

# Mini-symposium on Future Trends in Serious Games for Cultural Heritage

Desislava Paneva-Marinova, Radoslav Pavlov

Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria  
dessi@cc.bas.bg, radko@cc.bas.bg

**Abstract.** 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. 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. This mini-symposium on *Future Trends in Serious Games for Cultural Heritage* will present 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), other projects in the field and will outline some future trends for cultural heritage game development.

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

## 1 Introduction

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.

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.

Several projects are realized or are in a stage of development, *i.e.* the serious educational 3D video game on Bulgarian Orthodox iconography (Bontchev, Paneva-Marinoва, & Draganov, 2016), educational games, implemented in the BOOK@HAND BIDL application (Draganov, et al., 2015), “The Thracians” serious game (Márkus, Paneva-Marinoва, & Luchev, 2018), (Márkus, et al, 2018), (Paneva-Marinoва, et al, 2018a), (Paneva-Marinoва, et al, 2018b), developed under the project *Serious Games as Contemporary Tools for New Educational Applications, etc.*

The current 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 Kazanlúk), 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.

The technological implementation of *The Thracians* game has been accomplished under the joint project “Development of Software Systems for Multimedia and Language Technologies” of the Institute for Computer Science and Control, Hungarian Academy of Sciences (MTA SZTAKI) and IMI—BAS.

The game is available for free of charge and could be used in primary and secondary schools at learning ancient civilizations.

## **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 6<sup>th</sup> and 7<sup>th</sup>-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. 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 educational products.

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