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Virtual Worlds for Serious Applications (VS-GAMES'12)

GEL: Exploring Game Enhanced Learning

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Abstract

A brief presentation is given of the objectives and activities pursued in GEL (Game Enhanced Learning), a Theme Team initiative financed by the STELLAR Network of Excellence in Technology Enhanced Learning (TEL) during year 2011-2012. Some of GEL's main outputs relevant to the Serious Games research field are also outlined.

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Game-Based Learning; Serious Games; Education; Technology Enhanced Learning

1. Introduction

Enhancing learning processes with digital games has become a hot issue over recent years and can be considered an emerging research topic in the field of Technology Enhanced Learning (TEL). Serious Games (SG) in particular are widely regarded as effective tools for practicing soft skills like problem-solving, decision-making, inquiry, multitasking, collaboration and creativity [1-3]. They also offer a new standpoint for studying and evaluating the potential of immersive learning environments and for testing the pedagogical value and effectiveness of a number of emerging educational approaches.

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2. The GEL initiative

GEL - Game Enhanced Learning - is a Theme Team initiative financed from April 2011 to April 2012 by the STELLAR Network of Excellence (NoE) in Technology Enhanced Learning. Theme Teams are clusters of researchers from different EU institutions who come together to collaboratively investigate emerging research issues in the Technology Enhanced Learning (TEL) field (www.stellarnet.eu/instruments/theme_teams/).

GEL's specific mission was to explore the educational potential of Serious Games (SGs) in diverse contexts, including formal and informal settings, and in individual and collaborative learning environments. Its main aim was to provide fresh insights and practical support for both game design and game deployment, so that the potential of these tools could be harnessed more effectively.

The GEL team comprised the seven authors of this contribution, who hail from six different European countries and bring different backgrounds and expertise. All seven are actively involved in different aspects of Game-Based Learning (GBL) research, including school, higher and vocational education, military training, game design and implementation. Two are part of STELLAR, and six members are involved in GALA, a European NoE dedicated specifically to SG (www.galanoe.eu).

3. GEL objectives

As mentioned, GEL was devoted to exploring key challenges in the field of game enhanced learning, with particular regard for pedagogical aspects of SG. Its ultimate aims were to foster pedagogically-effective use of digital games and to support the design and development of pedagogically-sound learning games. Driven by the conviction that educational digital games can effectively contribute to innovate and enhance learning processes, GEL has sought to gain deeper understanding of:

- the main aspects continuing to hinder more widespread use of SGs for educational purposes, at least in formal educational settings;
- the keys to increasing the educational effectiveness of SGs and thus broaden their use;
- the role of the different actors in GBL processes (e.g. individual learners, learner groups, teachers, developers, virtual agents).

4. The GEL methodology

The GEL theme team operated for one year. Its activities comprised both online and face-to-face collaboration; a set of sub-activities was established and addressed by separate working groups. Each working group was led by a GEL partner responsible for managing the group's activities and outputs; in some cases researchers external to the team were also involved. Since a key aspect of GEL's mission was also to create synergies and exchanges between the STELLAR and GALA NoE communities, GEL established a group on the teleurope.eu platform. This constituted GEL's principal online working space and provided a means for promoting discussion on game-pedagogy related topics within the TEL community.

5. GEL'S main outputs

The GEL group worked in a variety of directions that are summarized hereunder; unless otherwise specified, these can be accessed at www.teleurope.eu/pg/groups/forum/81989/. A more detailed examination of results and contribution to the field is provided in [3].

5.1. State of the art

GEL began by gaining a picture of the state of the art in the field of Game Enhanced Learning. This led to the collection of relevant papers and best practices, which were catalogued on the Telearn repository following a specific structure.

5.2. Key questions

A number of hot issues in the field of Game Enhanced Learning, identified by each partner, were discussed in the “Key Questions Corner”. Topics discussed include:

- the relationship between pedagogical paradigms and learning games. This was an attempt to answer the question as to whether TEL-specific pedagogical paradigms (e.g. collaborative, discovery, inquiry learning) can also fit the Game Enhanced Learning field. A collection of examples from the literature relating specific games to relevant pedagogical paradigms was produced;
- definition of the teacher’s role in SGs deployment. The adoption of games as learning tools in the new 21st century leaning panorama involves new teaching/learning methods and calls into question the teacher’s function and role. Following internal discussions, two specific papers on the topic were published [4, 5];
- the definition and significance of some emerging terms such as authentic games, collaborative games and educational exergames were studied.

5.3. Game patterns

One of the main problems in the educational games field has been successful integration of educational and game design principles [6]. Pedagogical experts and game designers require a shared vocabulary and a shared understanding of their different perspectives. One approach to this issue is the adoption of game design patterns that address and shed light on the pedagogical dimension of game design. GEL has addressed this matter by developing a library of game design patterns structured specifically to meet this need (<http://amc2.pori.tut.fi/educational-game-design-patterns/>).

5.4. Pedagogical scenarios

Do games-based activities require a specific design approach? GEL looked at different approaches currently being adopted in the field of pedagogical scenarios, those artifacts that capture salient aspects of an instructional intervention as an aid to enactment and possible repurposing. A questionnaire has been developed to support educators’ reflection on the activity design process and for gathering data about their chief concerns when implementing game-based activities. Recommendations for SG developers have been developed providing insights on interoperability and evaluation.

5.5. Dissemination activities - book and podcasts

As a final output, the GEL group edited the book “New Pedagogical Approaches in Game Enhanced Learning: Curriculum Integration”, an IGI-Global publication due out in autumn 2012. The contributions (from inside and outside GEL) explore game enhanced learning from the specific perspective of curriculum integration. Two GEL podcasts have also been produced.

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