

THE GAME AND THE TEACHER IN TEACHING MATHEMATICS IN THE FIRST CYCLE OF PRIMARY SCHOOL¹

Merita Ajdini

Faculty of Pedagogy „Sv. Kliment Ohridski,, Bitola-Student in the third
cycle. E-mail: merita.ajdini@yahoo.com

Marzanna Seweryn-Kuzmanovska

Faculty of Pedagogy „Sv. Kliment Ohridski,,Bitola-Professor.
E-mail: marzanna.kuzmanovska@yahoo.com

ABSTRACT

Games are types of natural activity of children. They enable children to get to know the world, practice various activities in which they are very successful. Children always learn something new from games. By playing mathematical games, children develop mathematical skills and knowledge. Learning through games is an easy, interesting and self-motivating activity. Games are a combination of luck and knowledge, while mathematics is one of the subjects which comprises a special place in the education of children. Mathematics is considered as a basic need for every individual.

By playing mathematical games, students love mathematics more than usual, they gain self-confidence and at earliest age they submit themselves to solve mathematical problems with great confidence.

The information presented below has been enabled by the conducted interviews of 123 teachers who teach from class one to three, from nine primary municipal schools of the city of Skopje and the surrounding areas.

Key words: game, students, teacher, learning, mathematics.

¹ original scientific paper

PREFACE

The mathematics teacher, at classes comprising students aged seven and eight years old, uses gaming activities at great deal for achieving his class goals. Via free games he enables students to study materials, subjects, numbers, to be active even when he is teaching, to work independently or together with their teacher, aiming to solve the appointed tasks. Students are grouped in bigger or smaller groups, they work in pairs or individually in order to develop a certain skill, strategy or to accomplish a certain given task by the teacher. Very often, the teacher takes the role of a lecturer, when there is a need to help his students to link the things they are not able to do themselves without the help of someone else. We usually have oriented teaching when students perceive new contents, previously unknown to them. It is important to note that in the mathematical activities – in the games, quite often other subjects are integrated as comprising part of the game.

In essence, the task of the game which is appointed by the teacher, determines the activity of the game that the student plays. The very same name of the game that the teacher reveals, denotes activities to the student who needs to accomplish it: „Who lives in the house?“, “Who replaced the place?”, “Make a guess according to the description?”, „Magical square“, “Mathematic relay” and other similar names of games which at some point of the game are useful because they remind the student of what he is playing, what he is required to do in order to play the game successfully. While playing the game, except for the fact of the game, at the same time students conduct a few types of activities: perceptive, motoric, constructive, creative, graphical, figurative, musical, rhythmical, verbal, sociable, and above all – intellectual: reasoning, perception, discovery etc.

The game contents increase general knowledge at students for the surrounding world. They orientate, trigger to speak, enlarge their thesaurus and stimulate communication of speech. By conducting didactic games, especially those which are structured (logical-mathematical), students develop logical thinking. These types of games help students conquer intellectual processes: numerous constructions, special structures, time

structures, classifications etc. Moreover, these types of games expand social, emotional experiences of children and cultivate social-moral features. It is clear that the didactic games have high psychological and pedagogical values, but we must not forget that these games are only certain oriented activities of the game. A student of class one, at great deal needs free games in order to become prepared to live successfully in the community, discover his obstacles, possibilities and limitations. Practice has shown that, if children lack childish games, the child will not have childhood at all.

With the help of games and toys, children transit from childhood to the world of the grown-ups. The game is a natural activity, internal need as well as a great desire of children. On the other hand, the toys provide them ideas and contents for life. Via games children realize what they cannot do in the real life. Within the game, everything is permitted, while over the game situation stands the child himself. During the time of the game, the child is free of pressure, nightmare, fear, anger or other various negative experiences and yet again remains calm and relaxed after the game. If we come to observe the behaviors of the child during a free game, especially in the games where children fantasy is included, we can learn the real problems that the child faces.

METHODS OF WORK

The sample of this study consists of:

- The questionnaire sample consists of 123 teachers (who, in this school year, teach in first, second and third grade) from nine elementary schools, specifically from six elementary schools from the city of Skopje, along with three other elementary schools from the surrounding areas of Skopje. From the sample, can be easily noted that during the research were included 72 teachers who work in the city boundaries, the remaining 51 teachers work in the villages surrounding Skopje.

The independent variables of this study are:

- Games – a table of 100; red, yellow, blue and green tokens up to 1000, square, triangles, rectangles and circles in various colors...

- School subject: Mathematics

The dependent variable in this study is:

- Changes in the approach of work:

In gathering the data, the questionnaire technique has been used. This technique was chosen due to economical causes and the possibility to gather as much as possible important data. In addition to this, it is necessary to make use of this technique to gain basic data for the problem and the subject of research, as in this case is the determination in which grade games are used at most in teaching mathematics by teachers from first to third grade. The other important element is to denote if the employment of games in teaching mathematics is related to the work experience of the teacher.

- The questionnaires will be answered by teachers who in the school year 2020/21 teach in first, second and third grade. They will also state in which grade games are mostly employed by the teacher.
- Pedagogical documentation: The new plans and programs according to the programs of the International Centre for education programmes of “Cambridge”

Analysis and interpretation of teachers’ questionnaire results

In order to analyze and elaborate the data, we shall use:

C – Contingency

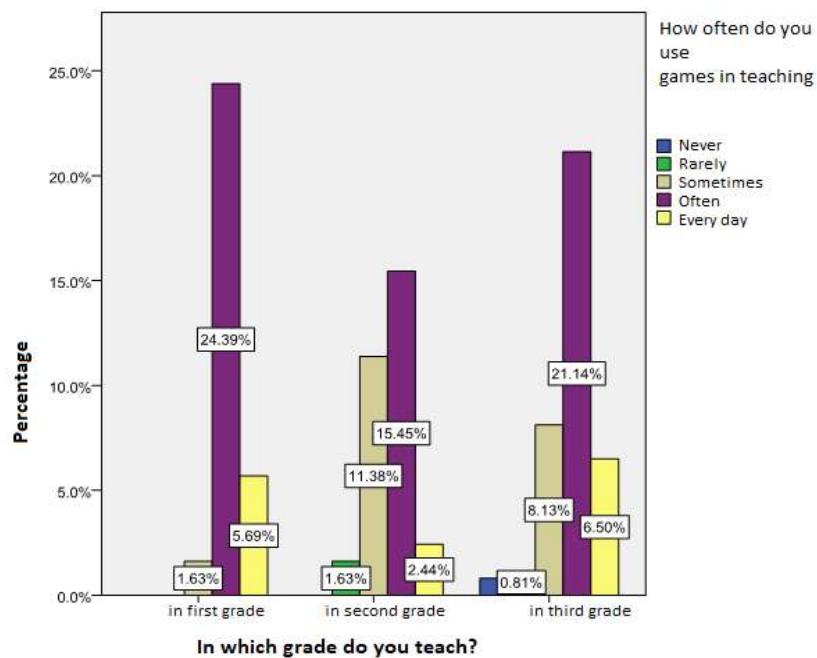
The data is elaborated with the Statistical Package for the Social Sciences – SPSS 19.0.

Due to the fact that all variables are measured on nominal and ordinal level, the description of the distribution of the sample in relation to the studied variables, has been conducted with absolute numbers and frequencies. For testing the statistical importance of the interconnection of the variables which are measured on nominal and ordinal level, which have more than two categories, we used coefficient of contingency. However, for determining the size of the effect the Cramer’s V measure was used. The statistical importance is determined with the p – value of less than 0,05.

RESULTS AND DISCUSSION

According to the findings which resulted by the employment of the coefficient of contingency there is a connection between the question of how often does the teacher use the game in teaching mathematics along with the question in which grade does the teacher teach $c(N = 123) = 0.351$, $p < .05$, Cramer's $V = .26$.

Figure 1



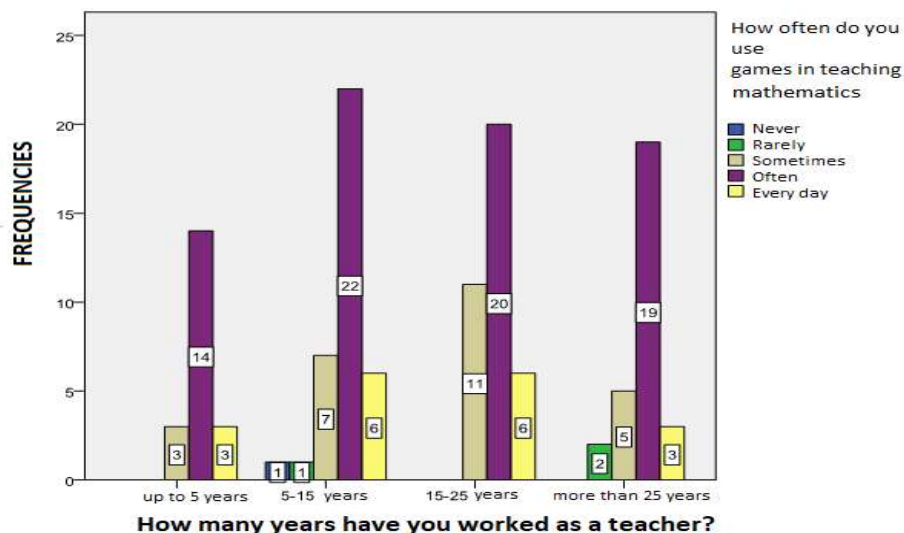
This connection can be clearly seen in the charts. At the teachers who teach in first grade we have a bigger employment of games in teaching mathematics, in the category often 24.39% were gained, in the category everyday 5.69% were gained, while in the category 1.63% were gained. The categories never or rarely received no answers.

The teachers who teach in second grade we have a decline of the often use of games of 15.45%, while in the category sometimes we have an increase of 11.38%, while the category everyday gained 2.44%. However, in second grade, in the category rarely we have 1.63%.

There is a more often use of games by the teachers who teach in third grade of 21.14%, which is bigger than the teachers of second grade. Yet, we have a smaller use of games in the category sometimes of 8.13%. In the category of everyday use of games 6.50% was gained, while 0.81 was gained in the category never from the total number of the teachers who responded to the questionnaire.

Based on the results from the use of the coefficient of contingency there is no connection between that of how often the teacher makes use of games in teaching mathematics and how many years he has worked as a teacher $c(N=123)=0.26$, $p>.05$, Cramer's $V=.16$.

FIGURE 2



The fact that teachers' work experience and the use of games in teaching mathematics are not related to each other can be easily noted from the chart shown above. Games are employed on every day basis by teachers who have work experience from five to fifteen years, as well as those with work

experience of fifteen to twenty-five years. On the other hand the teachers with work experience of five to 15 years are those who most often employ games in their teaching of mathematics. The category sometimes was mostly answered by teachers with work experience of fifteen to 25 years. The category rarely was mostly answered by teachers who have work experience of more than 25 years, after them come the teachers of five to fifteen years of work experience. But only one teacher of five to fifteen years of work experience stated that he never uses games in teaching mathematics.

CONCLUSION

The subject of Mathematics is one of the obligatory subjects for elementary education with numerous tasks of educative, educational and informational character. It is the teacher himself who will trigger love towards learning and mathematics at his students. It is very important to trigger curiosity for independent and creative work at students.

At the teachers of first grade we have a bigger employment of games in teaching mathematics. 24.39% of teachers use games very often in their teaching. At the teachers of second grade we have a decline of use of games quite often in their teaching with a percentage of 15.45%. On the other hand, the teachers of third grade we have a bigger use of games with a percentage of 21.14%.

We must state that there is simply no connection with the work experience of teachers with the use of games in the process of teaching mathematics in the first cycle of elementary education, and that can be easily noted from the inferential statistical analysis of data from the questionnaire as shown in the graphical chart.

BIBLIOGRAPHY OF SOURCES USED:

1. АлексоваА,Д-р Браун К, Учењето на математиката во 21 век, 2009.
2. Saton BrajanSmit, Igračke i Kultura, Beograd, 1986.
3. ЈакаБ, Математичките игри со методика за студентите на Факултетот за воспитание, Призрен, 2013
4. KamenovE, Intelktualno vaspitanie kroz igru, Belgrade, 1983.
5. Јанкуловска С,Мицковска Г, Играм и учам математика, Скопје, 1997.
6. Карен М, Математика 1, прирачник за наставници. Скопје, 2014.
7. Унапредување на наставата по математика и запознавање на околината, материјали за напредокот во наставата, Охрид, 2007.
8. Наставни програми по математика за: I, II и III одделение, Биро за развој на образованието – Cambridge International Examination, Скопје, 2014.
9. Прирачник за наставата по математика за: I, II и III одделение, Биро за развој на образованието – Cambridge International Examination, Скопје, 2014.
10. RodXh, Elen M, Ture K, and M, Мисли математички - за нижите одделенија, Скопје, 2011.