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The compare the affect instruction in experimental and practical approach (with emphasis on play) to verbal approach on mathematics educational progress

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Abstract

This research aims at comparing practical and experimental approaches with emphasize on game with verbal approaches on the mathematic educational progress. The present research is an experimental research. At first researcher, divided students in 2 groups; then, both groups are measured by the pre-test. Experimental group had trained with verbal (traditional) approach; finally both groups are measured by the post-test. Results showed that practical and experimental approach is more appropriate.

Keywords: experimental and practical approach, verbal approach, educational progress

1. Introduction

There are various techniques for laughing which are appropriate for specific conditions and lessons ; therefore, teachers and syllabus designers should pay attention to educational objectives, course subject, students' characteristics, facilities, class atmosphere, time of the class, etc. and then select appropriate teaching methods. (Adibnia 2006).

In order to have accurate perceptions, students have to experience things in person, manipulate objects and understand relations directly.

National Council of Teachers of Mathematics (NCTM) in America and Canada have done numerous studies about teaching mathematics and have emphasized that the best method is the method in which students construct their math concepts themselves. (Men 2009).

Koezener box, believes that one of the best methods for teaching mathematic concepts is using this box and playing with the wooden cubes inside it (angeji, askari, 2006).

Discussion about teaching and learning mathematic is related to NCTM math standard that emphasizes on teaching math to elementary and preschool children through playing games so that it would be more effective. (Sivkiang 2003).

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At school, we should provide conditions in which children can play games involving concepts of measurement, numbers and quantities. Their playing is a basis for learning math in a natural approach, which is a trustworthy way. (Nice Magazine 2006).

The active method requires using strategies that provide opportunities for students to be active. In fact, the active approach to teaching provides opportunities for students to establish relations with their teacher, with other students and with the course's subject. They will have opportunities for discussion, for listening to others' opinions, and often they would have to reconsider their own views (Rabson, 2004). In this student-centred approach the emphasis is on a type of learning in which the teacher's role is to engage students into solving suitable problems and to establish an atmosphere of discovery in the classroom. (Vendimeil 2001).

In this method, students actively link new information to what they have learned before, so that they began to create knowledge; they are no longer some passive recipients of information from external sources. (Agha Zadeh 2005).

Findings and recommendations of this research can prove helpful for syllabus designers, authors and teachers in the field of teaching mathematics, so that they could arouse interest and willingness in students hence helping them in their academic achievement. Some research has been conducted in this area, including:

Khyran (1991) has done a study named "The Effect of Games on Learning Mathematics". He has evaluated the role of games in learning math concepts.

Abbasian (1996) has done a study named "Analyzing the Relationship between Active Method of Teaching and Academic Achievement of Fourth Grade Students in Mathematic"; He concludes that active approach is more effective.

Fatahi (2003) in a research called "The Effect of Active Approaches on Educational Progress of First Grade Students in Math Course" concluded that active approach is more effective.

Barbato (2000) in his research on participatory learning concluded that the rate of learning in participatory learning group (experimental group) was more than that of the control group (students who were trained with the traditional method (Haidari 2006).

Paulo Buci, Timoti Long, and Bruce weed from Ohio State University and Joe Haling and Vert from Southeast University of India (2000) found that the use of toys, such as plastic cups and Lego pieces, dramatically helps students in developing mental models of mathematical concepts.

In their study, Peterson and Jankyt (1979) showed that students in the participatory groups gained higher scores mathematics achievement test than those in the traditional group (haidari, 2006).

2. Method

This is a semi-experimental research with pre-test and post-test and control group. In this research project, testees are selected randomly, and before running the independent variable, the selected testees in both groups were measured by pre-test.

At first, the researcher selected a school from among the elementary schools of ZarrinShaher (near Esfahan), and then selected two grade-five classes. Both classes underwent a pre-test, and finally one class was selected as the experiment group and the other one as the control group. The control group was taught the concept of multiplication in traditional and verbal approach. The same concept was taught to the experimental group through practical and experimental approach by the researcher focusing on playing games. After training, both groups were tested with post-test and finally, the discrimination between the two groups was identified by inferential statistics.

The statistical universe of this research consists of all second-grade elementary school boy students in the town of Zarrin Shaher who enrolled in the academic year (2008-2009).

The sample size of the study is 60 students who were divided into two groups randomly: experimental group and control group; and multistage cluster sampling was used for sampling.

2.1. Research tools:

In this research, a researcher-made test was used, and before that, the students were pre tested .After providing the experimental group with training, both groups underwent a post-test.

To determine the reliability, the two-half method was used. In this method, the test was divided into two halves artificially. Each individual score in each of the two halves was obtained, and correlation coefficient was calculated and then Spearman Brown formula was used. Based on performed calculations, the following results were obtained:
 Pre-test reliability coefficient: 88%
 Reliability coefficient of test: 91%

2.2. Research hypothesis:

Academic progress of elementary school second-grade boy students who have been trained through practical and experimental method (with emphasis on playing games) is significantly higher compared with those who have been trained with verbal approach.

3. Findings:

The research findings are provided briefly in the following table:

Table1: Descriptive indicators hypothesis

groups	Teaching Methods	Total subjects	mean	Variance	Standard deviation
control	verbal	30	5.38	4.88	2.21
experimental	Experience and practice with emphasize on play	30	7.48	9.61	3.1

Table 2: One-sided analysis of variance hypothesis

Change Resources	Square series	Degrees of freedom	(MS)Mean square	F	Sig
Between Groups	62.23	1	62.23	9.04	0.01
Within groups	405.82	58	6.87		
Total	468.05				

Since the observed F (9.04), at the confidence level of 0.01% and with degrees of freedom of 1 and 58, is bigger than critical F, therefore, the zero hypotheses is rejected, and it can be concluded that the difference between the two means is statistically significant.

4. Conclusion

Today, in the arena of education, teaching methodology is one of the challenges facing teachers, and applying a teaching method which is appropriate to each subject of the curriculum is very important. Mathematic is one of the basic sciences that is necessary for today's so cities, and increasing the quality of its education directly leads to the scientific and technological advancement. On the other hand, application of mathematics in everyday life helps ordering of thoughts and information, improving logical thinking and reasoning, and, above of all, solving problems. Practical and experimental approach is one of the approaches that most teachers use and through which students participate in learning; playing games is a tool which is used in this approach based on certain theories. In the present research, the researcher tried to compare the effect of training practically and experimentally (with emphasis on playing games) with that of verbal approach and their effects on the academic achievement of the second-grade boy students of an elementary school in ZarrinShahr.

The findings of this research is in accordance with those o Karkhyran (1991), Abbasid (1996), Fattah, Seraji (2003), Peterson and Jankyt (1979), Barbatv, Paalvbvsvy, Long, and Joe Wade Halyng and Vert (2000).In all of these studies it has been shown that the efficiency of active methods is more than passive methods. In some of them, the positive

effects of games have also been mentioned. The experimental and practical method of teaching mathematics can be considered one of the active methods in this field.

However, the findings of this research are not compatible with those obtained by Dobeen and Tavjica(1968); that is perhaps because applying active methods of teaching to different subject matters might yield different results.

References

- Adibnia, Asad.(2007).Eperience science approaches in elementary school.Alame Tabbatabaei University,Tehran,(chapter 5)
- Aghazadeh.Moharam.(2005).New approaches guidance based on mind- centered researches, structuralism, counseling learning, and extra recognition. Aeege Publication. Tehran,(chapter3)
- Angaji,leila.Askari, Azizeh.(2006).play and its effect in child growth. Emage Publication .Tehran,(chaoter 3)
- Cory .g. (2002). theory and practice of counseling and psychotherapy. Pacific grove: brokes Cole,(chapter 3)
- Dabiri, Atefeh.(2006). Analysing the effect of educational Toys on learning some the mentally retarded girl mathematic students in pre school period 6and 11 areas of Tehran city.Allameh Tabbatabae University.Tehran,(chapter 2)
- Mann, Robert (Bob).(2009). About Teaching Children Mathematics. The National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 20191-1502
- Shokohi,Qolam Hossein. (2000).Math and Geometry learning approach.Pirozi printer.Tehran,(chapter 4)
- Robson, jocolyn.(2004).active teaching and learning .[http://www. Green wich.ac.uk](http://www.Greenwich.ac.uk).
- Vande, welle.(2001).elementry and middle school mathematics teaching development, Addison wesly long man ice forth education.
- Sangur,s.&Tekeya,c. (2006). effect of problem – based learning and traditional instruction on self- regulated learning middle technical university, Shangai: Shangai Foreign Language Education Press.