

REVIEW

from Professor Valentina Nikolaeva Voinohovska, DsC

"Angel Kanchev" University of Ruse

of the materials of Silvena Marinova Stefanova, full-time education PhD, with the topic of the dissertation: "The motivation of bilingual students in the teaching of mathematics and information technologies in grades 8-12", submitted for participation in a competition for the acquisition of the educational and scientific degree "Doctor", in the field of higher education 1. Pedagogical sciences, professional field 1.3 Pedagogy of teaching in..., doctoral program: Methodology of teaching in mathematics and informatics.

1. Data on the doctoral studies, dissertation, abstract and publications

1.1. Data on the doctoral studies

Silvena Marinova Stefanova is a doctoral student in full-time study with a scientific supervisor Assoc. Prof. Dr. Krasimir Valentinov Harizanov. By Order of the Rector of RD-16-213/20.12.2024, of Konstantin Preslavsky University of Shumen, a procedure for the defence of the dissertation work has been opened, the procedure has been initiated.

All preliminary procedural and regulatory rules provided for in this procedure have been complied with.

1.2. Dissertation data

The dissertation has a volume of 208 pages and consists of an introduction, three chapters, conclusions, contributions of the dissertation, a list of the author's publications on the topic of the study.

The dissertation includes a reference list of 90 titles and 23 appendices. The graphic design of the dissertation contains 4 tables and 85 figures.

Motivation for learning is one of the key factors for the successful acquisition of knowledge and development of skills in students. In the context of bilingualism, this issue becomes even more significant, since the language barrier, cultural differences and the specifics of the learning process can make it difficult for students to understand and apply knowledge in mathematics and information technology.

This study is relevant because it offers new methodologies, strategies and technological solutions to increase the motivation and effectiveness of bilingual students' learning. Through analysis of the educational environment, the application of innovative methods and pedagogical experiments, the aim is not only to improve student results, but also to ensure better integration into the learning process.

The main goal of the dissertation is to build a foundation for motivation for learning mathematics and information technology among bilingual students.

Based on this goal, the following main research tasks have been formulated:

- Clarifying the reasons for the low motivation for learning of bilingual students.
- Analysing the environment in which these students live and study, including their traditions, values, and priorities.
- Testing various methods and techniques for increasing motivation for learning.
- Researching and analysing literature related to the integration of bilingual students in the educational process.
- Researching the opinions of teachers regarding the challenges of working with bilingual students in high school.
- Researching the attitudes of parents towards the education of their children.

- Conducting a pedagogical experiment to establish the effectiveness of the proposed methods and technologies.

- Analysing the data from the experiments and formulating recommendations for optimizing learning.

As a result of the conducted research, the main goal of the dissertation work has been fulfilled - building a basis for motivation for learning mathematics and information technologies among bilingual students. Through theoretical analysis and empirical studies, the key factors influencing the motivation of these students, as well as the challenges they face in the learning process, have been identified.

An author's model of teaching bilingual children, related to the application of ICT and active methods, in teaching mathematics and information technologies, has also been proposed.

All the tasks set for the study have been fulfilled. The reasons for the low motivation for learning among bilingual students have been analysed, and a detailed assessment of the social and cultural environment in which they are taught has been made. Modern pedagogical approaches and methods for working with bilinguals have been studied, as well as the possibilities for integrating information technologies into their education. The conducted surveys and interviews with students, teachers and parents provide valuable information about the attitudes and challenges related to the education of bilinguals.

Based on the empirical data, a pedagogical experiment was conducted, which confirmed the effectiveness of the proposed methods and technologies for increasing students' motivation and achievement. The analysis of the results of the experiment allows the formulation of specific recommendations for improving the learning process and the development of applicable strategies for teachers working with bilinguals.

The dissertation contributes to expanding theoretical and practical knowledge in the field of teaching bilingual students by offering innovative solutions for increasing their motivation and improving their learning outcomes.

1.3. Abstract data

The abstract has a total volume of 40 pages and meets all standard requirements for synthesis and adequacy, presenting the analytically and systematically developed information from the primary document. The text objectively presents the content of the dissertation research, respecting the structure, conclusions, recommendations and scientific contributions. The scientific and technical requirements for formatting in paper and electronic form are met.

1.4. Data on publication activity

Silvena Marinova Stefanova has provided scientific production, correlated with the scientometric criteria for the minimum national requirements for the scientific and teaching activities of candidates for acquiring scientific degrees and holding academic positions, as follows:

- Dissertation for the award of the educational and scientific degree "DOCTOR", Group A, Indicator 1 → 50 points.
- Articles and reports published in scientific publications, referenced and indexed in world databases of scientific information → 60.00 points.
- Articles and reports published in non-refereed journals with scientific review or published in edited collective volumes → 25.00 points.

It can be categorically summarized that the sum of the indicators of the relevant groups in the content fully meets the minimum national requirements under Art. 2b, para. 2 and 3 of the ZRASRB and Art. 1a, para. 1 of the PPZRASRB and respectively under Art. 24, para. 1 of the Regulations for the implementation of the ZRASRB (for the educational and scientific degree

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2. Scientific contributions

Doctoral student Silvena Marinova Stefanova correctly presents a total of 5 main contributions – four scientific and one scientific-applied.

Scientific contributions:

Scientifically, surveys and observations were conducted on bilingual students, aimed at investigating their motivation for learning and the difficulties they encounter in the educational process. The attitudes of bilingual parents towards the education of their children were analysed, and the degree of their commitment and support was studied. The experience and readiness of teachers to work with bilingual students was also studied through surveys, which revealed both the challenges and good practices in teaching. As a result of these analyses, a model for teaching bilingual students was developed, which offers adapted pedagogical approaches and technological solutions to improve the learning process.

Scientific and applied contributions:

In the scientific-applied aspect, original didactic materials have been developed that can be successfully used in teaching mathematics and information technologies to bilingual students. These materials are tailored to the specific needs of this group of students and aim to facilitate the acquisition of the learning content.

The present study also opens up opportunities for future research. One of the perspectives is an in-depth study of the factors influencing the motivation of bilingual students in their teaching of mathematics and information technologies in grades 5–7. Another possibility is to study the development of these students in the learning process and the impact of different methods on their learning outcomes. The analysis of the profiled preparation in the direction of "Software Sciences" (grades 8–12) and its role as a prerequisite for

better academic and professional prospects of bilingual students also deserves special attention.

3. Recommendations. Critical notes. Questions to the doctoral student

Recommendation to the doctoral student for the further development of the researched issues and deepening of the analysis.

The dissertation presents diagrams that visualize the results of the experiments and surveys. The collected volume of data provides an excellent opportunity for additional statistical processing, which would allow for a more detailed summary of the achievements. The inclusion of statistical significance tests would help establish real dependencies between factors such as motivation and academic achievements.

Question:

What specific elements or approaches does the author's model include that are essential for teaching bilingual students and distinguish it from models applicable to teaching students who use only one language?

4. Conclusion

Doctoral student Silvena Marinova Stefanova has fulfilled her obligations arising from the requirements of Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of ZRASRB of the Konstantin Preslavsky University of Shumen, as well as the obligations under the respective individual curriculum of the doctoral student, that is, she meets the minimum national requirements under Art. 2b, para. 2 and 3 of the ZRASRB and Art. 1a, para. 1 of the PPZRASRB and respectively under Art. 24, para. 1 of the Regulations for the implementation of the ZRASRB (for the educational and scientific degree "doctor") for the field of higher education 1. Pedagogical sciences, professional field 1.3 Pedagogy of education in...

Considering the above, I confidently give my positive assessment of the conducted research, presented in the dissertation, the abstract, the achieved

Considering the above, I confidently give my positive assessment of the conducted research, presented in the dissertation, the abstract, the achieved results and contributions, and I propose that the educational and scientific degree "Doctor" be awarded to Silvena Marinova Stefanova in the field of higher education 1. Pedagogical Sciences, professional field 1.3 Pedagogy of Education in..., doctoral program: Methodology of Education in Mathematics and Informatics.

01.02.2025

Author of the review:


(Prof. V. Voinohovska, DsC)