

## OPINION

by Prof. Dr. Evgeniya Minkova Topolska,  
lecturer at New Bulgarian University,  
member of the scientific jury for awarding the educational and scientific  
degree "Doctor" in a professional field 1.3 Pedagogy of teaching in...  
(Methodology of teaching in biology) in Sofia University "St. Kliment  
Ohridski"

for a dissertation on the topic "**Content of biological education in the  
Bulgarian and Californian educational systems - a comparative  
analysis**",

presented by **Maya Ivanova Gacheva**

The opinion was written on the basis of the Order of the Rector of Sofia  
University "St. Kl. Ohridski" RD-38-287 of 06.05.2024

### 1. Data on the doctoral student

Maya Ivanova Gacheva graduated from Nature - Mathematics High School "Acad. Prof. Dr. Asen Zlatarov", profile "Biology and English", in Botevgrad. In 2003, she graduated with a degree in "Molecular Biology" and a specialization in "Plant Physiology" at the Faculty of Biology of SU "St. Kl. Ohridski", and later graduated with a master's degree in "Modern educational technologies/ professional qualification - teacher" at the Faculty of Pedagogy of SU "St. Kl. Ohridski".

Maya Ivanova Gacheva works as a specialist at the Institute of Plant Physiology at the Bulgarian Academy of Science. From 2015 to the present, she works as a teacher of natural sciences, biology and health education at the American English Academy, Sofia and "Abraham Lincoln" Primary School, Sofia.

The educational and practical experience of the doctoral student reflects a lasting interest in natural science education and is a prerequisite for in-depth scientific research in the specified scientific field.

### 2. Procedure data

Maya Ivanova Gacheva is enrolled as a doctoral student of independent training in professional direction 1.3. Pedagogy of teaching in ..., doctoral program "Methodology of teaching in biology" at the department "Methodology of teaching in biology", by order of the Rector of SU "St. Kl. Ohridski" RD 20-906/05.05.2022.

By order of the Rector of the SU "St. Cl. Ohridski" RD 20-1004/28.05.2024 the doctoral student was dismissed early with the right to defense after a positive decision of the primary unit.

A certificate has been presented by the Department of Doctoral Students that Maya Gacheva has passed all the exams from the individual plan during the studies.

The doctoral student submits a declaration of originality and credibility, confirming the originality of the study and results. A protocol for verifying the originality of the dissertation work and an opinion are submitted by the supervisor, which confirm that there are no signs of plagiarism.

The certificate of compliance with the minimum national requirements for ONS "Doctor" shows that the doctoral student fulfills the requirements.

### **3. Data for the dissertation work**

The dissertation is in a volume of 176 pages, and the content is structured in: introduction, four chapters, conclusions, contributions, recommendations and conclusion, list of used literature and appendices. The exhibition includes 16 tables and 37 figures. The cited literature includes a total of 77 sources and 50 archival documents and Internet resources.

I find the doctoral student's idea to conduct a comparative study of biological education in two educational systems very useful in the process of searching for new opportunities to improve biological education in our country. The research field in the dissertation research is very broad, and in this sense I consider the doctoral student's decision to fully cover the content of biological education in school too brave, by comparing it in the Bulgarian and Californian educational systems based on state standards, curricula, textbooks, teaching aids, books for the teacher and student achievement.

In the introduction, the doctoral student presents the relevance of the chosen topic and her reasons for the scientific research.

In the first chapter "Methodology of the research" the goal and tasks, object and subject of the research, main research questions are correctly defined. The stages of the dissertation research are presented in detail.

In the second chapter "Competence approach and content of training" theoretical statements about the essence of competences are analyzed, normative documents and specialized scientific literature are cited. A comparative analysis is made between the Bulgarian and California educational systems of the competences regulated in the documentation related to the content of biology education: state standard, curriculum. I should note here that the comparative analysis refers to some of the classes in school education at the lower secondary and upper secondary levels.

In the third chapter, "Theoretical analysis of educational documentation related to the implementation of the concept of content in the learning process", the concepts of textbooks and teaching aids in the Bulgarian and California educational systems in the context of biological education are analyzed. Textbooks and teaching aids in biology education in the USA are analyzed. A comparative analysis of assessment scales and a method for equating values in Bulgaria and the USA is presented.

In the fourth chapter, Analysis of Student Assessment Results, the doctoral student focuses on student assessment results in grades 5, 7, 9, and 10. Mathematical-statistical methods are applied to process the obtained results.

In "Conclusions, Contributions and Recommendations", the doctoral student systematizes the obtained results by formulating basic similarities and differences in the concepts of the content of biology education in the Bulgarian and California educational systems. Recommendations have been made to the content of biological education in our country.

The conclusion contains correct scientific theses that show an unbiased view of the doctoral student towards the research topic.

#### **4. Scientific contributions**

The presented dissertation has the following scientific contributions:

- Competences in the teaching of biology in curricula in our country for individual classes from junior high school and high school stage are analyzed and compared with curricula in biological education in the California educational system.
- Textbooks, study aids and books for the biology education teacher in the Bulgarian and California educational systems are analyzed.

#### **5. Questions for the PhD student:**

- In the fourth chapter "Analysis of the results of student evaluation", where are the cited data with annual evaluations of biology education students for the specified five-year period from the 2018/2019 academic year until the 2022/2023 academic year according to the Bulgarian and Californian educational system?
- How many of the studied students in the Bulgarian and California educational systems are included in the comparative analysis?

#### **6. Conclusion**

The dissertation work presented by Maya Ivanova Gacheva is dedicated to a topic that has not been studied so far in our country. A topic that provides a guideline for the improvement of biological education in Bulgaria. The dissertation work has a scientific contribution, and this gives me the reason to propose to the respected scientific jury **to award the doctoral student Maya Ivanova Gacheva the educational and scientific degree "Doctor"**.

Prof. Dr. Evgeniya Topolska

01.09.2024