The First Information Day: Serious Games as Contemporary Tools for New Educational Applications

Desislava Paneva-Marinova[1], Radoslav Pavlov[1], Detelin Luchev[1],
Malvina Ruseva[2], Boyan Bontchev[3]

[1] Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria (IMI—BAS)
[2] Institute of Art Studies, Bulgarian Academy of Sciences, Sofia, Bulgaria
[3] Faculty of Mathematics and Informatics, Sofia University, Bulgaria
dessi@cc.bas.bg, radko@cc.bas.bg, dml@math.bas.bg,
malvina.rousseva@gmail.com, bbontchev@fmi.uni-sofia.bg

Abstract. In technology-enhanced education, the "serious games" method is accepted as a research, pedagogic, and evaluative tool. The method helps instructors to motivate student learning, curiosity, creative and logical thought, as well as develop a variety of skills and competencies. Serious educational games aim to cultivate better comprehension strategies, creative thinking, learning-by-doing (production, authorship), and students' engagement in their own cognition and learning processes. The first information day will present the scholarly and scholarly-practical outcomes of the *Serious Education Games as Contemporary Tools for New Educational Applications* project, Contract DSD-2/05.04.2017, between the Bulgarian Academy of Sciences and the Institute of Mathematics and Informatics, activity *Introduction of Contemporary Methods in Educating and Fostering Young Talent* (PMC №347).

Keywords: Serious Games, Gamification, Contextually-related Culture and Media Resources for Education.

1   Introduction

In recent years, a team of researchers from the Department of Mathematical Linguistics of IMI—BAS have been working on the development of tools and applications of the domain of serious games for better learning of cultural heritage. More precisely, the team has worked on the development of models for and applications of serious educational games that use related multimedia cultural resources to facilitate the illustration and understanding of cultural heritage by means of innovative and interactive techniques.

The main research questions to address include: How to activate and stimulate learning; What problems students would find interesting and attractive and how these problems can provoke the desire to learn new things; How games can increase motivation, engagement, and improved learning outcomes; How to enhance comprehension of content through the use of subtle or invisible modern-day methods that students would both

accept and welcome; How learners' individual characteristics influence their learning processes.

The primary goal of the recently completed *Serious Education 3D Video Game on Bulgarian Orthodox Iconography* and in particular the concrete iconographic image (Bontchev, Paneva-Marinova, & Draganov, 2016) is to present the subject in attractive form and to compel learners to search for tendencies in the development of religious iconography and its historical and cultural aspects, directions, and dynamics; to identify the factors and conditions that have influenced change and to what extent and with what force; and to recognize new tendencies. Immersive and active engagement strategies contribute to the effective acquisition of practical knowledge.

In addition, in partnership with a team of researchers from the Institute for Computer Science and Control, Hungarian Academy of Sciences, the application BOOK@HAND BIDL was developed with the aim of deepening users' knowledge about Bulgarian religious icons (Draganov, et al., 2015).

2   New Developments of Serious Games for Ancient Civilizations and History

Serious games can elicit significant engagement from learners and further contribute to the effectiveness of the learning process. With high levels of personalization and adaptability, education based on serious games generates good levels of comprehension and unconscious processing of content of relatively great difficulty. This approach can be implemented successfully also in the development of contemporary learning environments with high degrees of interactivity, personalization, and adaptability with respect to learners. For example, the integration of ICT in the 6th and 7th-grade ancient history curriculum would allow – by means of game playing, interactive interface, visualization, video, and animation – presenting the material in a fun and accessible way, explaining connections, relationships, and influences among ancient civilizations, demonstrating the continuity of ideas despite the demise of entire peoples, as well as the impact of geographic givens to the evolution of civilization, while equipping students with orientational literacy and the ability to apply geographic knowledge. A focus group of outstanding students will be formed and included in the development of serious educational games and their content in the area of ancient history and civilization and in particular of Thracian civilization. In collaboration with history instructor-pedagogues, an advisory group of history and civilization teachers will be convened in order to ensure the pedagogic and methodological relevance of the product.

The project *Serious Games as Contemporary Tools for New Educational Applications* comprises the development of a model and of content for a serious educational game focused on the Thracian civilization, a game which will draw on ancient primary sources, on architecture and artefacts unearthed during archaeological excavations, and on research by Bulgarian scholars. Exploring the chambers of the structure excavated beneath Ostrousha mound (in the Valley of Thracian Kinds near the town of Kazanlŭk),

learners will discover and retain knowledge about key characteristics of Thracian culture as known to us from the excavated and studied Thracian tombs, heroa, and sanctuaries, and from the weapons and treasures uncovered inside or outside these structures.

In combination with the appropriate content, serious games become an important modern-day educational tool, which reflects both the current state of technology and learners' social profiles.

3 Acknowledgements

References

Bontchev, B., Paneva-Marinova, D., & Draganov, L. (2016). Educational Video Games for Bulgarian Orthodox Iconography. *Proceedings of 9th Annual International Conference of Education, Research and Innovation (ICERI2016)*, (pp. 1679–1688). Seville, Spain.

Draganov, L., Paneva-Marinova, D., Pavlova, L., Luchev, D., Márkus, Z., Szántó, G., & Szkaliczki, T. (2015). Technology-enhanced learning for cultural heritage. In R. Pavlov & P. Stanchev (Eds), *Proceedings of the 5th International Conference on Digital Presentation and Preservation of Cultural and Scientific Heritage. 5*, pp. 293–301. Veliko Tarnovo, Bulgaria: Institute of Mathematics and Informatics—BAS. Retrieved March 25, 2017, from http://dipp.math.bas.bg