R E V I E W

in a competition for the academic position "Associate Professor"
in area 1 "Pedagogical Sciences“,
professional field 1.3. "Pedagogy of Training in ...",
scientific specialty "Teaching Methodology in Mathematics and Informatics",
in a competition announced by the Technical University – Varna,
published in SG No 38/28/04/2023,
with a **candidate**: Elena Koleva Kovacheva, PhD,
Reviewer: Prof. Dr. Eng. Milena Nikolova Mileva-Karova

1. General and biographical data

Dr. Elena Koleva Kovacheva completed her higher education in 1997 at the Plovdiv University "Paisiy Hilendarski" and acquired the educational degree "Master of Informatics" with the additional professional qualification "Teacher of Mathematics and Informatics". The professional path of the candidate began in secondary education as a teacher and continued for over 22 years in higher education as a lecturer in the field of mathematics and informatics pedagogy. From the very first years, along with teaching in a secondary school, she combined teaching work in groups with adult learners and college students. From 2000 to 2018, he was a teacher of informatics and information technologies at Bishop Konstantin Preslavski Higher Secondary School. She successively held the positions of "Assistant", "Senior Assistant" and "Chief Assistant" in DIKPO - Varna. Since 2018, he has been a part-time teacher at the Technical University - Varna.

The presented CV and other documents show that Dr. Elena Kovacheva is a specialist known to the Ministry of Education and Culture, whose competences have been useful in national working groups for the creation of new curricula in computer modeling and information technology. She is part of a team that created educational sets approved by the Ministry of Education and Culture on information technology and computer modeling from classes III to X. He is also a reviewer of the specialized edition of TU - Varna "Clusters and innovations in education", as well as a member of the program and organizational committee of the already traditional conference for pedagogical specialists.

The candidate represents TU - Varna in a number of national qualification programs as a contact person: National Program "Qualification", Ministry of Education and Culture for 2019, 2020, 2021; Project BG05M2OP001-2.010-0001 Qualification for professional development of pedagogical specialists", MES 2018, 2019, 2020, 2021; Project BG05M2ОП001-2.011-0001 "Support for success" - phase 1 and 2; and participates in a number of domestic, national and international scientific projects and programs, among which: Erasmus Project + KA220-VET - Cooperation partnerships in vocational education and training, "The Classes on The Moon" (participant in a team as a partner on the part of SMB - Varna); Project of SMB - Varna "Mathematics in Electronic environment Geogebra Activity (Mathematics in Electronic environment with Geogebra Activity - MᏣGA)", "America for Bulgaria" foundation, etc.

Dr. Elena Kovacheva has been active as a member of the program and organizational committee of the conferences of SMB - Varna and TU - Varna, respectively: "Mathematics and informatics - reality and perspectives" since 2016 and of "Clusters and innovations in education " since 2018, as well as at the municipal forums in 2021 and 2022 as a panelist and a report participant.

2. General description of the presented materials

Dr. Elena Kovacheva participates in the competition with a complete set of documents, which meets the minimum requirements for holding the position of "Associate Professor": curriculum vitae; certificate of fulfillment of the minimum requirements for holding the academic position "Docent" (1 monograph; 48 publications; 14 citations); reference to scientific contributions; summaries of scientific works; other related documents.

Two of the publications are in scientific publications, referenced and indexed in world-famous databases with scientific information (Web of Science). Thirty-two articles and 14 studies have been published in non-refereed peer-reviewed journals. There are two citations in monographs, and 12 in non-refereed peer-reviewed journals.

The evidentiary materials present Dr. Elena Koleva Kovacheva as a well-known university staff in the field of mathematics and informatics teaching pedagogy.

3. General characteristics of the candidate's research and scientific-applied activity

In the application documents, one independent monograph, 48 publications and 14 citations were provided, respectively evaluated with a total quantitative assessment of 512.65 points in the respective categories: category A – 50 points, category B – 100 points, category D – 282.65 points and category D – 80 points. The overall quantitative assessment according to the minimum requirements for acquiring the academic position "Associate Professor" (see ZRASRB, art. 2b, paras. 2 and 3 - 400 points) is completely sufficient.

The monograph "The Teacher and Computer Modeling in School" presents a theoretical rationale and summarized results of the author's research on the implementation of a model for teacher training in computer modeling. The main components of the methodological system on which the learning model is based are described and the learning achievements of the research participants are presented as a group assessment of learning outcomes. The topic of the scientific work is in sync with the modern processes (curriculum, methods) in the Bulgarian school and the need for innovative approaches in information technology education and the comprehensive use of computer technology and digital skills of the Bulgarian students.

The articles and studies presented in the list of publications for the competition contain analyses, classifications and theoretical characteristics of information technologies and practical guidelines for their use in school training by teachers. They are related to the topics of the courses and disciplines led by the candidate with students and students and relate to her scientific research. The content of the publications can be briefly presented as follows:

- An increasing the digital competence of teachers according to the European framework of digital competences.
- A study of the main software and hardware characteristics of various teaching aids.
- A presentation of interactive information technologies as different components of the learning process - both as learning content and as a tool or form.
- A computer modeling training pedagogy - the didactic part, describing the visual block environment application.

The responsible roles held by the candidate in organizing and conducting conferences and educational forums - member of the program and organizational committee and moderator (panelist) of individual sections, shows that TU - Varna, SMB - Varna and Varna Municipality rely on her high competence.

4. Evaluation of the candidate's pedagogical preparation and activity

The lectures and exercises that Dr. Elena Koleva has implemented with students and pedagogical specialists primarily concern basic topics of the pedagogy of mathematics and informatics education. The following disciplines, which the candidate taught, are presented: Methodology of Training in Informatics; Methodology of Training in Computer Modeling;

School Course in Computer Modeling; Visual Programming in a Block Environment; Fundamentals of Algorithms; Innovative Approaches in Computer Modeling Training; Information and Communication Technologies in Learning and Working in a Digital Environment; Project-based Approach in Learning; The Student Portfolio in Education; Cloud Technologies (Master's degree TKMT, cat. TKK, TU - Varna); Social pedagogy (Bachelor's degree in SM, cat. SPN, TU - Varna); General pedagogy (Bachelor SM, dep. SPN, TU - Varna); General and Social pedagogy (Bachelor SM, dep. SPN, TU - Varna), etc.

In the field of continuing qualification, the candidate was a lecturer in short-term courses and trainings under national programs and projects. The topics that Dr. Elena Kovacheva develops are related to the narrow specialization for an Associate Professor - "Pedagogy of Learning in Mathematics and Informatics": "Cloud Technologies for Effective Communication in School"; "Cloud Technologies - a Means of Implementing Modern Management Models of Educational Institutions"; "The Interactive Whiteboard as a means of Implementing Innovative Approaches in Education"; "Basic Digital Competences for Implementing Innovative Approaches in Education"; "Application of a Toolkit for Early Identification of Students at Risk of Prematurely Leaving the Education System and for a Differentiated Approach in Determining their needs for Providing Individual Support"; "Problem-oriented Training for the Formation of Key Competences"; "Importance of STEAM Education for the Development of Scientific and Computational Students Thinking"; "Innovative Approaches to Organizing STEM Education"; "Multimedia Didactic Tools in Kindergarten".

5. Basic scientific and scientific-applied contributions

I accept the contributions announced by Dr. Elena Kovacheva, which I define as scientific and scientific-applied. These contributions directly correspond and refer to the scientific interests of the candidate and the subject of the competition.

Scientific contributions

● A theoretical concept and justification for the introduction of the new subject "Computer Modeling" in general education at school has been created.

● A model for training pedagogical specialists in computer modeling is described and substantiated in detail.

Scientific and applied contributions:

● Author's analyzes of the main characteristics of various information technologies as a tool in the learning process are presented - interactive whiteboard, multi-mouse technologies, cloud technologies, etc.

● A model for training teachers in computer modeling has been approved.

● Practical concepts for increasing the digital skills of teachers are presented, related to the use of an interactive whiteboard, cloud technologies, etc.

● An analysis of the didactic application of various information technologies in the preparation and conduct of the lesson is proposed.

● Specific practical applications of various information technologies and approaches in the learning process are presented.

The research results have been published in a total of 47 works (monographs, articles and studies), of which 2 are indexed in Web of Science, 14 citations are indicated. Judging by the number of scientific works and citations, the candidate's personal contribution is undeniable.

The teachers are familiar with the candidate's works because they use them in their publications. 12 of their citations in various pedagogical collections/magazines are presented. The two citations in monographs show the authority of Dr. Elena Kovacheva's publications.

6. Significance of contributions to science and practice

In the scientific works of the candidate, the methodical systems of training are described, which are applied in practice. It enriches pedagogical science with theoretical analyzes and conclusions to add innovative teaching aids in the components of the learning process. The topic is particularly relevant today in the establishment of STEM centers in every school, and the contributions of Dr. Elena Kovacheva can help pedagogues to check their effectiveness within various pedagogical experiments. The following can be highlighted as important for school activity:

● Comparative analysis of teaching sets on computer modeling for 3rd and 4th grades from the point of view of pedagogical technology, methodological framework and means of achieving educational goals.

● The theoretical justification of the need to include the new subject "Computer Modeling" in school.

● The system of classes for training teachers in computer modeling, applicable in forms of continuing qualification.

● The Classification of various hardware and software tools from the point of view of functionality and applicability in the learning process.

● The Practical concepts for increasing the digital skills of teachers.

7. Critical notes and recommendations

I have no critical remarks.

I recommend that the candidate include in her articles research related to the effectiveness of teaching students computer modeling during the first years of implementation of this new subject. To present these articles in impact factor journals and conferences indexed in Web of Science.

8. Personal impressions and opinion of the review

My personal impressions are that Dr. Elena Kovacheva is an excellent organizer and a teacher in various forms of teacher qualification, as well as in her work with students. The documents submitted in the competition present her scientific potential both when working with students and with pedagogical specialists in the scientific direction "Pedagogy of Mathematics and Informatics Education". The scientific studies in the list is well above the minimum national requirements for occupying the academic position "Associate Professor".

CONCLUSION

I personally know Dr. Elena Kovacheva from our coperative work at the Continuing Education Center of the Technical University of Varna and the Department of Language and Continuing Education and Sports (DEPOS) of the Technical University of Varna as lecturers and partners in the creation of curricula and training programs for teachers. The submitted documents and the content of the scientific works of Dr. Elena Kovacheva prove the rich teaching experience and the high level of competence of the candidate in the field of Pedagogy of Mathematics and Informatics Training. The results achieved by the candidate, my personal impressions give me reason to propose to the scientific jury members Dr. Elena Koleva Kovacheva to occupy the academic position of "Associate Professor" in scientific area “1. Pedagogical Sciences”, professional field 1.3. “Pedagogy of Learning in.” (“Mathematics and Informatics”).

Date: 20.08.2023

Reviewer:
/Prof. M.Karova, PhD/

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