

REVIEW

by Prof. Dr. Yordanka Stoyanova Peycheva Shumen University "Episkop Konstantin Preslavski" Member of the scientific jury pursuant to Order No. RD16005/26.01.2026 of the Rector of Shumen University

Regarding the dissertation submitted for the award of the educational and scientific degree "Doctor" Field of Higher Education: 1. Pedagogical Sciences Professional Field: 1.3. Pedagogy of Teaching ... Doctoral Programme: "Methodology of Teaching Technology and Technology Education" Topic: "*A Model for the Ecologization of the Curriculum in Technology and Entrepreneurship*" Author: **Irina Borislavova Slavova**

Supervisor: Prof. Dr. Ec. Sc. Margarita Kirova Boneva

I. Information about the Procedure

Irina Borislavova Slavova was enrolled as a doctoral student by Order No. RD10062/01.02.2021 and was deregistered with the right to defend by Order No. RD10112/19.02.2024.

All required documents have been submitted. The procedure complies with the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and its implementing regulations. The minimum national requirements have been met. No plagiarism has been detected.

II. Information about the Author of the Dissertation

Irina Borislavova Slavova was born on 25 June 1993. She completed secondary education in 2012.

In 2015 she obtained a Bachelor's degree, and in 2016 a Master's degree in *Social Activities* at Shumen University "Episkop Konstantin Preslavski".

At the beginning of her professional career, she held various administrative positions. Since 2015 she has been a Chief Specialist at Shumen University. Her professional competence is supported by qualifications in technical skills, an A2 English language certificate, and participation in three research projects at Shumen University.

On 1 February 2021 she was enrolled as a fulltime doctoral student in the programme "Methodology of Teaching Technology and Technology Education" within Professional Field 1.3. Pedagogy of Teaching ..., Field 1. Pedagogical Sciences, at the Department of TOPU and PUNUP at Shumen University, with scientific supervisor Prof. Dr. Ec. Sc. Margarita Boneva.

III. Evaluation of the Dissertation

Relevance of the Research Problem

The doctoral student addresses a relevant issue grounded in the recommendations and strategies for educational development of the Council of the European Union and national educational documentation.

The topic of ecologizing the curriculum is significant and necessary for pedagogical practice in Technology and Entrepreneurship education. Its practical applied nature enables the comprehension and application of acquired knowledge, which is essential for forming ecological culture in every member of society.

Characteristics of the Dissertation

The dissertation consists of 200 pages and is structured into: introduction, four chapters, a survey, a glossary of ecological concepts in Technology and Entrepreneurship education, a table of additional knowledge, skills and competences resulting from the subject, additional ecological knowledge, conclusion, and bibliography. The author cites 152 sources.

The main focus is on the state and possibilities for ecologizing the curriculum in Technology and Entrepreneurship from 1st to 7th grade in theoretical terms.

Introduction

Based on current normative documents, the need to create pedagogical conditions for optimizing the relationship between social and natural environments is justified through the integration of ecological education into general education, including Technology and Entrepreneurship.

The hypothesis, object, subject, aim, and research tasks are formulated.

Chapter One

The need to address ecological problems through mastering ecological and ethical norms, attitudes, and values is argued. This leads to ecological preparedness and responsibility in interactions with nature. The influence of ecological issues on education is highlighted, necessitating the introduction of ecological content.

Through analysis of documents and works of Bulgarian and foreign scholars, the essence and significance of ecologizing the curriculum are clarified. Ecological education and upbringing are implemented, and ecological culture is formed. The interactive educational environment and student activity are considered essential for effective learning.

Key concepts such as *ecological problem*, *ecological education*, *ecological upbringing*, *ecological literacy*, *ecological awareness*, *ecological culture*, etc., are defined, although inconsistencies between cited texts and listed sources are noted.

The author identifies major issues in ecological education: focus on factual material at the expense of experience and skills; reducing ecological education to nature protection; insufficient attention to social factors influencing ecological problems. Based on this, she outlines directions for development regarding aims, priorities, tasks, principles, and curriculum content.

Chapter Two

The concepts *entrepreneur* and *entrepreneurship* are clarified, including types, significance for the market economy, economic growth, living standards, entrepreneurial qualities, socioeconomic effects of innovative entrepreneurship in Bulgaria and abroad, and learning outcomes at national and European levels.

The key competence "initiative and entrepreneurship" and its implementation in Technology and Entrepreneurship in primary and lower secondary education are presented. The link to the dissertation topic is based on the recommendation of the Global Entrepreneurship Monitor in Bulgaria to include ecological aspects in entrepreneurial training for sustainable development.

Chapter Three: Curriculum in Technology and Entrepreneurship and Opportunities for Ecologization

Drawing on the Recommendation of the European Council on key competences for lifelong learning and other documents, the doctoral student justifies the need to develop entrepreneurial competence aligned with active learning trends. Emphasis is placed on didactic conditions: innovative approaches, individual choice of activities, supportive environment, project work, etc. Recommendations for optimizing curricula and requirements for teachers are proposed.

In section 3, the analysis of curricula demonstrates the author's competence, but the review would be more valuable if it examined the state of ecologization more comprehensively and convincingly. This would better support the next chapter.

Despite efforts to clarify concepts, a unified conceptual framework synthesizing the theoretical basis is missing. This affects the development of a coherent strategy for achieving the research aim.

Chapter Four

Based on curricula, the implementation of the key competence "skills for supporting sustainable development and healthy lifestyle and sports" is traced, which is one of the niches for ecological approaches in technological education.

Two surveys are included: one assessing ecological literacy among 59 teachers, and another with 22 teachers without a stated purpose.

The survey questions rely on teachers' subjective selfassessment, which cannot serve as a criterion for ecological literacy. Objectivity and reliability are lacking. Statistical processing does not meet doctoral standards.

The proposed model for ecologizing the curriculum is based on the Framework Requirements for ecological education. It includes existing curriculum parameters and new aspects such as *sustainable behaviour*, system connections between living and nonliving nature, and the impact of pollution on human health (primary level); and types of pollutants, noise pollution, etc. (lower secondary level).

Some proposed concepts are not aligned with the specifics of technological education (e.g., *abiotic factors* in 1st grade; *air pollution from burning wood* in 2nd grade; *greenhouse effect*, *acid rain* in 3rd grade; *narcotics*, *junk food* in 5th grade).

Other concepts are overly specific and already embedded in broader curriculum topics (e.g., *wind turbines* vs. "devices using wind as an alternative energy source").

Concepts such as *living and nonliving nature*, *animals*, *plants* belong to other subjects and should not be core elements in Technology and Entrepreneurship.

The integration of ecological aspects at curriculum level is presented in Table 1, differentiated for primary and lower secondary stages, ensuring continuity.

The recommendations are appropriate but require refinement.

Contributions

- The need for effective ecological education and upbringing across all educational spheres is argued.
- Key problems in ecological education are clarified, and an attempt is made to justify the need for ecologizing the curriculum in Technology and Entrepreneurship.
- An idea for an author's model for ecologizing the curriculum is proposed.

IV. Recommendations and Questions

To optimize the dissertation, it is recommended to:

- Expand the concept of ecologizing the curriculum and highlight the doctoral student's contribution.
- Develop a model with concrete dimensions within the curriculum.
- Propose a methodology for implementing the model in pedagogical practice.
- Create a procedure and diagnostic tools for assessing students' ecological knowledge and skills to prove the model's effectiveness.
- Refine the correspondence between text and sources in the theoretical section.

Questions:

- In what aspects can innovations in education be examined? How do they correspond to the ecologization of the curriculum in Technology and Entrepreneurship?
- What is the role of the educational environment in ecologizing Technology and Entrepreneurship education?

V. Author's Abstract and Publications

The author's abstract reflects the content of the dissertation.

The three attached publications are in nonrefereed but peerreviewed editions and edited scientific volumes. They reflect the doctoral student's interest in innovative technologies.

VI. Conclusion

Based on the above, the dissertation does not meet the scientificmethodological requirements for this type of academic work. The doctoral student needs time to make corrections and additions regarding the theoretical basis, methodology, and statistical analysis.

Therefore, I give a negative evaluation and recommend that the Scientific Jury **does not award the degree "Doctor"** to Irina Borislavova Slavova.

I propose that, pursuant to Art. 11, para. 3 of ADASRB, Art. 33, para. 4 of its Regulations, and Art. 31 of the Regulations of Shumen University, the dissertation be returned for revision. If the doctoral student wishes, a new defence procedure may be opened within one year of the return date.

Date: 25 February 2026

Reviewer:

(Prof. Dr. Yordanka Stoyanova Peycheva)