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SOME METHODOLOGICAL GUIDELINES IN THE TRAINING OF BILINGUAL CHILDREN*

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ABSTRACT: *This article discusses various methods of teaching in the context of bilingualism, which will give fruitful results and increase efficiency in the learning process. Various learning models have been proposed that can contribute to more effective acquisition and application of knowledge and skills in mathematics and information technology.*

KEYWORDS: *bilingualism, problem-oriented learning, game approach, motivation of bilingual students.*

2020 Math. Subject Classification: *97P20 u 97B20*

Introduction

It is clear to anyone involved in education that innovative curricula and educational standards alone are no guarantee of achieving positive changes in teaching. The change does not necessarily mean a change in the mathematical concepts used in school. It means changing the way we look at these concepts. It means changing the way of teaching. The teacher is not an actor in an entertainment show, and the student is not a simple observer. Training is an active, constructive, cumulative and purposeful process. As such, it should also be perceived by the students. That is why the transfer of knowledge from teacher to student is not a unilateral act. On the contrary, teachers are obliged to provide an opportunity for students to find their own approach to knowledge.

Teaching bilingual children is a social and long-term process associated with overcoming specific difficulties.

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Exhibition

A few central themes can serve as a means of orientation. "They take into account five different aspects of training:

1. Teaching style
2. Work on tasks/goals
3. Technical Content
4. Ways to check what has been achieved
5. The role of the mathematics teacher.

These guidelines aim to provoke a rethinking of teaching style by setting certain priorities. But it is not only students who are obliged to discover their personal possibilities". [1] We have already mentioned that successful education has an individual face and it is above all the face of the individual teacher.

For many years, studies have been conducted for the constructive development of the methodology, and the activity is oriented towards the design (recreation) of the learning environment and its empirical research, testing and implementation.

Good math teachers usually shine with their bright personality. "However, there are also certain fundamental guiding concepts that characterize question-and-answer-based teaching of mathematics in schools. They include:

- less accumulation of knowledge, more training in solving tasks;
- less calculation, more understanding;
- learning in context ("telling stories", mathematics as a cultural asset);
- attention not only to results, but also to the necessary learning strategies and processes. The reward is the path taken! [3]

Applying these basic concepts will break you away from the rigid way of teaching in its traditional form, characterized by a narrow-minded approach consisting of questions and answers with formal calculus and juggling of terms at the expense of provoking interest.

Continuous learning in mathematics also requires something else - to create situations in which students develop their interest and go through the following stages of the learning process. [6]

- independently (I),
- together in other students (You),
- with the help of the teacher (We).

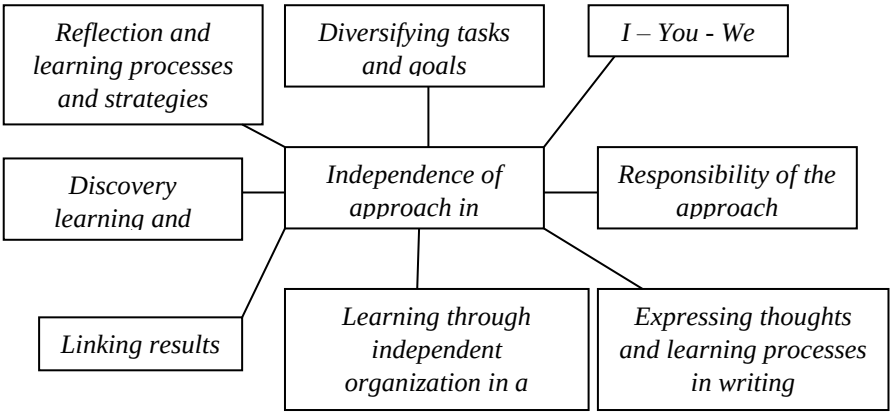

Figure 1. Pedagogical situations for the formation of motivation and activity [6]

It is a known truth that each lesson or learning unit is defined by the personality of the teacher in terms of their essence and methodology. That is why only the teacher is able to effect a change in the teaching scenario. More serious changes are only possible through small changes made over a long period of time. What we need is a process of continuous improvement in teaching to be constructed by the teachers themselves.

Taking into account the specifics of bilingual education (insufficient knowledge of the Bulgarian language, distinguishing emotionality as leading in the formation of knowledge), the authors offer support in the conditions of bilingualism in mastering basic competencies using mozaBook interactive lessons. This approach has proven advantages in all grades of mathematics education: increasing the speed, volume, accuracy and durability of memorizing and

reproducing the studied educational material. Modern approaches to the organization of the learning process are related to the characteristics of students. In certain cases, the content-methodical forms of education are adapted to certain groups of students. Desegregation in Bulgarian education has not yet been fully implemented. In this line of thinking, the integration of children bilingual, a large part of them who are bilingual, should be done through the school education process. The pandemic related to COVID-19 has faced new challenges in Bulgarian education, and thus distance learning has come to the fore. "The application of MozaBook interactive lessons and mathematics education for bilinguals developed in the direction of designing the software in a virtual environment. The virtual environment in mathematics education prioritizes how to learn rather than what to learn. For bilingual students, it is necessary to be intrigued and provoked to think in order to be able to understand mathematical terms and concepts. The use of such a form of education enables the formation of basic knowledge and skills on the studied topics of the educational content." [4] MozaBook is a specialized innovative educational software for both interactive whiteboard and standard computers. Using it creates opportunities for simple, intuitive and attractive learning in classrooms. This software is easy and convenient to apply in distance learning.

Motifs perform three main functions:

- instigate and direct the activity of the individual;
- give meaning to the individual's actions
- serve as explanatory schemes.

Mathematics education should focus on the following basic skills:

- literacy as a means of inclusion;
- mastering scientific concepts as a means of creating a true picture of the world;
- education of the will to overcome difficulties.

"The mozaBook software enables teachers to create their own presentations tailored to bilingual children experiencing difficulties

with the learning material. Lessons can become interactive, enriched with images, videos, drawings and 3D models" [5], adapting to the psycholinguistic features of thinking and expression in bilingual children. The built-in exercise editor in mozaBook as well as numerous thematic applications and games provide ways to relate to the age and physiological characteristics as well as the specificity of the culture to which bilinguals belong. As a result, the teaching of mathematics bilingual students is aimed at mastering basic competencies related to achieving the requirements for the learning outcomes of the subject of mathematics.

The dynamics of the world we live in require a different approach to the way in which learning material is presented. Young people are tempted by new technologies more than anyone else. They are captivated by the possibilities for information and communication that the Internet offers. This is already a necessity, without which the time in which we live is unthinkable, but the students seem to live not with it, but through it. New needs call for a flexibility in teaching that, unfortunately, continues to be seen by some as too conservative. It is important for students not only to gain knowledge about individual subjects, but to be able to discover connections between different fields of knowledge. Naturally, all of this can help generate interest among students in learning, respectively in mathematics learning.

As a result of the analyzed literature, the types of interests are clearly presented in [3].

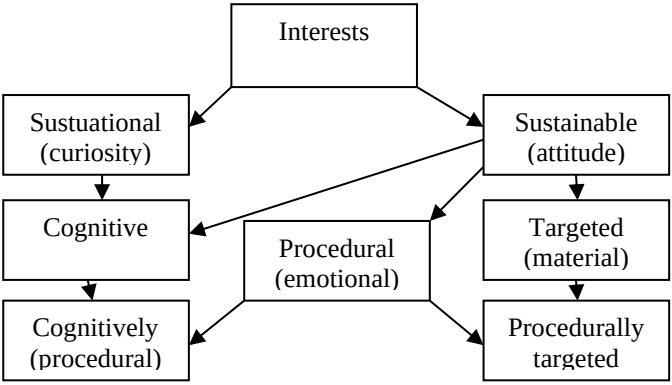

Figure 2. The types of interests [3]

"In the period between 12 and 15 years of age (grades 5-7), cognitive interests become more multifaceted. For students between the ages of 15 and 18 (grades 8–12), the cognitive interests of most of them are concentrated in one academic discipline or a certain subject area." [2] Examining the role of mathematics in everyday life and practice. It is known that the conscious assimilation of knowledge begins with an interest in it. The teacher will successfully achieve the set goals if he attracts and fully engages the attention of all learners, and then manages to keep it during the lesson. Our experience and practice show that students are very interested in these lessons, where the teacher reveals the practical and theoretical significance of the studied material.

Leading among all cognitive processes is thinking, which accompanies them and often determines their character and quality. Therefore, the development of thinking is one of the goals of the mathematics teacher, and the application of various means and methods for its activation are conditions for reaching this goal. Psychologists have found that solving a task in several ways is more beneficial than solving several tasks of the same type in a row. Discovering different ways to solve a problem allows the student to apply his entire arsenal of mathematical knowledge, i.e. to activate their thinking. Exposing

different ways of solving problems develops flexibility of thought in learners. We will also note that solving tasks in different ways helps to form a need for the learned knowledge, develops breadth, originality, non-template thinking. Not only in solving problems, but also in proving theorems, require students to discover different proofs of them. We will illustrate the ideas expressed with the following examples:

Example 1. After studying systems of equations of the second degree, the following example can be included in the system of problems:

1. Solving by addition (subtraction).

$$\begin{cases} x^2 - y = 8 \\ x - y = 2 \end{cases} \Leftrightarrow x^2 - x = 6 \Leftrightarrow x^2 - x - 6 = 0 \Leftrightarrow \begin{cases} x = 3 \\ y = 1 \end{cases} \text{ и } \begin{cases} x = -2 \\ y = -4 \end{cases}$$

2. Solving by substitution.

$$\begin{cases} x^2 - y = 8 \\ x - y = 2 \end{cases} \Leftrightarrow \begin{cases} x^2 - y = 8 \\ x = 2 + y \end{cases} \Leftrightarrow$$

$$\begin{cases} (2+y)^2 - y = 8 \\ x + y = 2 \end{cases} \Leftrightarrow \begin{cases} y^2 + 3y - 4 = 0 \\ x = 2 + y \end{cases} \Leftrightarrow \begin{cases} x = 3 \\ y = 1 \end{cases} \text{ и } \begin{cases} x = -2 \\ y = -4 \end{cases}$$

Solving the system is assigning numerical values to the variables so that all the equations are simultaneously satisfied. These problems find application in calculating how many cubes of wood they need to make to take a certain amount. For bilingual students, the application of theoretical knowledge in school and its application in life is extremely important.

It is very important, when we focus on solving a mathematical problem in different ways, that the students evaluate and justify which of the ways is the most rational for them. The obtained results in activating the students' thinking prove that it is especially necessary to carefully consider and define the mathematical tasks offered to them for solving, as one of the most effective means of achieving this activity.

Conclusion

The purpose of the training is the formation of a mathematical and technological culture among bilingual students, the acquisition of knowledge, skills, an active attitude towards the activity performed and laying the foundations for creative thinking. As a result of the learning process, students should know and be able to use the tools of information technology, understand the learned content, apply what they have learned in specific conditions, analyse life situations, adopt an active positive attitude towards technological knowledge and life skills in personal plan.

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