

## **OPINION**

**by Assoc. Prof. Evgenia Deneva Goranova PhD**

‘Angel Kanchev’ University of Rousse

of a **dissertation** on the Topic:

**‘Motivation of Bilingual Students in Mathematics and Information Technology Education,  
Grades 8-12’**

for awarding the educational and scientific degree ‘doctor’,  
in the field of higher education 1. Pedagogical sciences,  
professional direction 1.3. Pedagogy of training in...,  
doctoral program Teaching methodology in mathematics and informatics

Author of the dissertation: **Silvena Marinova Stefanova-Milanova**

This opinion was prepared on the basis of Order No. RD-16-213/20.12.2024 of the Rector of the Shumen University ‘Bishop Konstantin Preslavski’ and in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations on the Development of the Academic Staff of the Shumen University.

### **1. General description of the dissertation work and the materials attached to it**

The set of materials (on paper and electronic media) for the public defense of a dissertation submitted by Silvena Marinova Stefanova-Milanova is in accordance with the procedural rules of the Shumen University ‘Bishop Konstantin Preslavski’ for the development of the academic staff. The set is complete and the documents in it are neatly arranged.

### **2. Relevance of the research problem**

The relevance of the research problem is related to the search for rational solutions and active methods for increasing the motivation of bilingual students for better results in mastering the educational content in Mathematics and Information Technologies in the secondary school educational level 8-12 grades.

This study focuses on the problems in the education of bilingual students and its results are used to create an effective model for their compensation.

### **3. Brief description of the dissertation work**

The dissertation work of Silvena Stefanova-Milanova on the topic ‘Motivation of bilingual students in the teaching of mathematics and information technologies in grades 8-12’ has a volume of 207 standard typewritten pages. It is structured in Introduction, three Chapters, Conclusion,

Main Contributions to the Dissertation, List of Publications and Citations on the Topic of the Dissertation Research, Declaration of Authorship, Literature. 23 Appendices are also presented.

The dissertation has the following structure and content:

The **Introduction** justifies the relevance of the problem, formulates the goal, objectives of the study, and research hypotheses. The research methods are specified.

**First chapter** presents: the essence of bilingualism; the fact that the environment in which the training will be conducted is characterized as ‘mass bilingualism’, which is a prerequisite for training in a multicultural environment, is emphasized; the main problems that stand out in the training of bilingual children in secondary school are related to the unsatisfactory command of the official language of education - Bulgarian and the socialization of children in society. National and international projects are indicated that are outside the mandatory training of Bulgarian schools and are aimed at overcoming the educational deficits of such children. It has been established that despite numerous studies and recommendations, there is still no unified model for training bilingual children in Bulgarian schools. For this reason, the doctoral student has directed the research towards its creation in her subject area - mathematics and information technologies.

**Chapter Two** examines the phenomenon of ‘motivation to learn’ from the perspective of scientific knowledge and its main categories - object, subject and cognitive image. The concepts of sensory and theoretical knowledge are defined with a view to their achievement through classical and innovative methods, which the doctoral student applies. The methodological guidelines for teaching bilingual students are reduced to clarifying the practical role of the two subjects - Mathematics and Information Technologies in life and the use of numerous illustrative and practical examples. Two learning models are defined - in a face-to-face and online form, in which object-shaped models and the didactic interactive resources belonging to them are created to support understanding.

The content of **Chapter Three** describes the pedagogical experiment, its stages and results. The following are formulated: the research problem, the approach to solving it and implementing the solution. Two control groups and one experimental group were formed for the experiment. The experiment was conducted with students in grades 8-12 in the period from 2020 to 2024. Criteria and indicators for exit diagnostics were developed. The pedagogical research is based on a qualitative approach. Observations, discussions and surveys were conducted with bilingual students, with teachers who teach bilinguals and with parents of bilinguals. In this way, by following the issue from different positions and points of view, through an interpretative understanding of the “individual case”, pedagogical actions arise that build the sought-after motivation model. It is assumed that with the application of this model, bilingual children would overcome their insecurity in a social aspect and would gain motivation to independently control their learning activities, as a prerequisite for success in learning and life.

**The conclusion** summarizes the difficult mission of education to compensate for the negative characteristics of the mentality of bilingual students and draws out scientific and applied scientific contributions.

**The applications** include tests used to measure entry, exit and intermediate levels in Mathematics and Information Technology and questionnaires used to survey students, teachers and parents on the topic of the study.

**The abstract** contains 40 pages, following the traditional structure and accurately reflecting the main results achieved in the dissertation.

The language in which the dissertation is written could be more correct in terms of punctuation. Some technical inaccuracies are noticeable. However, the doctoral student's attitude to the researched topic shows detailed knowledge of the problems of teaching bilingual students and a strong desire to overcome them. In my opinion, this issue is one of the most difficult in the Bulgarian educational system and the doctoral student's commitment to it deserves admiration.

The dissertation note presents a lot of illustrative color materials - tables, schemes, graphs, diagrams. An advantage is the presence of conclusions after each chapter of the dissertation.

I believe that the goal set in the dissertation has been achieved and the hypotheses have been confirmed.

#### **4. Review of cited literature**

The list of used literature contains 90 titles in Bulgarian, Russian and English – book and web-based. The listed titles reflect classical and contemporary concepts on the topic of the dissertation research.

#### **5. Main contributions**

At the end of the dissertation, the author has indicated 4 contributions of a scientific nature, 1 contribution of a scientific-applied nature. I accept the contributions stated.

#### **6. Publications on the topic of the dissertation**

Silvena Stefanova-Milanova has presented 5 publications on the topic of the dissertation. One of the publications is co-authored with the scientific supervisor. Three of the publications are in English. Three of the publications are by indicator G7. Two of the publications are by indicator G6 - in scientific publications referenced and indexed in Scopus and Web of Science. The number of publications is sufficient as a quantitative criterion for obtaining the scientific and educational degree of doctor. The doctoral student has complied with the rules of scientific ethics - she has not published the same manuscript in different places, there is no plagiarism and repetition in the publications submitted for review.

The doctoral student has submitted a certificate of compliance with the minimum national requirements under Art. 2b, para. 2 and 3 of the Act on the Development of the Academic Staff of the Republic of Bulgaria, as defined in its Procedural Rules, in the relevant scientific field and professional field in which the defense procedure is being carried out. From the submitted references and materials, it is clear that Silvena Stefanova-Milanova significantly exceeds the minimum national requirements.

#### **7. Critical notes and recommendations on the dissertation**

I have no significant critical remarks about the dissertation. However, I would recommend that the conclusion of the dissertation include conclusions that are generally valid for the education of bilinguals, thereby contributing to the formation of a universal model for their education.

#### **8. Personal participation of the doctoral student**


The dissertation is the personal work of the doctoral student. From a subjective point of view, I have not identified plagiarism in the submitted materials. The doctoral student has submitted reports on the similarity of the dissertation and the abstract from the Strikeplagiarism system, from which objectively it is clear that the coefficients of similarity are clearly acceptable.

#### **9. Conclusion**

The dissertation work of Silvena Stefanova-Milanova has scientific value and up-to-date content. It is well structured and meets the requirements of the Act on the Development of the Academic Staff of the Republic of Bulgaria. I believe that the goal set in the dissertation work has been achieved and the hypotheses have been confirmed. The doctoral student has submitted a certificate of fulfillment of the minimum national requirements under Art. 2b, para. 2 and 3 of the Act on the Development of the Academic Staff in the Republic of Bulgaria for the relevant scientific field and professional field in which the defense procedure is.

**Based on the above, I give my positive assessment and propose to the respected scientific jury to award the scientific and educational degree ‘doctor‘ to Silvena Marinova Stefanova-Milanova in the field of higher education: 1. Pedagogical Sciences, professional direction 1.3. Pedagogy of Training in..., scientific specialty Methodology of Training in Mathematics and Informatics.**

30 .01. 2025 г.  
Shumen

Prepared the opinion:   
/ Assoc. Prof. Evgenia Goranova PhD/