

REVIEW

by

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Member of the Scientific Jury, appointed according to Order № RD-16-021 / 28.02.2022

by the Rector of Konstantin Preslavsky University of Shumen

Regarding the procedure for holding the academic position of "professor"

in field of higher education 1. Pedagogical sciences, professional field 1.3. Pedagogy of education in... (Biodiversity, biology, health and environmental education), announced by Konstantin Preslavsky University of Shumen in the State Gazette, issue 111/ 31.12.2021 for the needs of the Department of "Sciences for Education" at DIQLL Varna

The competition for the academic position "Professor" was announced in the State Gazette, issue 111/ 31.12.2021 and only one candidate participated in it - Assoc. Prof. Dr. Rositsa Dimitrova Davidova-Madzharova – the Deputy Rector for Research, Design and International Affairs at Konstantin Preslavsky University of Shumen.

According to Order № RD-16-021/ 28.02.2022. by the Rector of Shumen University and Protocol №1 / 10.03.2022, I was appointed a member of the Scientific Jury, responsible for preparing a review for the procedure for holding the academic position of "professor" in the field of higher education 1. Pedagogical sciences, professional field 1.3. Pedagogy of education in... (Biodiversity, biology, health and environmental education), announced by the University of Shumen in the State Gazette, issue 111/ 31.12.2021 for the needs of the Department of "Sciences for Education" at DIQLL Varna.

I. Analysis of the candidate's career profile

After graduating from high school, Assoc. Prof. Davidova continued her education at Konstantin Preslavsky University of Shumen in 1995 and graduated with a master's degree and a qualification of Biologist, Teacher of Biology and Chemistry. Her academic career began after winning a competition in Methodology of Biology Education. She was appointed an assistant-professor in 1996. She obtained a doctoral degree in 2004, and became a chief assistant-professor, and in 2012 was elected an Associate Professor. Over the years, along with her academic development, the candidate has been a course leader, responsible for quality, participated in the preparation of accreditation documents in Biology and Chemistry, Plant Protection, joined various committees on educational activities, and social issues. As a result of the successful scientific career, teaching duties and exceptional organizational work at Konstantin Preslavsky University of Shumen, in 2016 Assoc. Prof. Davidova was elected Deputy Dean for Accreditation and Quality of the Faculty of Natural Sciences. From 30.10.2019 to 01.04.2021 she has worked as a Deputy Rector responsible for educational

policies, research and international relations, and as an institutional "ERASMUS+" coordinator. Assoc. Prof. Davidova has participated in and chaired different university commissions responsible for teaching, research, and student enrolment. She is a member of the commission for preparation of curricula for Bachelor's and Master's degrees.

Assoc. Prof. Davidova has a wide range of expertise. She has been a member of the editorial boards of two scientific journals - *Acta Scientifica Naturalis* and *Acta pedagogica naturalis*, a member of the editorial board of article collections from conferences, she has been a reviewer of publications in specialized foreign and Bulgarian scientific journals, projects, course books, a member of scientific jury in procedures for acquisition of academic positions, a member of the expert group of NEAA on procedures for accreditation of doctoral programs.

The candidate is a Member of the Union of Scientists in Bulgaria. She has a good command of English.

As it becomes clear, the career profile of Assoc. Prof. Davidova shows research interests in combination with extensive teaching and organizational activities and high administrative responsibility, based on a successful management approach.

II. Review of the documents submitted for the competition

The documents submitted by Assoc. Prof. Dr. R. Davidova present both her academic and professional development and his personal qualities. They contain all the necessary information for holding the academic position of "professor" in accordance with the requirements of the ZRASRB and the Regulations on the terms and conditions for acquiring scientific degrees and titles at Konstantin Preslavsky University of Shumen.

For the purposes of her participation in the competition for the academic position "Professor", announced by Shumen University, Assoc. Prof. Dr. Rositsa Dimitrova Davidova - Madzharova **has submitted 34 scientific publications to the attention of the scientific jury: a monograph (1), articles, published in scientific journals, referenced and indexed in top research databases of scientific information (15), articles published in non-refereed journals or papers published in edited collective volumes (17), and university textbooks (1).**

The scientific works of the candidate are included in a reference form proving the fulfillment of the minimum requirements for holding the academic position of "professor", according to ZRASRB.

The publications included in the author's list are in Bulgarian and foreign editions. In **19 of the total number of publications**, the candidate is the first author. In the other publications the name of the candidate comes second in 10 publications and third in 3 publications. The data show the author's ability to write together with other researchers, which proves her ability to work in a team, which I as a reviewer appreciate. **I recommend that Assoc. Prof. Davidova in her future work publishes as a single author and develops wider independent publishing.** The publication activity of the candidate is almost evenly distributed throughout her academic career, most frequently in the last two years, in specific research fields which fully correspond to the professional field of the announced competition.

The candidates' research covers issues aimed at current and significant issues in the field of education in biology, health education, man and nature. The scientific papers submitted for participation in the competition can be grouped in the following research areas:

I. Methodology of teaching the subjects Man and Nature and Biology and Health Education in high school

- The application of the competence approach in teaching and the formation of key competencies in students on the basis of the curriculum in the subjects Man and Nature for V - VI grade and Biology and Health Education for VII - X grade are thoroughly analyzed. The possibilities for the formation of key competencies provided by the curriculum of the subject Man and Nature for V - VI grade and Biology and Health Education for VII - X grade are analyzed (3.1; 7.8).

- The application of interactive methods as an innovation in the training for the formation of key competencies in students in the subjects Man and Nature and Biology and Health Education is analyzed. The need for a combination of methods for achieving the goals of the competence approach in teaching is outlined.

Assoc. Prof. R. Davidova has developed didactic models of lessons on topics from the curriculum in Man and Nature for V - VI grade and Biology and Health Education for VII - X grade, and presented models for their incorporation into specific methodological units of the curriculum (3.1; 7.8). Methodological models of lessons with interactive methods supporting the formation of key competencies are designed and implemented through real learning activities (7.8).

- The possibilities offered by the curriculum in biology and health education for VII and VIII grade for the application of innovative methods for environmental and health education of students are analyzed. The ecological and health aspects of the educational content are revealed. Methodological models of lessons with interactive teaching methods were developed and tested in practice and their effectiveness for ecological and health education of the students in the subject was researched (6.5; 6.6; 6.8). The conducted didactic /methodological/ experiments are a practical contribution to the didactics of biology and the problem of the use of interactive methods for the purpose of students' ecological and health education.

- The problem of developing the cognitive interest of students in the subject Man and Nature for VI grade, Part III. Structure and life processes of organisms, were studied. Learning and cognitive tasks and specific methodological situations were constructed, illustrating the methodology of application of the didactic categories such as approaches, methods, techniques and teaching aids. The developed methodological models illustrate some possible ways of developing the cognitive interest of the 6th grade students in the process of teaching the subject Man and Nature (6.1; 6.2; 6.3).

- The level of knowledge and skills acquired by students in the process of studying the section Biotic factors (9th grade) and the section Heredity and variability (10th grade) in Biology and Health Education is diagnosed and assessed. The above sections play a key role in building health and environmental culture and behavior in adolescents (7.10; 7.15).

- **A model for application of modern information technologies in the teaching of Biology and Health Education for VII grade with of the software platform Envision was designed. The obtained results prove that the software of Envision is effectively integrated in teaching the subject to VII grade students (7.16; 7.17).**

II. Quality of education and preparation of university students for their professional realization

- The results of teaching university students from different specialties of Shumen University in the discipline Lesson observation in Biology were analyzed. Fragments of the methodological models of students' lessons were developed, including interactive methods aimed at achieving the objectives of teaching Man and Nature and Biology and Health Education in V - X grade, compulsory training (7.7).

- A survey was conducted among graduates of Shumen University in the professional field Plant Protection who are currently employed, and among employers, in which the professional realization of students was analysed. The quality of their general, theoretical and practical training was evaluated (7.6).

- An evaluation of the practical training in the individual professional fields and educational and qualification degrees of Shumen University was conducted. The results prove the requirements of employers and are the basis for improving the system of practical training of students (7.11)

- The innovative and entrepreneurial potential of the teaching staff of Shumen University was assessed by using the HEInnovate tool. The obtained results support the diagnosis of strengths and weaknesses in various key areas. The actions that the university should take in order to achieve sustainable development and increase the benefits **of the research conducted for the institution and the region were outlined (7.13; 7.14).**

III. Taxonomic diversity and ecological features of different groups of organisms studied by university and school students in the subjects Man and Nature and Biology and Health Education in secondary school

- The taxonomic composition of shell amoebas in different regions of Bulgaria - Kamchia, Brestovene, Beli Lom, Loznitsa, Kara Mihail, Bogdantsi, Isperih, Lipnik, Blanik Malak Preslavets Protected Area, Golden Sands Nature Park, the Bulgarian Black Sea sand supralitoral and the associated brackish and freshwater basins was studied and assessed in detail. The structure and dynamics of testate amoebae communities was established. The nature of the biotope distribution of the identified species of shell amoebae was analyzed. **The testate amoebae fauna of these areas was studied for the first time (6.4; 6.7; 6.10; 6.14; 7.1; 7.2; 7.3; 7.9).**

- The influence of a number of environmental factors on the diversity, distribution and abundance of shell amoebas inhabiting different biotopes was studied (6.7; 6.10; 7.12). The identified dependencies find specific application in the teaching the subjects of Man and Nature, and Biology and Health Education.

- The species composition of ticks (Acari: Parasitiformes) in nests of three species of sparrows was described: Great Tit (*Parus major*), Half-white flycatcher (*Ficedula*

semitorquata) and Blue Tit (*Cyanistes caeruleus*). Annual dynamics and structure of different climatic elements on the development of ticks were identified. **The mite fauna inhabiting the nests of *Cyanistes caeruleus* was studied for the first time.** Research on the group was used in the education of students in the subjects Man and Nature and Biology and Health Education in secondary school (6.9; 6.11; 6.13; 6.15; 7.4; 7.5)

- The biology of the plum wasp (*Eurytoma schreineri* Schr.) was described - a relatively new and serious pest of plum trees in Bulgaria. The data obtained made it possible to make specific recommendations for the conservation of plum orchards, and to assess the impact of humans on nature and their responsibility for conserving the biodiversity (6.12).

The in-depth research and analysis that Assoc. Prof. Davidova does on the place and role of various organisms in natural and anthropogenic ecosystems, their ecological features, and the protected areas in Bulgaria, allows the formation of a scientific basis of environmental competencies which are important for the environmental education of university and school students, as well as for the formation of competencies for understanding the relationship between animate and inanimate nature. This knowledge is a prerequisite for environmentally friendly and healthy lifestyle, which is an essential part of students' education.

According to quantitative indicators of the criteria for awarding the academic position "professor", the production presented by the candidate significantly exceeds the requirements for this academic position. The candidate has made contributions of both theoretical and applied nature.

III. Reflection of the candidate's scientific publications in the national and foreign research (citations)

The high value of the scientific production of Assoc. Prof. Dr. Davidova is evidenced in the total of 97 registered citations, 79 of which are in publications abroad and 41 in research publications in journals referenced in Web of Science и Scopus. For participation in the competition the candidate presents 36 citations of her work by foreign and Bulgarian authors, of which 17 are in journals referenced in Web of Science and Scopus, and 26 citations abroad, which means that on this indicator she exceeds the required minimum number of points. The list of the citations by other authors is prepared by the candidate herself.

IV. Comprehensive quality assessment of the candidate's teaching duties, including supervision of students' research

Teaching duties (work with students and doctoral students):

The candidate in the current competition, Assoc. Prof. R. Davidova, teaches the following disciplines: Zoology, Zoology of Invertebrates, Zoology of Vertebrates, Lesson observation in Biology, Current Pedagogical Practice in Biology, School-based internship in Biology, Methodology and Technique of School Experiments in Biology, Didactic aspects of the school course in Man and Nature and Biology and Health Education, Theory and Methodology of Didactic Tests, Pedagogical Workshop in Biology, Methodology and Methods of Pedagogical Research

Assoc. Prof. Davidova has supervised students who defended 8 diploma theses; 5 graduates have obtained the first (1), second (1) and third (3) professional qualification degrees

in biology. Under her supervision students, postgraduates and doctoral students, have had a total of **26 participations in 13 scientific forums.**

Scientific and applied research

Assoc. Prof. Davidova has participated in a number of projects, in 4 of which she was a coordinator and in 4 other – a team leader. The projects can be divided into the following groups:

- Participation and management of national projects (10), (*Appendix 12.12*).
- Participation and management of university projects (11), (*Appendix 12.13*).

The candidate has gained experience in projects funded by various European programs such as the Operational Program for Human Resources Development, co-financed by the European Social Fund and the Operational Program "Science and Education for Smart Growth", Projects under the Grant Scheme: Ministry of Education Project, implemented with the financial support of the Operational Program "Human Resources Development", co-financed by the European Social Fund of the European Union. All these projects expand the horizons of the candidate and develop her skills in conducting research and projects related to improving the academic staff structure, as well as involving students in collaborative work.

Implementation activity (applied in practice results of research; inventions and rationalizations)

• in secondary school, in the process of teaching Biology and Health Education

- Methodological models of lessons with interactive teaching methods in Biology and Health Education for 7th and 8th grade were developed and tested in practice (*Appendices 6.5; 6.6; 6.8 from the list of publications*).
- Methodical models of lessons with interactive methods for formation of key competencies were designed and implemented in real classrooms (*Appendices 7.8 from the list of publications*).
- Integration of the software "Envision" in the teaching of "Biology and Health Education" in VII grade. (*Appendices 7.16; 7.17 from the list of publications*)

V. Assessment of the personal contribution and qualities of the candidate

The entire scientific production, professional and pedagogical work of Assoc. Prof. Davidova is dedicated to innovations in pedagogy and the development of biological science in particular. I highly appreciate her choice for scientific fields in which she works thoroughly and with research precision. Her contributions to the research and discovery of different species and their implementation in the teaching of the subjects Man and Nature and Biology and Health Education are important. In this way, her research adds value to the environmentally friendly and healthy lifestyle of pupils and students and her scientific achievements reach the public! Her scientific contributions to the field of pedagogy, discovery and research of species, as well as health and environmental education are not confined to Shumen University alone, where she is a Deputy Rector of an established university in the country and abroad. Her contributions are in different areas of life - education, environmental protection, agriculture, promotion of environmental behavior, and healthy lifestyle.

VI. I don't have any critical remarks.

I recommend to maintain and develop the cooperation with colleagues from the country and abroad by organizing conferences and practical meetings hosted by the University of Shumen on research issues the candidate works on, such as *quality of education and preparation of students for professional realization; taxonomic diversity and environmental features of different groups of organisms, as well as Methodology of teaching Man and Nature and Biology and Health Education in secondary school.*

VII. Conclusion

The documents and evidence presented by Assoc. Prof. Dr. Rositsa Dimitrova Davidova - Madjarova for participation in the competition fully meet the mandatory quantitative and scientometric criteria, according to the regulations for the academic position of "Professor" at Konstantin Preslavsky University of Shumen.

In view of the above, I strongly express my positive vote and advise the esteemed members of the Scientific Jury to vote in favor of her candidacy. I find it appropriate that the scientific jury propose to the Council of DIQLL the candidacy of Assoc. Prof. Dr. Rositsa Dimitrova Davidova - Madzharova to hold the academic position of "Professor" in higher education area 1. Pedagogical sciences, professional field 1.3. Pedagogy of teaching... (Biodiversity, Biology, Health and Environmental Education), announced by Konstantin Preslavsky University of Shumen for the needs of the Department of "Sciences for Education" at DIQLL, Varna.



10.04.2022

Reviewer: Prof. Sonya Toncheva, PhD, DSc