

REVIEW

by Assoc. Prof. Slavka Nenova

of a Doctoral Dissertation entitled
“ADAPTIVE MODELS OF LEARNING IN TECHNICAL VOCATIONAL EDUCATION
ACCORDING TO STUDENTS’ PROFESSIONAL ABILITIES AND INTERESTS”
submitted for the award of the educational and scientific degree **Doctor (PhD)** in the field of
Higher Education *Educational Sciences*, Professional Field 1.2. *Pedagogy (Professional and
Vocational Education)*

Author: Iliyan Vasilev Vasilev

Scientific field: **1 – Pedagogical Sciences**

Professional field: **1.2. Pedagogy (Theory of Education) and
didactics – Professional pedagogy)**

University: **Sofia University "St. Kliment Ohridski "**

Faculty: **Faculty of Pedagogy**

Scientific supervisor: **Assoc. Prof. Dr. Iliana Petkova**

1. Doctoral studies data

With Order of the Rector of Sofia University “St. Kliment Ohridski” ПД 20-293/31.012024 Iliyan Vassilev is listed as Full-time doctoral student in Professional field 1.2. Pedagogy, doctoral program " Educational Theory and Didactics - Vocational Education" to department "Didactics" in Faculty of Pedagogy of Sofia University “St. Kliment Ohridski “. The term of the doctoral program is from 01.02. 2024 to 01.02. 2027. Assoc. Prof. Dr. Iliyana Petkova has been appointed as the scientific supervisor.

Iliyan Vassilev has performed ahead of schedule their duties, which stem from the doctoral program. The dissertation " Adaptive models of training in technical education" vocational education according to " The professional abilities and interests of students " was discussed at an internal meeting of the department "Didactics" and a formal defense procedure has been revealed.

On the basis of Order No. 3 3 -791/23.12.2025 of the Rector of Sofia University „St. Kliment Ohridski“ I was appointed as a member of the scientific jury under the procedure for awarding the educational and scientific degree „doctor“ in Professional field 1.2. Pedagogy (Theory of Education and Didactics – Professional Education) at Sofia University „St. Kliment Ohridski“.

2 . Brief information about the participant in the procedure

Ilian In the asylum Vasilev was born on 29. 12. 1982. He has educational and qualification Master degree in Automation, Information, Control Engineering at the Technical University - Sofia (2002-2006), Master degree in Methodology of Teaching in Physics and Astronomy („Physics and Astronomy Teacher“) at Sofia University „St. Kliment Ohridski “. Graduated from

SDK - Methodology of Teaching English language for “English teacher” at the Center for Postgraduate Studies - NBU (2020).

In his professional development, PhD student Vassilev has held various positions in Bulgaria and abroad: process automation engineer at Chemical Plant “Neochim“ AD, Dimitrovgrad (2007-2010), senior process automation engineer, training expert at Muscat (Oman) , Morocco , Republic of the Congo , Colombia, Vietnam (2010-2019). From 2020 to 2023 he holds the position of “teacher” in professional theoretical training at the National Vocational high school of Precision engineering and Optics “M. Lomonosov” - Sofia, and from 2023 to 2025 it is assistant in the University of Telecommunications and Post – Sofia.

Given the professional experience of Iliyan Vassilev, it can be summarized that his professional (engineering) and communication competencies are manifested both in real business practice and in his teaching activities in higher and secondary education. He successfully combines practical engineering experience with pedagogical competencies. In addition, his in-depth professional expertise and long-standing international acquired experience in the real economy are based on it to identify and analyse existing problems and challenges in the Bulgarian education system, as well as for formulating guidelines for its improvement and modernization.

He is fluent in English, Greek and Italian.

3. General characteristics of the presented dissertation work

The dissertation consists of an introduction (4 pages), four chapters (176 pages), aimed at creating a design of adaptive models in secondary vocational (technical) education, 32 tables, 23 figures, conclusion (2 pages), a list of used literature (17 pages) with 248 titles included, of which 63 in Cyrillic and 185 in Latin and 10 electronic resources, appendices (16 pages). In terms of volume and structure, the work is balanced and meets the requirements for writing this type of scientific work.

In the initial part of the scientific work, entitled “Introduction”, the author precisely and clearly formulates a research concept oriented to development of adaptive models for vocational education and training. It is correctly presented main research objective – relevant in the context of vocational education. A two-pronged approach was applied in formulating the sub-objectives, an expression of the author's intention to achieve integrity of the research: from theoretical argumentation to empirical research and analysis. Research questions are relevant to the objectives and find their answer consistently in the overall study. The research tasks and methods are tied to the main research objective.

More in the introductory part the author manages to provoke interest in the reader towards the five theoretical ones mentioned model for vocational education: model “STRONG”⁶, model “LOOSE”⁷, author’s model “Vassilev”⁸, “UM”⁹ model, a model for building an “APL” system¹⁰.

The inclusion of the aforementioned models in the study, as an expression of methodological pluralism, demonstrates the author's overall vision regarding the problems in secondary vocational education.

The first chapter “Educational models and models of vocational training” is distinguished by a clear logical structure and a well-founded selection of thematic accents. The consistent approach of the exposition makes a positive impression - from the terminological clarifications and characteristics of the models in education and training (presented by Bulgarian and foreign authors), through the specifics of secondary vocational education, to the criteria and indicators for deriving the features of secondary technical education. All this is considered in the context of the creation and application of educational models of training. The benefits and role of synergistic models as a modern perspective for the development of vocational education are emphasized. In summary, it should be emphasized that this part provides a methodologically adequate basis for the study.

Chapter two offers a systematized presentation of the adaptive models “STRONG”, “LOOSE”, “UM”, “APL” and the author’s model “Vassilev”, supported by an in-depth analysis with correct and well-reasoned scientific justification. The exhibition is structured in a way that provides a logical transition from general theoretical foundations to specific manifestations of modelling in the context of professional technical education. In the five models are proposed options for implementing different forms of organization of education process, including modular training, changes in curricula plans and curriculum programs, as well as improving the teaching methodology. They are considered in the context of a new philosophy of vocational education, aimed at towards flexible integration of educational approaches and solutions according to the needs of the trainees and adaptation to modern social and economic realities.

High I appreciate the ideas developed by the author in the key points presented in the dissertation problem areas of vocational education related to “STRONG”, “LOOSE”, “UM”, “APL”. Additionally, dignity represent the proposals set out in the “APL” model for the

⁶A model for maximum use of the potential and development of additional competencies of strong/outstanding students from the secondary vocational education system, i.e. a model for working with gifted children, but with a traditional organization of the learning process.

⁷ A model for the reorganization of students with permanent educational and upbringing deficits from the vocational secondary education system.

⁸ “Vassilev” model of organizing the learning process in the professional training of students.

⁹ A model for increasing the knowledge of strong students, progress and improvement of lagging students in core subjects of the DZI, in particular mathematics, as well as general and sectoral vocational training.

¹⁰ A project for the construction of an APL system, as well as its benefits for secondary vocational education.

recognition of different professional competences in the learning process. The executive value for the practical application of models has the specific ones presented variants for their implementation in technical vocational high schools.

The third chapter "Empirical" research" can be viewed not only as independent methodological construction, but also as an organic part of the main research purpose. Represents seriously empirically research with a clearly stated design, consistent organization and adequately selected methods and tools for processing and analysing statistical data. Based on the developed and described in the theoretical part adaptive model "STRONG", a technology for conducting empirical research is proposed, based on multicomponent statistical analysis. The methodological logic of the empirical research is structured in sequential stages that ensure a reliable study of the quality of vocational education in the context of the applicability of the "STRONG" model .

In summary, it can be emphasized that Chapter Three represents a methodologically adequate, well-structured basis for empirical verification of the " STRONG " model and for formulating practically significant conclusions regarding guidelines for improving the quality of vocational education. Additional scientific value is added by including the relationship between vocational education and training (VET), total factor productivity and quality, as this perspective allows for a more substantiated identification of dependencies between human capital, technological modernization and economic efficiency . The final Fourth Chapter outlines the future opportunities for activities in the context of the model "STRONG", placing the issue under consideration in a broader context macroeconomic context. The relationship between labour productivity and trends in the Bulgarian labour market is logically connected and with the need for changes in the system of vocational education and training. The author reasonably summarizes that the quality of vocational education and training is emerging as a key factor in overcoming the mismatch between the formation of knowledge and skills, rapid technological development and the effective use of the workforce.

In conclusion, the author presents a clear and summarized answer to the research questions posed at the beginning of the work, consistently connecting the theoretical statements with the results of the empirical study. The conclusions drawn logically follow from the analysis and confirm that adaptive models can be a real tool for increasing the quality and effectiveness of technical vocational education. The place of the "STRONG" model as a working framework for the development of talented students is particularly convincingly argued, as is the need for institutional and regulatory changes to ensure the sustainability of such solutions. In this way, the conclusion fulfills its role not only to summarize the results, but also to outline the practical possibilities for the development of the vocational education and training system in accordance with modern requirements for skills and the labor market.

4. Evaluation of scientific and applied results

Undisputed are the author's research achievements in both scientific and applied aspects. The study is presented logically, consistently and systematized, focusing on a significant problem of modern education - the training of talented and outstanding students. Noun Another advantage is the skillful selection of rich and relevant theoretical literature, which provides a stable basis for the development of the researched issues.

Correct the formulated research design demonstrates high professional maturity and guarantees reliability of the subsequent empirically I also positively assess the consistent transition towards an analysis of vocational education through clearly defined criteria and indicators, as well as the emphasis placed on the synergy as a contemporary perspective on its development.

A strong point of the work is the reasoned statistical methodology, supported by the processing of empirical data . The connection of the examined learning models with the new philosophy of educational process oriented to flexibility, individualization and consideration of the needs of the trainees in the context of dynamic socio-economic conditions.

Additional added value gives the emergence of interdisciplinary connections between education, the economy and the quality of human capital, which expands the analytical scope of the study and increases his significance.

5. Evaluation of scientific and applied scientific contributions

I accept the contributions indicated by the author as significant, scientifically sound and with clear practical applicability. They integrate the development of theoretical solutions and their empirical verification in the context of vocational education and training, and have been developed into specific tools and opportunities for implementation. A significant contribution is the theoretical systematization of educational models in the Bulgarian and international context and the development of adaptive solutions for secondary vocational education, among which the "STRONG" model stands out, aimed at talented and outstanding students. The developed criteria and indicators for quality assessment, consistent with the European framework, as well as the toolkit for assessing the applicability and acceptability of the model, are also of contribution. The "STRONG" model demonstrates potential for application in other vocational high schools and for developing the relationship between secondary and higher education through the idea of vertical continuity ("STRONG" $-\alpha$ and "STRONG" $-\beta$), supported by mechanisms for recognition and validation of results (ECVET/ECTS).

In conclusion, the work can be assessed as significant for the development and improvement of quality in vocational education, especially with regard to working with talented students.

6. Abstract and publications on the topic of the dissertation

The abstract is 50 pages long. It reproduces the synthesized content structure of the dissertation work. The main ideas and research results are presented. 5 scientific publications have

been deposited under the defense procedure – 3 scientific articles (published in the journal Education, the journal Professional Education, Collection of scientific papers at the National University of Science and Education “V. Levski”), one in co-authorship (published in the journal “Strategies for Policy in Science and Education”, indexed Web of Science (ESCI) and one article (published in the journal “Pedagogy”, indexed but in Web of Science (ESCI)). Publications are an integral part of the doctoral student's research activities and meet the requirements of scientific publications.

7. Critical notes, recommendations and questions

I have not found any inaccuracies in the dissertation submitted for review. In the context of the presentation and the achieved results, I would like to ask the following question:

How would you perceive the idea of a public-private partnership for the implementation of your models?

Conclusion

Given the relevance and significance of the professionally implemented research, the targeted scientific and applied results and the contributions in this study, I give a positive assessment of the dissertation work and propose to the esteemed members of the Scientific Jury, on the basis of Chapter Two, Article 6 of the Law on the Education and Training of the Republic of Bulgaria, to support the award of the educational and scientific degree “Doctor”(PhD) to doctoral student Iliyan Vasiliv Vasilev in Professional Field 1.2. Pedagogy (Theory of Education and Didactics - Vocational Education).

Sofia, 22.02.2026 Reviewer: (Assoc. Prof. Slavka Nenova)

