

OPINION

by Prof. Dr. Keranka Georgieva Velcheva
Shumen University "Episkop Konstantin Preslavski"
on the dissertation thesis entitled:

"The Motivation of Bilingual Students in Mathematics and Information
Technology Education (Grades 8-12)"
for the award of the educational and scientific degree "Doctor in the field of
higher education 1. Pedagogical Sciences,
professional field 1.3. Pedagogy of Education in ...,
doctoral program **Methodology of Teaching Mathematics and Informatics**

Author of the dissertation: Silvena Marinova Stefanova-Milanova

This review has been prepared based on Order No. RD-16-213/20.12.2024 of the Rector of Shumen University "Episkop Konstantin Preslavski" (SU) and in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria, its Implementing Regulations, and the Procedural Rules of SU for obtaining scientific degrees and holding academic positions.

1. General Description of the Dissertation and the Attached Materials

Doctoral candidate Silvena Stefanova-Milanova has submitted in electronic form the required documents and materials for the procedure for obtaining the doctoral degree. The package includes: dissertation thesis, abstract (in Bulgarian and English), CV, list of contributions, report on meeting the minimum requirements, list of five publications, along with the full texts of the articles relevant to this procedure, and official documents (orders, reports from StrikePlagiarism, declarations, etc.). The documents are complete and well-structured.

The dissertation thesis has been developed under the scientific supervision of Assoc. Prof. Dr. Krasimir Harizanov.

2. Brief Biographical Data

Doctoral candidate Silvena Stefanova-Milanova graduated with honors with a Bachelor's degree in "Mathematics and Informatics" from SU "Episkop Konstantin Preslavski" in 2008. She obtained her Master's degree immediately after completing her Bachelor's studies in "Economic Informatics" in 2010, again at SU. Silvena Stefanova-Milanova is an experienced teacher. Currently, she is a

teacher of Mathematics, Informatics, and Information Technology at "Georgi Stoykov Rakovski" Secondary School in Kotel. For a young teacher, she has achieved remarkable professional growth: in 2017, she obtained the fifth professional qualification degree (PKS), in 2018 – the fourth PKS, and in 2020 – the third PKS from Sofia University. Stefanova-Milanova has participated in numerous training programs over the years, as evidenced by the obtained certificates. From the presented CV, I can highlight some particularly significant courses: "European Guidelines for Bulgarian Education," "Group-Dynamic Training for Psychocomfort and Personal Intelligence," "Successful Communication Between Teachers and Students and Student Motivation for Learning," "The Capabilities of Mozabook's Electronic Educational Resources for Effective Learning," "Methods for Assessing Mathematical Literacy in the International PISA 2021 Study," and others. She has also participated in projects aimed at secondary education and adult literacy, such as "Care for Every Student," "Your Hour," and "New Chance for Success." Along with her professional achievements, Stefanova-Milanova has been an evaluator of National External Assessment (NEA) and State Matriculation Exams (DZI) since 2020. As a natural continuation of this active professional development, she was enrolled as a doctoral student in the "Methodology of Teaching Mathematics and Informatics" program in 2021 at the Faculty of Mathematics and Informatics at SU. She continues her development through numerous training sessions, specializations, and initiatives, including participation in training programs such as "Academic Integrity – Plagiarism and How to Avoid It," "ScienceDirect and Scopus - How to Find Relevant Literature Effectively?" She is also an active participant in research projects such as "Innovative Technologies in Mathematics and IT Education," "STEAMIE – Opportunities and Applications," and "STEAME in Light of the Competency-Based Approach."

3. Relevance of the Problem

The Bulgarian educational environment is a proven example of multiculturalism. The diversity of participants in the learning process requires addressing various challenges daily. In my opinion, the problem explored in the dissertation is relevant and timely. The proposed methodology serves as an innovative motivational strategy in the candidate's teaching practice. The research focuses on students from the Roma ethnic group, but the current global context suggests that similar issues arise when working with migrant children who have little or no proficiency in the Bulgarian language. The doctoral candidate

emphasizes building motivation for learning Mathematics and IT among bilingual students. Stefanova-Milanova examines successful foreign techniques and develops her own approaches for motivating bilingual students. The pedagogical experiment was conducted among students at the school where she teaches.

4. Brief Characteristics of the Dissertation

The dissertation is structured into an introduction, three chapters with conclusions for each, contributions, twenty-three appendices, a declaration of authorship, a list of publications on the dissertation topic, a list of citations, and a list of references. The appendices contain didactic tests and surveys. An index of abbreviations used in the dissertation is provided. The total volume of the dissertation is 207 pages, with 148 pages comprising the main text, while the rest are dedicated to appendices and supplementary documents. The abstract presents the main ideas and results of the pedagogical research. The research design constructs – object, subject, aim, tasks, and hypothesis – are correctly formulated.

5. Review of Cited Literature

The doctoral candidate has studied and analyzed regulatory documents and specialized literature on the topic. The total number of sources is 90, about half of which are in Latin script and the rest in Cyrillic. The sources include diverse and high-quality methodological literature, articles from collections and journals, books, regulatory documents, etc. All listed sources are cited in the dissertation text. The theoretical analysis is in-depth and logical, with a personal stance. The author demonstrates knowledge of both theoretical and practical aspects of the problem, providing a strong foundation for conducting research and developing the dissertation.

6. Main Contributions

The doctoral candidate's contributions can be synthesized as follows – scientific and applied contributions:

- A "motivational" model for teaching bilingual students in mathematics and information technology has been developed.
- A pedagogical study has been conducted among bilingual students.
- A study has been carried out among parents of bilingual students, focusing on their attitudes toward supporting and encouraging their children to learn.
- A survey has been conducted among pedagogical specialists to examine their experience and readiness to work with bilingual students.

The main applied contribution is:

- The development of original didactic materials applicable to teaching mathematics and information technology to bilingual students.

7. Publications on the Dissertation Topic

The dissertation includes five publications on the topic, three of which are in English. One of the publications is co-authored with the scientific supervisor, while the others are independent. All articles are presented at prestigious international conferences and journals.

8. Application of Research Results in Practice

The proposed models and accompanying materials have a strong practical application and are already being implemented at the candidate's school.

9. Critical Remarks, Recommendations, and Questions

I recommend further development of the "motivational" model for bilingual students in lower secondary education and the dissemination of research results in additional scientific publications.

10. Conclusion

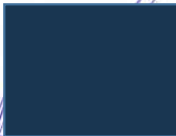
The dissertation contains scientific and applied results that represent an original contribution to science and meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of ZRASRB, and the corresponding Regulations of Shumen University "Bishop Konstantin Preslavski." The presented materials and dissertation results comply with the Procedural Rules of Shumen University for obtaining scientific degrees and holding academic positions in accordance with ZRASRB.

I have no grounds to suspect plagiarism in the dissertation and consider it to be the author's own work.

The dissertation demonstrates that the doctoral candidate, Silvena Marinova Stefanova-Milanova, possesses in-depth theoretical knowledge and professional skills in the scientific specialty of Methodology of Teaching Mathematics and Informatics. She exhibits qualities and competencies for conducting independent scientific research.

In confirmation of the above, I give my positive assessment and propose to the esteemed academic jury to award the educational and scientific degree of "Doctor" to Silvena Marinova Stefanova-Milanova in the field of higher education 1. Pedagogical Sciences, professional field 1.3. Pedagogy of Teaching ..., doctoral program Methodology of Teaching Mathematics and Informatics.

11.02.2025 г.
Shumen

Prepared the opinion: 
/Prof. Dr. K. Velcheva/