

REPORT

of dissertation for the acquisition of:

educational and scientific degree " doctor "	X
scientific degree " Doctor of Science "	
	the true is indicated by the sign "X"

Author of the dissertation:

		Monika	Yanulova	Petrunova	45 "Konstantin Velichkov" Primary School
academic position	scientific degree	name	middle name	last name	workplace

Topic of the dissertation:

Interactive training and testing systems
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Scientific area:

4	Natural sciences, mathematics and informatics
code	name

Professional area:

4.6	Informatics and Computer Science
code	name

Scientific specialty:

Informatics

The report was written by:

Assoc. Professor	PhD	Katya	Georgieva	Dishlieva	Faculty of Applied Mathematics and Informatics, Technical University of Sofia
academic position	scientific degree	name	middle name	last name	workplace

1. Meeting the minimum requirements under the Regulations:

A) The candidate meets the minimum requirements	20 points	X
B) The candidate doesn't meet the minimum requirements	0 points	
		one of the answers given is marked with the sign "X"

It is mandatory to fill in if answer B is marked. The publication activity of the candidate is analyzed. The response of the results achieved (quoted) is analyzed.

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2. The relevance of the topic of the dissertation:

A) The topic is relevant and new (there are no known results on the topic by other authors)	8 points	
B) The topic is relevant and results from other authors are known	6 points	X
C) The topic is not relevant, but results from other authors are known	2 points	
D) The topic is not relevant and no results from other authors are known	1 point	
E) The topic does not correspond to the level of dissertation	0 points	
		one of the answers given is marked with the sign "X"

The evaluation of the relevance of the dissertation must be substantiated
The topic of the dissertation is extremely relevant given the widespread usage of computer technology and Internet in the world, the rapid development of new technologies with added "virtual reality", 3D images, etc. This is a serious challenge for the trainers, learners and institutions (personal data protection, technical literacy, etc.), but it also opens up many new opportunities for conducting distance education through various mobile applications, websites and teleconferencing tools. On Scolargoogle.com you can find over 7,500,000 documents (books, articles, etc.), conference materials dedicated to these topics and over 718,000 documents related to the education in secondary schools. The global e-learning market exceeds \$325 billion for e-learning by 2025. By 2022, 98% of American corporations have included online learning in their curricula.

3. Type of research:

A) Theoretical	4 points	
B) Applied	4 points	X
C) Theoretical with application elements	4 points	
D) It does not correspond to the level of dissertation	0 points	
		one of the answers given is marked with the sign "X"

The level of research must be substantiated if answer D is marked.

4. Objectives of the research:

A) Realistic and of scientific and / or applied interest	8 points	X
B) Realistic, but not of scientific and / or applied interest	3 points	
C) Unattainable (unrealistic)	0 points	
		one of the answers given is marked with the sign "X"

Objectives must be specified. The type of the set objectives must be justified.

The objectives of the dissertation are related to the analysis of the leading platforms for e-learning and knowledge assessment; the extent to which these assessments follow the regulatory framework of Bulgarian education; a study of the preferences of teachers and students and which are the most used platforms for online tests. Other objectives are to make a generalized analysis, to develop and implement ways of assessing knowledge, according to previously set criteria, to study the formulas for converting points (percentages) into a score and whether they can be changed under specific requirements. The derivation and application of a method for automatic analysis of the type "most frequently made errors" or "most incorrect answers in the test" when determining the entry and exit level for the subjects is also set as an objective.

5. Contributions of the dissertation:

A) With lasting scientific and / or applied response, they form the basis for new research and applications	20 points	
<u>B) They are of significant scientific and / or applied interest, complete and / or summarize previous research</u>	<u>16 points</u>	
C) They are of scientific and / or applied interest	12 points	X
D) Lack of significant contributions	8 points	
E) Lack of contributions	0 points	
		one of the answers given is marked with the sign "X"

Contributions must be specified. The type of results achieved must be justified.

Scientific and applied contributions: 11 platforms and models for online learning and assessment are examined. There is a survey with 56 teachers and requirements for functionality and pedagogical effectiveness of the platforms used are summarized, as well as the main pedagogical and organizational difficulties in OREC. Objective criteria for assessing the effectiveness of digital platforms in a real learning environment is formulated. An analysis of different assessment systems is made. Various formulas and scales are compiled for converting points into grades for more objective assessment in a digital environment. A logical scheme is developed for identifying specific thematic gaps through error analysis. Algorithmic differences in the way leading platforms structure output data is systematized. A universal methodology is developed for analytical interpretation of the results of tests for diagnosing learning deficits, regardless of the specific software platform or educational stage.

Applied contributions: Some solutions have been proposed in order to increase the efficiency of distance learning, mechanisms for visual contact and tracking of joint work; a mechanism for automatic calculation and transformation of the points into grades. Algorithms, scripts and formulas for automated analysis of results have been developed, which overcome the functional limitations of mass platforms and optimize training. Through automated analysis of zero and low results, the "critical questions" are identified, which should be paid more serious attention. An author's Google Apps Script, based on JavaScript, has been implemented, which extends the functionality of Google Forms by automated filtering and sorting of questions according to their difficulty in real time. A library of practical Excel templates has been created for transforming raw data from Microsoft Forms and Kahoot, including advanced logical functions for checking data validity and excluding irrelevant records.

6. Conclusion

A) The evaluation of the dissertation is POSITIVE	This evaluation is assigned to a total number of at least 40 points	X
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B) The evaluation of the dissertation is NEGATIVE	This evaluation is assigned to a total number below 40 points	
		one of the answers given is marked with the sign "X"

To be filled in at the request of the member of the scientific jury
I assess positively the contributions in the dissertation of Monika Petrunova, their scientific and applied significance. In terms of volume and quality, they satisfy the requirements of ZRPASRB and its regulations, as well as the regulations of University of Chemical Technology and Metallurgy - Sofia on the terms and conditions for obtaining scientific degrees and titles. This is a reason to recommend to the esteemed scientific jury to award the educational and scientific degree "Doctor" to Eng. M. Petrunova.

28.04.2026	The report was written by:	
date	Assoc. Prof. PhD Katya Dishlieva	signature