Original Research Paper

The Effect of Grouping in Mathematics in Teachers' Views for the First Circle in Primary Schools-Sulaymaniyah, Iraq

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Abstract: Mathematics is one of the important subjects in school that can be used to measure a student's ability to learn and understand scientific equations. This study is done to determine the best method to teach mathematics and boost the sc1596-JMSSientific level of pupils in basic schools. The pupils' contributions in grouping make the lesson easier and more enjoyable among them. The identified problem is teaching pupils in the group method and its goal is to improve the group method in teachers' views. The method is descriptive and data analysis. Our objective is to clarify the effectiveness of grouping among pupils in the first circle in basic schools because in teaching mathematics using the grouping method helps pupils understand the subject better. To illustrate, the findings not only facilitate the further understanding of grouping strategy but also provide the teachers with a useful teaching method and a clue that they should use while teaching because each teacher, who participated in the questionnaire compared to their previous experience, believes that the best way to teach mathematics is grouping method.

Keywords: Group Method, Basic Schools, Pupils

Introduction

Grouping is a learning method in which pupils are divided into small, heterogeneous groups (with different levels of knowledge), and each group has between 2-5 members (Johnson and Johnson, 2008; Sharan, 1980). The pupils of one group cooperate to achieve common goals, objectives, or educational learning situations in which pupils work as groups in a positive mutual interaction where everyone feels responsible for learning and others' learning to achieve common aims.

In this study, the problem is how teachers can teach pupils in the basic schools by using the group method. The purpose of this research is to gather information about the subject through a questionnaire.

Several steps are suggested to be taken to solve and deal with the problem (Bales and Strodtbeck, 1951). First, let pupils be in charge of the group and select an appropriate team, then focus on the participation of attendees and give homework, after emphasizing the importance of cooperation between the teacher and pupils in identifying the problem, then collecting information and data from multiple sources under the supervision and guidance of the teacher to the pupils individually or collectively and then the classification of information is done, later put the tasks of the solution because the information is obtained by the pupils must be discussed, implemented and decomposed in the form of general provisions and verifying the validity of the hypotheses reached, then conclusions and finding a solution as a result of testing hypothesis, after that knowing the implications of the results achieved, then application and generalization and disclose the validity of the specific assumptions whether the results are acceptable or not and lastly listen to all ideas.

The study's objective is to develop the effectiveness of the member's contribution to the cooperative effort to achieve the objectives of the group. After learning about the most important elements and components of the cooperative educational situation, we now come back and know about cooperative learning. Collaborative learning is the relationship between groups of pupils. This relationship requires positive participation, individual responsibility, social skills, and finally constructive and direct interaction with others, which can be collections containing several standard sets. This allows us to enter new criteria for the group position (Constantinou and Gani, 1994; Joback and Reid, 1987).

Literature Review

From this study, it is understood that we need Mathematics lifelong as a beneficial material in our natural life. Table 1 gives a list of previous studies for group work in Mathematics. The literature on the group method.

Table 1: List of previous studies for group work in mathematics

The author's name	Year	Title
Vygotsky	1978	Interaction between learning and development
Good *et al.*	1989	Using work-groups in mathematics instruction
Mulryan	1995	Fifth and sixth graders' involvement and participation in cooperative small groups in Mathematics
Frobisher and Orton	1996	Introduction to Education: Insights into
Koçak *et al.*	2009	The importance of group work in Mathematics
Bayturan and Keşan	2012	The effect of computer-assisted instruction on the achievement and attitudes towards mathematics of students in mathematics education
Alshatri *et al.*	2019	Teaching aids effectiveness in learning mathematics

Vygotsky (1978), said that language is an important tool for creating and sharing mathematical knowledge. This is why pupils must share relevant mathematical information among themselves (Vygotsky, 1978). Learning mathematics is seen as an agreement through social interaction.

Then (Good *et al.*, 1989) showed that pupils generally spent more time doing the task especially in performing good work in groups rather than the entire classroom preparation. Pupils were also more active participants in the groups.

But the results of (Mulryan's, 1995) study showed that pupils generally spend more time on the task, especially more quality time.

Also, Frobisher, L. and Orton, A., in 1996, mentioned that the pupil's performance is the basic criterion for assessment and measurement defined in Mathematics Education (Frobisher and Orton, 1996; Koçak *et al.*, 2009), explained that group work helps pupils to improve critical thinking skills and solve problems, in 2012 (Bayturan and Keşan, 2012), data were collected using the Mathematics tests and attitude scales, his results showed that computer-assisted mathematics instruction significantly increased students success in mathematics lessons.

However, the experimental and control groups did not differ in students' attitudes towards mathematics.

Finally, Effective teaching aids in mathematics learning also play a key role in group formation in the classroom (Alshatri *et al.*, 2019).

Materials and Methods

The type of research includes the sampling method as well as the use of analytical methods. The participants who filled in the forms through a google form were seventy mathematics teachers. These educational technologies are new and different in their progress. Innovative technologies, in particular, the innovative method (SAVT) concerning the team method is very effective (Mukhamadovna *et al.*, 2020).

In this study, the data was collected, and then the analytical sampling method was used. In this research, a questionnaire was held for hundred (100) teachers as models within the city of Sulaymaniyah in Kurdistan-Iraq. For this reason, forms were given to 100 mathematics teachers in the

first circle in several basic schools but only seventy (70) teachers out of 100 answered the questions completely; that is to say, 70 forms were returned. This study consists of five phases, as shown in Fig. 1 is designed by LATEX software.

Results and Discussion

It is thought that this article is necessary to be published because most teachers believe that creating groups in the first circle in mathematics lessons is an effective tool for students to understand the subject easily. In this study, the opinions of seventy (70) teachers in different basic schools were taken about the group method for teaching mathematics in grades 1 to 3. It has been clear using the group method in learning Mathematics makes the lesson easier to develop the level of pupils' thinking and convey information in less time. Based on the results of the questionnaire which was directed to the teachers about students' group work in the class, the answers were different as shown in Table 2.
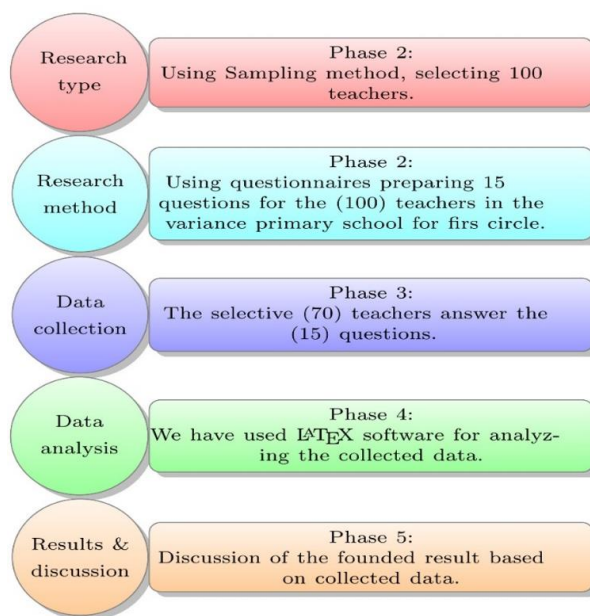

Fig. 1: The diagram shows the steps of the research processes

Table 2: Important questions to the participants in the questionnaire

| No.	Questions	Yes	Yes By %	Some extent	To some extent by %	No	No by %
Q1	Is this a suitable method for some subjects?	30	42.86%	16	22.86%	24	34.28%
Q2	Does the application of this method have a impact on the high level of scientific pupils?	34	48.56%	20	28.58%	16	22.86%
Q3	Does the application of this method have an interest in the ability of thinking and creativity by pupils?	26	37.14%	26	37.14%	18	25.72%
Q4	In the division pupils in the groups allow the level of intelligence and level of individual differences?	44	62.86%	16	22.86%	10	14.28%
Q5	Are the class and stuff inside the class that is suitable for applying this method?	10	14.28%	4	5.72%	56	80.00%
Q6	Do pupils in class help implement this method?	26	37.14%	18	25.72%	26	37.14%
Q7	Does the application of this method care about strong social relationships among pupils?	36	51.44%	22	31.42%	12	17.14%
Q8	Does the application of this method during teaching cause some pupils to neglect their duty and depend on their friends?	38	54.28%	26	37.14%	6	8.58%
Q9	Does the application of this method take a long time to the subject?	42	60.00%	12	17.14%	16	22.86%
Q10	Are pupils during learning this method, cooperating with their friends?	20	28.58%	34	48.56%	16	22.86%
Q11	Does the application of this method the the teacher can control the class?	46	65.72%	10	14.28%	14	20.00%
Q12	Learning by using the group method could help the weak pupils?	30	42.86%	18	25.72%	22	31.42%
Q13	Does this method help participate pupils secluded?	44	62.86%	16	22.86%	10	14.28%
Q14	Is using the group method a difficult task for teachers and pupils?	42	60.00%	16	22.86%	12	17.14%
Q15	Are the individual and groups exams easy in this method?	18	25.72%	18	25.72%	34	48.56%
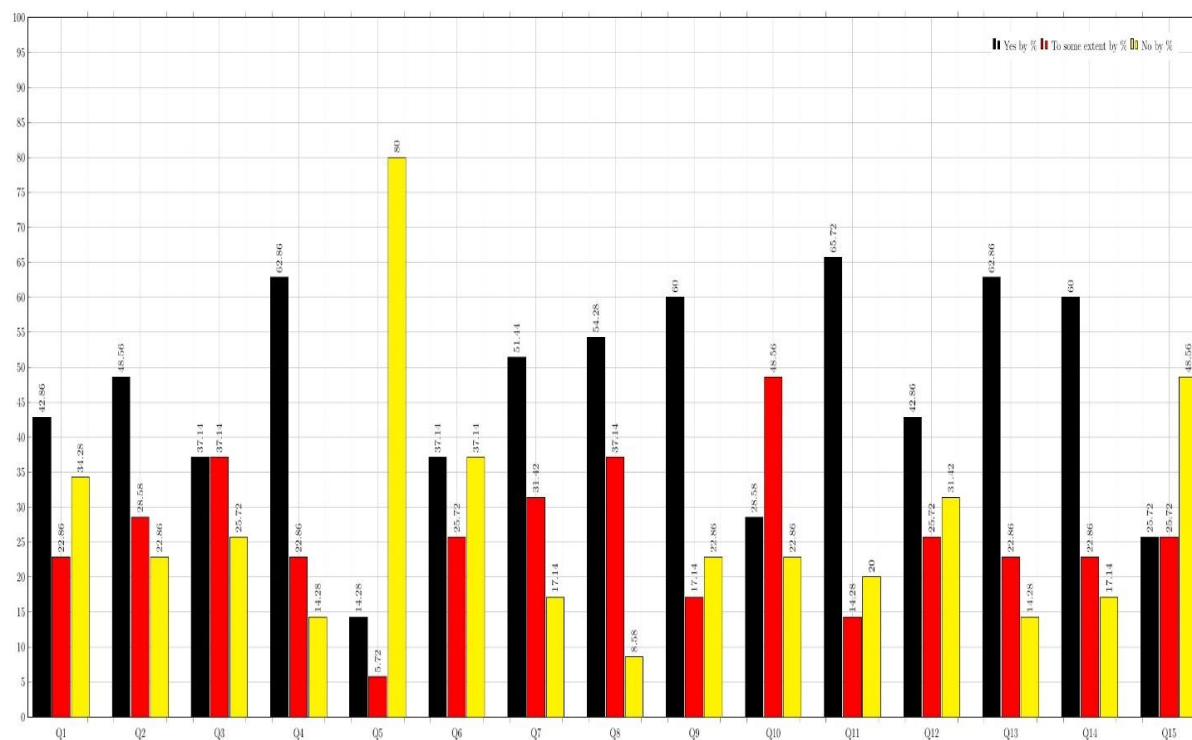
Fig. 2: Bar chart of answers to important questions from participations

Mathematically, we get Eq. (1):

$$X_i = N_i / 0.7, for \ i = 123...15, \qquad (1)$$

N_i = Number of teachers' answers (70)
X_i = Percentage of answers

For example, in Q1, there is ($N_1 = 30$ "Yes", that means $X_1 = 42.86\%$), ($N_1 = 16$ "To Some Extent", that means $X_1 = 22.86\%$) and ($N_1 = 30$ "No", that means $X_1 = 34.28\%$).

In Q2, there is ($N_2 = 34$ "Yes", that means $X_2 = 48.56\%$), ($N_2 = 20$ "To Some Extent", that means $X_2 = 22.86\%$) and ($N_2 = 30$ "No", that means $X_2 = 34.28\%$) and so on. In this study, it is been found that the use of groups in classrooms is the best solution for teachers to teach students scientifically and it is the easiest and best way to introduce students to mathematics in the first circle of primary school.

The provided bar chart illustrates the number of questions from (Q1-Q15) in the given three legends (Yes by %, To some by %, and No by %) as shown in Fig. 2 is designed by OriginLab software.

Conclusion

In conclusion:

- In the opinion of all teachers, group work is the best method for teaching mathematics and raising students' level
- It has a crucial role in teaching mathematics in primary schools as evidenced by the questionnaires
- Teamwork affects the pupils' social interaction and has positive effects on learning Mathematics
- The method is descriptive and data analysis
- The group method is the best and most effective way to raise pupils' scientific levels
- Effective teaching aids in learning mathematics play a key role in forming groups in the classroom (Alshatri *et al.*, 2019)
- Learning within groups is more effective as compared to academic success with competitive and individual learning systems
- It helps to improve attitudes toward Mathematics and to overcome math anxiety
- In this study, some suggestions are made to help those who are working on this subject, such as (using another approach, changing the scope of the work, and asking teachers more questions) so that they can get more detailed answers to compare their work with this proposed method

Author's Contributions

All authors equally contributed to this study.

Ethics

The authors address group work which is focused on how to train pupils to use this method correctly and precisely at this age and level of study.

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