difficulties and normal ones, the present study is different from that of Obidat [16] and Xin [29].

2.2. Statement of the Problem

The present study attempts to use the strategy of cooperative learning in teaching mathematics to the second primary grade students with learning difficulties in Jordan's resource rooms and investigate its impact on achievement. Accordingly, the problem of the study is defined in the following main question: *What is the impact of using the strategy of cooperative learning on the achievement of students with learning disabilities in Mathematics?*

The aforementioned question involves the following sub-questions:

Questions of the Study:

1. Are there statistically significant differences in achievement between means of experimental group students and those of the control group students due to teaching methods?
2. Are there statistically significant differences in achievement between the means of experimental

group students and those of the control group students due to gender?

2.3. Significance

The significance of the current study lies in:

- Drawing the attention of learning difficulties specialists to the significance of cooperative learning as a new teaching method for students with learning difficulties.
- Paying attention to providing learning environment appropriate for students with learning difficulties in mathematics to help them get rid of failure, increase their self-confidence, and overcome some problems, such as loneliness and resisting inclusion with their peers in learning process, that face children with learning difficulties.

2.4. Objectives

The current study aims at:

1. Identifying the effectiveness of using the strategy of cooperative learning in teaching mathematics to the second primary grade students with learning difficulties in Jordan's resource rooms.
2. Comparing teaching mathematics to the second primary grade students with learning difficulties using the strategy of cooperative learning and the traditional method based on explanation and individual direct teaching in resource room.
3. Designing programs to improve the strategies of teaching students with learning difficulties in mathematics.

2.5. Study Terms

Students with learning difficulties: Procedurally, they are the students who join resource rooms in public schools supervised by the Ministry of Education. Using tools approved by the Ministry, team, involving various specializations such as: specialist of Special Education, educator of learning difficulties, psychologist and guardian, classified them as individuals with learning difficulties.

Resource room: Procedurally, it is a private classroom, attached to normal school, where children individually or collectively learn basic skills of reading, writing and arithmetic for a definite time during the day. It involves educational aids and tools appropriate for students with learning difficulties. Educators, specialized in Special Education or learning difficulties, teach in such classrooms.

Cooperative Learning: Procedurally, it is teaching students in small groups (2-5) with different capabilities; they seek to achieve common objectives which the educator, who provides them with feedback, supervises and plans for.

Traditional Method: Procedurally, it is based individual learning which is conducted by the teacher who uses direct teaching or theoretical presentation strategy in classroom. While he is presenting them information and knowledge, students are listening and taking notes.

Achievement: It is the information and knowledge that learner gained. It is often stimulated by the student's scores in the test prepared by the author.

2.6. Limitations

The current study is limited to the second primary grade students with learning difficulties in resource rooms. Two chapters in mathematics course of the second primary grade: chapter one (numbers involved in 999) and chapter two (Addition involved in 999). It was conducted in the second semester of the academic year 2015/2016 which lasts for two months; the period of the strategy's training program application. It was applied in Zarqa city in The Hashemite Kingdom of Jordan. It involves various resources rooms for learning difficulties, so it provides appropriate sampling.

3. Methodology

The present study uses quasi experimental approach which is based on causal relation between two variables: independent and dependent variables.

Population:

Population involves students with learning difficulties in Zarqa's public schools. Specifically, First Zarqa's Directorate of education, second semester of the academic year 2015/2016)

Data, obtained by both authors from First Zarqa's Directorate of education, indicated that the number of schools involving resource rooms was 16; 13 female schools and 3 male schools. The number of the second primary grade male and female students with learning difficulties was 125; distributing as follows: 22 male students and 113 female students. Table 1 shows distribution of population according to gender and schools.

Table 1. Distribution of population according to gender and schools

Gender	No. of schools	No. of students with learning disabilities
Males	3	22
Females	13	103
Total	16	125

Sampling:

Sampling was randomly selected according to drawing method. Sampling consisted of four schools: two for females and two for males; Ramzy District Second School for Girls, Al Marwa Elementary School for Girls, Al Amir Mohamed Elementary School for Boys, Al Layth ibn Saad Elementary School for Boys. Students were randomly distributed to experimental and control groups as indicated in Table 2.

Table 2. Random Distribution of Schools to Experimental and Control Groups

Gender	Experimental Sampling	Control Sampling
Males	Al Amir Mohamed Elementary School for Boys	Al Layth ibn Saad Elementary School for Boys
Females	Ramzy District Second School for Girls	Al Marwa Elementary School for Girls

Accordingly, number of female and male students of the experimental sampling is 17 and that of the control one is 17, as well.

Table 3. Number of students in experimental and control group

Gender	Experimental Sampling	Control Sampling
Males	8	8
Females	9	9
Total	17	17
Total participants	34	

3.1. Tool of the Study

To achieve the objective of the study; identifying the impact of using cooperative learning strategy on the achievement of students with learning difficulties, both researchers prepared achievement test through selecting two units (numbers involved in 999) and (addition involved in 999) in mathematics book assigned for the second primary grade, as follows: defining behavioral objectives which handle the content; they focused on the first three levels in Bloom's Taxonomy: cognition, comprehension and application, preparing the test specifications and its 26 sections which were arranged according to their sequence in both units.

Test Validity:

Fifteen reviewers: Professors specialized in curricula and Teaching Methods at Faculty of Educational Sciences in The University of Jordan, supervisor on program of learning difficulties, and two teachers of learning disabilities examined the test. Their comments, modifications, including formulation, number and relevance of the questions were kept into account. Six questions were deleted and 12 sections were more modified. Accordingly, the test consisted of 20 questions; and the total mark is 100; 5 marks for each question.

Test Reliability:

Another sample (rather than sampling of the study) of the population was selected to conduct the test and get its reliability. Muta First Elementary School was selected for this purpose. The number of the second Elementary grade female and male students in resource room was 8. Researcher agreed with the school administration and teacher of resource room to conduct the test twice with a two-week interval under his supervision. It was verified, student's scores were collected to estimate validity coefficient based on Pearson Coefficient. Its rate was 88%; it's appropriate for the application of the study. Table 4 shows test reliability as follows:

Table 4. Test Reliability

Section	Reliability
1 st Unit Test (Numbers involved in 999)	.87
2 nd Unit Test (Addition involved in 999)	0.85
Final Test	0.88

3.2. Procedures of the Study

The author pays visits to schools, provides teachers with pre-test, explains them the instructions of its application, asks them to apply it to students and provides them with post-test. After applying pre-test and before training program, equivalence of experimental and control samples were verified based on the following aspects:

1. Grade Equivalence: sampling is devoted to 2nd grade primary students.

2. Diagnosis Equivalence: sampling is devoted to 2nd grade primary students with learning difficulties in mathematics according to diagnosis tests that The Ministry of Education in Jordan approves and teachers apply in resource rooms.
3. Educational Age: making sure that the participants are seven years old.
4. Performance Equivalence in Pre-Test: Students' scores in pre-test were close. Performance means of both groups were compared using T-test; performance was close and differences had no significance. [Table 5](#) shows the aforementioned aspects.

Table 5. T-test to compare the pre-test means

Means T-test					
	T-value	Degree of Freedom	Significance Level	Differences' Means	Standard Error
Score	.715	32	.480	2.05882	2.87800

T-test showed that there are no significance differences between both groups in pre-test. Significance level of T-value is higher than 0.05-that is, both groups are equivalent.

- Teachers were provided copies of both groups' post-test to be applied 8 weeks after training program according to the instructions.
- Checking performance in the test and conducting the appropriate statistical processing.

3.3. Methodology

The author adopted Quasi Experimental approach based on causal relationship between two variables: dependent and independent. Sampling was randomly selected, then it was distributed into two groups; experimental group applied cooperative learning method and control one applied traditional method. Moreover, pre-posttest was applied.

Statistical Processing: The author used Statistical package for social sciences (SPSS) to obtain the following:

A. Arithmetic means of comparisons and standard deviations, T-test (which compares between both groups' pre-test means to verify their equivalence) and One-Way ANOVA to define the effect of the independent variables on the dependent ones.

4. Results and Discussion

1st Question: Are there statistically significant differences in achievement between means of experimental group students and those of the control group students due to teaching methods?

Both authors estimated arithmetic means and standard deviations of the students' scores according to the group's variable (experimental and control). Results are shown in [Table 6](#) as follows

Table 6. Arithmetic means and standard deviations of the students' scores according to the group's variable (experimental and control)

Score	Group	Sample	Standard Deviation	Means
	Control	17	19.13.93	42.6471
	Experimental	17	9.69195	67.9412

The above-mentioned results indicate that the experimental group's means in post-test are 67.9412, whereas that of the control group is (42.65). Differences between them are 25.29, for the favor of experimental group. The author estimated T-value to identify significance of difference between both groups' arithmetic means. [Table 7](#) shows this aspect.

Table 7. T-test of the impact of the group variable on the achievement test scores using cooperative learning strategy with students with learning difficulties who learn in resource room

Scores	T-value	Freedom Degrees	Significance Level	Means' Difference
	4.863	32	.000	25.29412

[Table 7](#) shows that there are statistically significant differences ($\alpha \leq 0.05$) between both groups, for the favor of the experimental group. T-value was 4.87 with significance level (0.00). The author claims that applying the strategy of cooperative learning with students with learning difficulties has a great impact.

This result agrees with the results of several studies, such as [16,24,29], which verified the effectiveness of cooperative learning in improving the achievement of the students with learning difficulties in mathematics. It is also compatible with other studies conducted on students with learning difficulties to identify the effectiveness of cooperative learning in the students' achievement in other courses, such as Arabic language [6] and social studies [26]. The strategy is effective due to the following aspects:

- It is substantially based on mutual positive reliance among the participants; they work as one team and take over success. Thereby, the brilliant participant will help the other participants to achieve their common objectives effectively and get the best results as well.
- It motivates such students to learn and to get the best score through positive motivating interaction.
- It is a new method for the students with learning difficulties. It involves various teaching methods and motivates students to interact and focus. Participants support and motivate each other because it cooperative learning differs from the traditional individual method in which the students individually learn.
- It enables students to feel active and lively and overcome learning boredom in classroom. Accordingly, they will be motivated to carry out their assigned tasks and improve their performance. It makes them feel that they are academically successful. Teacher's assessment of groups while working provides them with feedback motivates them to interact and participate and helps them to perform well and avoid drawbacks.
- Collective and individual accountability in the strategy of cooperative learning obliges students to work together and motivate students with learning difficulties to ask for help, so they will collectively work and succeed.
- The present study indicates that cooperative learning strategy is an effective method for students with learning difficulties because they have individual differences and academic and social

different levels. Thus, it's appropriate for them. It is different from the traditional method which is based on the strategy of individual direct teaching. It also attributes the achievement improvement of the students with learning difficulties (the experimental group) to their positive and effective interaction due to the students' individual and collective role, and developing teamwork and cooperation among them.

Second Question: Are there statistically significant differences in achievement between the means of experimental group students and those of the control group students due to gender?

Both authors estimated arithmetic means and standard deviations of the sampling and performance scores in the test. Table 8 handles this aspect.

The author used Two Way ANOVA to identify significance of difference between both groups' arithmetic means. Table 9 shows this aspect.

Table 9 shows that there are no statistically significant differences ($\alpha \leq 0.05$) between both groups. F-value was .380 with significance level (.542); it's higher than significance level of the study ($\alpha \leq 0.05$). This means that the acceptance of null hypothesis which indicated that there are no statistically significant differences at significance level in the academic achievement of mathematics between students' means of both groups due to gender.

This agrees with some results of literature, such as Shihab [27], Abu Obaid [1], and Sarkhawa [12] that indicate that there are no significant essential differences between genders (males and females), whether they are normal, e.g. Sarkhawa [12] and Abu Obaid [1], or students with learning difficulties, e.g. Shihab [27]. According to

the table, it is noted that the value of the males' arithmetic means is (58.4375) which is less than that of the females of (52.5000). This is a simple and inessential. However there are psychological differences between the genders that affect their way of thinking as well as their communication and behavior and they are manifested in school, playing, home, or work, the current study agreed with the results of literature regarding the impact of the strategy between the genders, indicating that there are no differences in cooperative learning between males and females that are attributed to gender. In addition, they have approximate impact in learning based on cooperation and positive communication between the individuals.

5. Recommendations

The following recommendations are made:

1. Using cooperative learning strategy in teaching students with learning difficulties in Mathematics because of its positive impact on raising their achievement.
2. Using cooperative learning strategy in teaching the various subjects to normal students and those with learning difficulties.
3. Conducting studies on cooperative learning strategy using computer or software in students with learning difficulties to teach the various subjects, including Mathematics, as well as conducting studies on cooperative learning using other methods, e.g. Jigsaw Strategy and Student Teams-Achievement Divisions (STAD).

Table 8. Arithmetic means and standard deviations of the experimental and control groups' achievement according to gender

Gender	Group	Means	Standard Deviations	Sample
Male	Control	47.5000	22.83481	8
	Experimental	69.3750	4.95516	8
	Total	58.4375	19.55494	16
Female	Control	38.3333	15.20691	9
	Experimental	66.6667	12.74755	9
	Total	52.50000	19.94478	18
Total	Control	42.6471	19.13093	17
	Experimental	67.9412	9.69195	17
	Total	55.2941	19.69238	34

Table 9. One Way ANOVA between experimental and control groups

Source of Variance	Sum of Squares	Freedom Degree	Mean of Squares	F-value	Significance Level
Performance	5825.184	3	1941.728	8.355	.000
Interrelation between both groups	104248.621	1	104248.621	448.582	.000
Gender	298.621	1	298.621	1.285	.266
Group	5338.327	1	5338.327	22.971	.000
Group * Gender	88.327	1	88.327	.380	.542
Error	6971.875	30	232.396		
Total	116750.000	34			

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