

THE DIALOGIC TEACHING IN THE LIGHT OF THE COMPETENCE APPROACH

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ABSTRACT: *The article revolves around the influence of the «dialogic teaching», as a method, on the realization of the competence approach in mathematics training. The article presents a reference overview on the given issues, ideas for pedagogical study of the influence of «dialogic teaching» on students' motivations are presented.*

The ability to apply «dialogic teaching», both on the part of the teacher and on the part of the student, is regarded as competence.

KEYWORDS: *dialogic teaching, mathematics, motivation, competencies*

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1 Introduction

Since the middle of the last century, the competence approach has gradually been applied in a number of educational areas. To date, it has proven its effectiveness and its implementation is regulated in a number of countries. According to European commission (2009) [4] key competences are:

- Literacy competence
- Multilingual competence
- Mathematical competence and competence in science,
- Technology and engineering
- Digital competence
- Personal, social and learning to learn competence
- Citizenship competence
- Entrepreneurship competence
- Cultural awareness and expression competence

The development of e-learning and introduction of a variety of platforms and software solutions in education have been strongly forced by the pandemic situation. Classical training methods have already acquired a new light. «Dialogic teaching» is an important method of learning. It is interesting to note to what extent the ability to initiate a discourse is competence. It is important to examine the relationship of the dialogic method with key competences of students and teachers.

2 «Dialogic teaching» as a method

An American teacher once said, “There is no trace of historical background in the teaching of mathematics and thus the misconception was created that all mathematics fell ready from the sky for the use of magicians and jugglers” [5].

In continuation, the mathematician and philosopher Bertrand Russell said that “Mathematics may be defined as the subject in which we never know what we are talking about, nor whether what we are saying is true” [7].

These two arguments reflect on the way in which most people perceive the subject of mathematics, as a strange and distant subject, disconnected from everyday reality, boring and requiring practice and learning by heart, which is not interesting, is not enjoyable, and is not in the least bit humane. The mathematician Kronecker, who lived in the 19th century, said that God created the natural numbers and the people created the rest of mathematics.

«Dialogic teaching» turns out to be one of the most effective methods to help students manage to bring the abstract side of mathematics closer to specific competences applicable in practice. There are many aspects of the concept of «dialogic teaching» and the realization of «dialogic teaching» as a method.

Socrates, about 2400 years ago, taught in the method of an intellectual dialogue revolving around a chosen topic. In this method he instructed his students using guiding questions and not through answers. This is the main method of teaching a student to think independently as required of mathematics students and certainly

mathematics students on the level of four-five units of study and students in mathematical and scientific academic studies. To realize this in the classroom, a number of conditions must exist: a teacher with excellent mastery of the material, the consent of the students, and little in the way of a judgmental approach [3].

The term ‘dialogic teaching’ is especially related to the focus of Alexander (2008) on conversations between teachers and students in the classroom. Alexander draws his approach to dialogue from Bakhtin, who frequently quotes the line “if an answer does not yield a new question it falls from the dialogue” [1]. The essential interpretation of Alexander of the use of the Bakhtinian definition of dialogue is that only through a live dialogue between students and the teacher in general and the teacher of mathematics in particular, directly with the student, or through the listening to the dialogue of others, do the students learn to think and discover the more profound layers of the material in mathematics, the many challenges, and the learning skills required for the learning of mathematics in general and at the level of four-five units of study in particular, and so on. This understanding of the dialogue is supported by many researchers in the field [14, 15].

The common denominator for all the approaches to dialogic teaching is the emphasis on the importance of the teaching to the dialogue, as well as the teaching through the dialogue [2, 6].

Dialogue in education has been gaining steadily increasing momentum in recent years, both because of the search for an alternative to the traditional approach built on the memorization of the material - largely responsible for the boredom and frustration among the students and the burnout in teaching and among teachers - and because of the important desire to improve the students’ achievements in general and in mathematics in particular on the international and national levels. Traditional learning is composed of students who are not especially active and who lack motivation, who populate crowded classrooms and are busy writing down what the teachers read to them from ancient notebooks. This approach certainly is detrimental in every subject of study and especially in mathematics, which obligates high order

thinking and ongoing handling of mistakes. The dialogue between the students or with the teacher is supposed to create active learning inside and outside of the classroom, curious students who aspire to independence in learning, and productive and beneficial reciprocal relations between the teachers, the study material, and the students. In light of the fact that the dialogic learning for the most part is undertaken behind doors, it is difficult to characterize it and to examine it [10].

- Who are the partners in the dialogue?
- What are the conditions essential to the holding of dialogic learning?
- What are the products that dialogic learning and teaching advance?

Before we clarify, first we must understand what dialogic teaching/learning is. Dialogic teaching/learning is the encounter between three participants with the following conditions:

1. A teacher with presence and with pedagogical and didactic control and good fulfillment in all the relationships and contexts of the material.
2. Learning material with a reasonable volume.
3. Students in quantities of 12-25, who can be communicated with and who can communicate among them, without the fear of expressing freely and actively [10].

Unfortunately, the reality in many education systems is quite different. In a number of countries, it happens that:

1. There are classes of more than 25 students.
2. Teachers without presence and without mastery of the material and of conveying it, for whom teaching was not their first choice.
3. Learning material that is not up-to-date and is presented in a format that is not interesting and is conveyed well through memorization and does not connect to the students' world.

Despite these conditions, sometimes it is possible to successfully realize dialogic teaching and learning also when only two of the three conditions are met, but certainly it will be more limited, and yet will compensate for the absence of one of the conditions. It is important to

note that quality dialogue necessitates dwelling on the material, while the need to cover the material for the high school matriculation examination negates this dwelling [10].

In dialogic learning in general and in dialogic learning in mathematics in particular the learning is based on the intelligent discourse on the learned material based on reasoned arguments, asking questions that inspire thinking and high order understanding, confirmation or disconfirmation of an argument on a logical and not nonsensical or vague basis, different ways of solving, documenting the solution process in Hebrew and according to mathematical rules. This process reinforces the world of knowledge existing in the learner and builds on it the new knowledge world in a stable manner that is etched in the memory for the long term and not as disconnected units in the student's brain that cannot be retrieved [12, 13].

Paulo Freire (1921-1997), one of the greatest educators with most influence in our time, created a new school in education – dialogic education. This perception is based on dialogue that fundamentally is equal discourse between learners and teachers, which derives from the learners' world and is based on mutual respect. The goal of the discourse is to enable the learners to connect to their abilities and strengths and to be empowered, as individuals and as a group [8].

As the years pass for the student, in learning in general and in the learning of mathematics in particular, the number of experiences of success steadily decline, the number of errors in mathematics steadily increases, the learning gap grows and grows, the negativity of attitudes towards the study of mathematics and towards mathematics increases, and the ability of speech and motivation to participate in the mathematics lessons steadily decreases until “cognitive paralysis” and “speech paralysis” [9].

According to Bakker [2], in the field of scaffolding (mediation methods) and dialogic teaching in mathematics, the integration of the scaffolding and dialogic teaching is natural and necessary and enables the learning of concepts in mathematics and their manner of development. In addition, the integration enables the learning of

mathematical discourse, which is a source of creative thinking and facilitates the improvement of the learning and the achievements among students who have difficulties in general. A large research in mathematics (probability and ratios) in the middle school, which compares between classes in which there was intervention through dialogic teaching and control classes, observed a small positive influence on achievements but not attitudes and approach, but there is a basis to say that with more time given to the intervention process, definitely it is possible to hypothesize that there will be greater influences on achievements and on attitudes and approach [11].

3 Guidelines for forthcoming pedagogical research

Dialogic teaching in general and in mathematics in particular, in all its components and with the addition of perseverance and consistency, is the main and natural way to develop thinking and understanding and to improve the attitudes, motivation, and achievements in mathematics [2, 10, 11].

Several main lines arise for future studies:

1. To what extent does the active application of «dialogic teaching» in mathematics education influence the formation of key competences?
2. To what extent does the active application of the «dialogic teaching» in the teaching of mathematics influence the formation of the mathematical competencies set in the curriculum?
3. To what extent does the active application of the «dialogic teaching» in mathematics education affect the motivation of students?
4. How is it appropriate to organize a «dialogic teaching» in e-learning?
5. What are the factors motivating students to initiate conversations in mathematics education?

Some of these questions are prepared to be tested among Israeli students. Students from Israel are already returning to the classroom form of education, but they also have experience with e-learning gained during the pandemic situation.

4 Conclusion

Based on the conducted abstract review and observation of the work of students, teachers and university professors, both in classroom and in electronic form of education, we conclude that the ability to conduct a «dialogic teaching/learning» can also be attributed to important competencies. With the important competency to teach in the dialogical approach it is possible to promote and develop other competencies of students in mathematics, computer science, languages. It is important for the teacher to be able to guide the students towards the goal. For students, the ability to initiate a conversation, by asking meaningful questions, is a way to reflect and reach high levels of knowledge. Thus, the ability to conduct a «dialogic teaching/learning» in mathematics education is on the border between purely mathematical competencies and soft skills.

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