

REVIEW

under the procedure for acquisition of the educational and scientific degree
“Doctor”

by candidate **VALENTINA TODOROVA TERZIEVA-BOGOYCHEVA**,
of the PhD Thesis entitled: **“TECHNOLOGICAL APPROACHES FOR
PERSONALIZED LEARNING USING EDUCATIONAL COMPUTER GAMES”**

In the Scientific field: **4. Natural Sciences, Mathematics and Informatics**
Professional field: **4.6. Informatics and Computer Sciences**

Doctoral program “Informatics”, ИКТ-БАН

The review has been prepared by: **prof. Milen Yordanov Petrov**, FMI, Sofia University
(academic position, scientific degree, given names, surname - place of work)
as a member of the scientific jury for the defence of this PhD thesis according to Order №
168/05.07.2023 of the Director of BAN.

1. General characteristics of the dissertation thesis and the presented materials

The dissertation it contains 163 pages (not including the appendices), consisting of a table of contents, an introduction, four chapters, a conclusion, a bibliography, a table of contents, lists of figures and tables, and five appendices - dictionaries of abbreviations and terms used. In the conclusion - including the scientific contributions of the dissertation, approbation of the results and summary of the results, lists of contributions, articles on the dissertation (8 in number) and citations (5 in number), declaration of originality and acknowledgments - all in a volume of 12 pages. The topic of technology-assisted learning and the direction of personalization and use of educational computer games is very current, judging by the numerous publications on the topic in the world-famous scientific databases in recent years.

2. Degree of knowledge of the state of the problem and interpretation of scientific sources

The bibliography contains over 200 sources mainly in a foreign language, and the sources are mainly articles from scientific journals and volumes from proceedings of scientific conferences. The fact that the sources are mainly from the last 15 years speaks for the topicality of the topic, which undoubtedly shows the candidate's in-depth knowledge of the field of research, as well as the topicality of the problem.

3. Correspondence of the chosen research methodology with the set goal and tasks of the dissertation work

The research methodology was correctly chosen and corresponds to the set goal and the defined scientific research tasks, and the results have been approved, except in scientific publications and in a national scientific research project.

4. Content analysis of the scientific and applied achievements of the candidate, contained in the presented PhD thesis and the publications to it, included in the procedure

I accept the wording of the contributions as defined by the candidate, and I would summarize them, namely: 1) an analysis of the scientific literature was made, as a result of which a classification of the types of educational computer games was proposed and a qualitative and quantitative assessment of the use was presented of ICT and educational computer games in Bulgarian schools. (scientific-applied); 2) A conceptual composite learner model for use in customizing educational computer games and a methodology for customizing educational video games based on a composite learner model were created. (scientific-applied); 3) A methodology for customizing a maze-type educational video game, enriched with built-in didactic mini-games, and a methodology for researching, validating, and evaluating learning suitability, game impact, effectiveness, and attitudes when using a customized educational video game-type were created labyrinth. (scientifically applied); 4) A universal and personalized maze-type educational video game was created, enriched with built-in didactic mini-games dedicated to Bulgarian medieval history, which were successfully validated against the above methodology (appended).

5. Significance of contribution for the theory and practice

Dissertation deals with the problems and technological approaches for implementation of learning with educational computer games. Approaches to the development of educational computer games of different types customized to the characteristics and preferences of learners are explored, taking into account surveys of the opinions and preferences of teachers and students. It makes a very good impression that the results and contributions thus obtained can be directly implemented in practice in the modern development and maintenance of software systems, and it is connected to national research projects, which I find a huge advantage.

Contributions are in the multidisciplinary field of technology-assisted learning, educational games and software systems, undoubtedly applying state-of-the-art technological solutions, methods and approaches.

6. Approbation of the results

Publications related to the dissertation are presented, of which one is in SCOPUS and 3 are in WoS. Four of the publications are in English, and four are in Bulgarian. He has three independent articles and is the first co-author on all 3. Articles with co-authors, co-authors are no-more than three. Publications have been peer-reviewed and reported at prestigious scientific forums, national scientific seminars and conferences.

The scientific works meet the minimum national requirements.

The results presented by the candidate in the dissertation work and scientific works to it do not repeat such from previous procedures for acquiring a scientific title and academic position;

There is no plagiarism proven in the legally established order in the submitted dissertation work and scientific papers under this procedure.

7. Qualities of the abstract

The abstract is correctly prepared and generally reflects the structure and results achieved in the dissertation work.

8. Critical notes and recommendations

The dissertation is well-formed, as well as the layout of the submitted materials. I have no significant remarks the dissertation.

9. Conclusion

Having become acquainted with the PhD thesis presented in the procedure and the accompanying scientific papers and on the basis of the analysis of their importance and the scientific and applied contributions contained therein, **I confirm** that the presented PhD thesis and the scientific publications to it, as well as the quality and originality of the results and achievements presented in them, meet the requirements of the ADAS in the Republic of Bulgaria, the Rules for its Implementation and the corresponding Rules at the BAN and IICT for acquisition by the candidate of educational and scientific degree “Doctor” in the Scientific field 4. Natural Sciences, Mathematics and Informatics, Professional field : 4.6. Informatics and Computer Sciences In particular, the candidate meets the minimal national requirements in the professional field and no plagiarism has been detected in the scientific papers submitted for the competition.

Based on the above, **I strongly recommend** to the scientific jury to award the candidate, **VALENTINA TODOROVA TERZIEVA-BOGOYCHEVA** educational and scientific degree “Doctor” in the Scientific field 4. Natural Sciences, Mathematics and Informatics, Professional field : 4.6. Informatics and Computer Sciences (Informatics).

29.08. 2023 г.

Review

НА ОСНОВАНИЕ

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