

REVIEW

by Prof. Nikolay Ivanov Tsanev, Ph.D

, member of the scientific jury, pursuant to Order No. RD-16-004/26.01.2026 of the Rector of Shumen University “Ep. Konstantin Preslavski”

Regarding: Dissertation for obtaining the educational and scientific degree “Doctor”

Field of Higher Education: 1. Pedagogical Sciences Professional Field: 1.3. Pedagogy of Teaching ... (Methodology of Teaching Technology and Technology Education)

Author: Irina Borislavova Slavova Title: “*A Model for Ecologization of the Curriculum in Technology and Entrepreneurship*” Scientific Supervisor: Prof. Dr. Ec. Sc. Margarita Kirova Boneva

1. Compliance of the Procedure with the Regulatory Framework

The documentation submitted by Irina Borislavova Slavova formally meets the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB). The procedure has passed through the necessary administrative phases. The similarity report (StrikePlagiarism) registers low coefficients (CS1 – 7.31%, CS2 – 3.94%), which excludes direct plagiarism, but in itself does not constitute proof of theoretical contribution.

2. General Biographical Presentation of the Candidate

Irina Borislavova Slavova was born on 25 June 1993. Her professional and academic path is closely connected with Shumen University “Episkop Konstantin Preslavski”, where she has consistently built upon her pedagogical qualifications. She completed her higher education in the field of pedagogical sciences, which enabled her to establish a theoretical foundation focused on the methodology of technological education.

Her professional biography shows active engagement in the academic environment. Slavova holds the position of Chief Specialist at Shumen University, which provides her with direct insight into the organization of the educational process and administrative standards in the scientific sphere. As a doctoral student in the Department of “Pedagogy of Teaching Fine Arts and Technological Education”, she

strives to combine her expert work with research tasks. Her professional experience also includes work in a real school environment, which served as the empirical basis of the dissertation. During her doctoral studies, Slavova demonstrated interest in applied aspects of innovative technologies (3D printing) and participated in international scientific forums (e.g., Armenia, 2022).

3. Analysis of the Relevance and Significance of the Topic

The topic of ecologizing the curriculum is strategically significant and fully corresponds to global imperatives for sustainable development and ecological transformation of society. In the context of contemporary climate and resource challenges, education is called upon to play a key role in building a new type of culture in which ecological awareness is integrated into every human activity.

The relevance of the dissertation is determined by several fundamental factors:

- **Global and European context:** The research aligns with EU policies such as the “Green Deal” and UNESCO’s goals for Education for Sustainable Development. Emphasizing ecology within technological education responds to the need to prepare specialists for the future “green economy”.
- **Interdisciplinary character:** The significance of the topic lies in the attempt to overcome the traditional separation between technological progress and environmental protection. Integrating entrepreneurial thinking with ecological responsibility is a conceptual bridge essential for shaping the modern learner.
- **Methodological necessity:** Reconsidering the curriculum in “Technology and Entrepreneurship” through the lens of ecologization gives the subject higher social and ethical value. It represents a shift from purely operational mastery of technologies toward understanding them as tools for sustainable impact.
- **Age specificity:** Focusing on primary and lower secondary education is conceptually justified, as this is the period when the foundations of value systems and ecological attitudes are formed.

Thus, the chosen research area has potential for theoretical and practical development, raising the question of the new role of technological education in the era of ecological transition.

4. Conceptual Foundations

The conceptual framework of the dissertation is built on the idea of transforming traditional technological education into a factor for ecological upbringing. The author places several key theoretical pillars at the center of her concept:

- **Paradigmatic shift:** The concept relies on the transition from an anthropocentric to an ecocentric approach in education. Slavova argues that ecologizing the curriculum in “Technology and Entrepreneurship” should not be an episodic inclusion of nature-related topics but a comprehensive rethinking of entrepreneurial initiative through the prism of sustainability.
- **Technological mediation of ecological values:** An original element is the role of additive technologies (3D printing). They are viewed not as a technical goal but as a mediator—a means of visualizing product life cycles and working with environmentally friendly materials (e.g., biodegradable polymers). Thus, abstract ecological ideas acquire tangible form through students’ practical experience.
- **Integration of “Green Entrepreneurship”:** The concept emphasizes forming competencies for ethically oriented innovation. Entrepreneurship is defined as the ability to create value without harming ecosystems, which is the ideological core of the proposed Model.
- **Socio-pedagogical triangulation:** The concept assumes that ecological awareness is sustainable only if built simultaneously at school and in the family. This justifies the inclusion of parents and teachers as active participants in the Model, not merely observers.

Despite these clearly outlined lines, the conceptual framework suffers from theoretical eclecticism. The author attempts to combine a wide range of pedagogical, economic, and technical ideas without always integrating them into a unified theory. A deeper authorial definition of the concept of “ecologization of the curriculum” is missing; it often remains at the level of adding examples of biodegradable materials rather than proposing a new conceptual structure of methodological knowledge.

5. Methodological Analysis: Pedagogical Experiment or Survey Study?

The procedural and methodological characteristics of the experiment are imprecise and suffer from several fundamental weaknesses. This is one of the most critical parts of the dissertation:

- **Dominance of the survey method:** Despite claims of a complex methodology, the pedagogical experiment is effectively replaced by a survey study. Evidence for the model's effectiveness relies almost entirely on subjective self-assessment by participants (students, parents, teachers) regarding their "literacy" and the "usefulness" of the training.
- **Lack of objective diagnostics:** Methods such as "observation" and "analysis of activity products" are presented narratively. There are no protocols, criteria, or scales to objectify the measurement of students' actual achievements.
- **Statistical inconsistency:** The use of only percentage analysis and mean values is insufficient for a doctoral dissertation. The absence of statistical significance testing (e.g., t-test) and other common statistical methods leaves the conclusions about the model's effectiveness scientifically unproven.

6. Scientific-Theoretical and Practical Contributions

The contributions should be evaluated in relation to the author's stated goals and the actual results achieved.

Attempts at scientific-theoretical contributions:

- **Conceptualizing the "ecology–technology" relationship:** There is an attempt to define the role of technological education as a mediator of ecological knowledge in primary and lower secondary education. However, this remains at the level of thematic systematization rather than forming a new pedagogical category.
- **Theoretical justification of the need for ecologization:** The author attempts to argue for restructuring the curriculum by introducing elements of "green entrepreneurship". This contribution is declarative and does not offer a complete authorial theory for transforming the methodological system.
- **Creation of an integrative model:** Efforts are made to outline theoretical parameters of a model uniting the interests of students, parents, and teachers. However, its theoretical depth is limited by its predominantly descriptive nature.

Practical contributions:

Here the value of the work is more clearly expressed, though with local significance:

- There is an attempt to develop a specific Model for ecologizing the curriculum, offering a new interpretation of topics in “Technology and Entrepreneurship”.
- A diagnostic toolkit (survey questionnaires) is proposed for assessing participants’ attitudes, which may be used in school practice for exploratory studies.
- A methodological algorithm for working with 3D technologies is suggested, visualizing ecological problems through biodegradable materials. It is presented more as a description of lesson scenarios than as a universal methodological algorithm applicable by other teachers.

In summary, the contributions are primarily practical, while the scientific-theoretical claims remain at the level of “attempts at systematization” of known pedagogical facts.

7. Author’s Abstract and Publications

The author’s abstract reflects the content of the dissertation. The publication activity (3 publications) meets the minimum threshold for admission to defense (30 points), with publications mainly in local journals.

8. Notes and Questions

The dissertation falls below the required standards due to its logical and methodological indeterminacy and the use of self-assessment methods (surveys) to prove a scientific hypothesis. I pose the following questions for clarifying the value of the dissertation and guiding future improvement:

1. How could the thesis about the effectiveness of the proposed Model be defended more convincingly if, alongside survey data, the research included objective indicators such as diagnostic test results and direct assessment of students’ practical skills?
2. What specific qualitative and quantitative indicators should be used in the “analysis of activity products”, and how would these indicators correspond to levels of ecological literacy?
3. What theoretical arguments can distinguish the author’s concept of “ecologization” from the simple thematic addition of ecological examples to the curriculum?

4. Since no methods for testing statistical significance were applied, on what grounds is it claimed that the observed changes in attitudes are a stable result of the model rather than a random factor?
5. How is the proposed Model expected to function in the educational reality of the mass Bulgarian school if the suggested changes are not reflected in the upcoming update of the curriculum documentation?

9. Conclusion


Based on the dissertation and accompanying documentation, I find significant methodological deficiencies, conceptual ambiguity, and unconvincing statistical processing of empirical data. The work does not convincingly defend its scientific-theoretical novelty and relies predominantly on subjective evaluation methods (surveys), replacing a real pedagogical experiment with an opinion study.

Therefore, I state:

1. The dissertation does not meet the requirements of Art. 6, parag. 3 of ADASRB, as the presented results do not constitute original scientific contributions.
2. In accordance with Art. 11, parag. 3 of ADASRB, an unsuccessfully defended dissertation is returned for revision. If the candidate wishes, a new defense procedure may be initiated no later than one year after the return.
3. Pursuant to Art. 33, para. 4 of the Regulations for the Implementation of ADASRB and Art. 31 of the Rules for the Development of the Academic Staff at Shumen University "Episkop Konstantin Preslavski", the dissertation should be returned for complete revision.

Based on the above, I give a categorical negative evaluation. I propose that the scientific jury refrain from awarding the educational and scientific degree "Doctor" to Irina Borislavova Slavova and return the dissertation for revision and elimination of the identified substantial deficiencies.

Date: 16.02.2026

Reviewer: 
(Prof. Nikolay Tsanev, Ph.D.) 