

# Prototype of Emapps.com Environment as Agent for Building the Learning Communities

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## ABSTRACT

The Information Society and Education need to be combined in order to achieve successful active citizenship and economical development with a natural and mutual interdependency. Project eMapps.com game platform can be an example of cross-connected eLearning, mobile and life environment contribution to education. It can increase effectiveness of education both for educational needs in XXI Century and to create a basis for further research on ICT mediation in Information Society. The positive outcomes on learners motivation are explored by the scientific modelling of the future educational environment prototype as agent for building up the learning communities of common intelligence at internal, local and international level. The key finding of this paper is that an eMapps.com game platform prototype can be used to ensure that technology, pedagogy and social networking context are closely aligned in order to realise the educational stimulation in secondary education.

**Keywords:** eLearning, education, educational stimulation, technology, pedagogy.

## 1. INTRODUCTION

The use of Information technology has been widely explored and analyzed in the world. The object of the research is to explore technology as a facilitator in a separate field, i.e. education and as a unifying agent of knowledge for society, which can (make) have a great influence on further economic, social and cultural development of humankind. Recognition of social networking and human capital as a crucial and intangible asset determines a clear vision of technological development and further research. Virtual games, as prerequisites for stimulation and motivation, have been analyzed only in the last decade, and after receiving research data on the successful use of certain game elements for educational purposes [1]. The analysis of didactic teaching methods using games, and a number of other related research carried out within the framework of the European Commission's IST 6th Framework research programme project, indicates some aspects influencing the success of non-educational games and at the same time discloses the fact that game environment developers usually have no relation to pedagogy [3]. The educational game experts - M. Prensky and J.P. Gee speak about the relation between didactics and virtual game environments [8, 10], however, the majority of educational games develops from commercial prototype games or virtual entertainment environments. "Serious Virtual Worlds" scoping study [14] indicates 80 virtual world applications available, with another 100 planned for 2009. While the virtual gaming environments are developing with the progress of technology it still is not applied broadly to

formal education. The educational success of virtual game environments challenges education paradigm and curriculum changes. This paper places emphasis on didactics as a starting point to develop future learning environment prototype.

## 2. RESEARCH OBJECTIVES

The aim of this paper is to present a virtual game eMapps.com environment prototype acting as an agent within learning communities and to define the realization of further research in the context of educational stimulation. Emapps.com environment is setting out to demonstrate how the value of games which combine computers, mobile phones and learning in the local environment can be realistically applied in learning.

The object of analysis: Prototype of Emapps.com Environment as Agent for Building the Learning Communities.

Research objectives: singling out and evaluating the successful methodological components of virtual games; defining technology, as an aspect of educational stimulation and designing a hypothetic virtual learning community model guidelines of didactics, social communication and technological component synergy in Lithuanian educational context. Methods: scientific literature, data analysis, modelling.

## 3. METHODOLOGY

The results of the few Research and Development projects were studied for a more thorough analysis and comparison. FP6 IST project eMapps.com were investigated together with the Institute of Mobile Technologies for Education and Culture (IMOTEC), involved as a partner. The aspects influencing education through virtual game environment following FP6 IST project Elektra related M. Bopp research material was chosen [3]: situational dimension and dimension of time were chosen when the situation and social dimension were presented, where action takes place. M. Markland, G. Butters and P. Brophy research showed successful eMapps.com project environment findings [15]: cross-curricular learning, stimulation of creativity, learning motivation/engagement, time management, satisfaction and enjoyment factors.

The paper refers to the project conceptual ideas and uses its quotations as a baseline for the data analysis. It analyses the project's didactical construct and outcomes.

Virtual game didactic analysis is implemented in the national context of a research on the use of Information and Communication Technologies for improving quality of teaching at schools carried out by Lithuanian Ministry of Education and Science in 2006 [5]. Following the results of research the main advantage of using ICT in learning and teaching process,

according to the pupils, teachers, parents and heads of schools, involves an immediate and interesting rendering of information, which raises students' interest and motivation to learn.

The analysis also covers the context of national stimulation environment [4], in which concept of motivation is examined from the psychological, managerial, and educational point of view; fundamental difference between motivation and educational stimulation is provided; the concept of educational stimulation is highlighted in the light of five levels of educational reality: social pedagogy, institutional, interpersonal, intrapersonal and its realization mark in a certain educational theory context.

#### 4. THE EMAPP.COM MODEL

Project eMapps.com: Motivating Active Participation of Primary School children in Digital Online Technologies for Creative Opportunities Through Multimedia ([www.emapps.com](http://www.emapps.com)) is a STREP project funded by the European Commission's FP6 IST Call 4 Priority 2.4.13: Strengthening the Integration of the ICT research effort in an Enlarged Europe. The Project started in 2005 and continued 30 months.

The eMapps.com consortium core group was made up of 5 organisation partners responsible for the co-ordination, technical, dissemination, networking and pedagogical aspects of the Project: Cross Czech a.s. (Czech Republic), Ciberespacio SL (Spain), MDR Partners (UK), The European Schoolnet Partnership (EUN), Manchester Metropolitan University (UK). Eight New Member States of Europe (Estonia, Latvia, Lithuania, Slovenia, Slovakia, Poland, Czech Republic and Hungary) representative organisations were involved in the developed platform and learning objective trials.

The eMapps.com project objectives were:

- to build communities of creative, networking children in the NMS, generating their own cultural content and communicating with peer groups in other countries;
- to contribute to the growth of a community of teachers who are aware of the potential for change through 'schools without walls' and who exchange knowledge and experience through communication with counterparts in other NMS countries;
- to develop adaptable interactive tools (primarily games played on a mobile platform) with which to deliver learning objectives and which help to integrate the use of ICT in the delivery of the school curriculum;
- to establish processes and facilities for teachers and children to access relevant digital content available through a variety of sources while playing the eMapps.com games - and to make the multilingual and multicultural local content created during the games suitable for sharing and repurposing for use in the wider eLearning context of schools and children in NMS;
- to create a child's *living map of Europe*, based on geography, history and heritage, accessible through mobile devices, which can be continuously expanded as an important and rich content resource for schools in NMS and elsewhere;
- to design and implement effective training and multiplier mechanisms for future exploitation of the eMapps.com outcomes by schools and teachers;
- to influence education policymakers at national and regional levels in NMS.

The Project focused on demonstrating how games and mobile technologies can be combined to provide new and enriching experiences for children in the school curriculum and beyond. The work concentrated initially on Europe's New Member States and school children in the age group 9-12. In the course

of this, the eMapps.com games application were piloted and tested in 16 schools across eight European countries. Key target audiences for eMapps.com included policy makers in school education, teachers and other learning, parents and children [9].

The didactical construct was realized through the social constructivism approach and technical platform development.

#### 5. GAMES AND LEARNING

The approach of eMapps.com is closely related to constructivist concepts of learning which hold that, by reflecting on their own experiences, all learners actively construct their own understanding of the world based on both their previous and current knowledge. Research shows [24] that people learn better when they are entertained, when they can use creativity to work toward complex goals, when lesson plans incorporate both thinking and emotion, and when the consequences of actions can be observed.

The project concept suggests that that the knowledge acquired by students should not be supplied by the teacher as a ready-made product. Children learn better by creating for themselves the specific knowledge they need, rather than being instructed in what they must know. Attention to these informal styles of learning is also inclined to focus more on the experiential nature of learning, involving wonder, surprise, feelings, peer and personal responses, fun and pleasure [2].

It has been argued that students who enter school are communicative, curious, creative, and capable of learning many things but that the 'traditional' school tends to diminish these abilities over the period of learning. The more effective use of ICT is held to promote student motivation, learning which is driven by curiosity and then reapplied in real life [13].

The eMapps.com approach is based on alternate reality game (ARG). Unlike other game genres, ARG have no defined playing field or game space but involve immersive, real world encounters which transcend the limitations of the Internet and reach into the everyday world of the player.

#### 6. THE EMAPPS.COM PLATFORM

The eMapps.com games platform enables the implementation of ARG. It runs on digital devices such as mobile phones, PDA, Tablet PC over GPRS and UMTS networks and includes game control mechanisms, forum, chat and pre-set map-based local scenarios. The games are played on an open platform through multiple networks and devices. Weblogs, podcasts and videocasts are key components [9]. 'Pins' located in a pre-set scenario (map-based) are linked to information placed in independently edited photo, audio, video and text 'blog' folders, using 'drag and drop'. Any mobile device that supports a browser can be used for uploading the content to any folder. The map also supports external links. The map is a Graphical User Interface (GUI) that interacts with objects and can be used for mapping existing objects in a given territory, based on UTM Coordinates. It also has a route editor and comes with a series of tools that zoom in and out and move up/down/right/left.

The GUI supports any language independent of the network or software used for uploading. The map supports unlimited amount of layers ranking from satellite images, aerial images, and maps created ad hoc: these layers are geo-referenced over the original map.

## 7. THE EMAPPS.COM PROJECT RESULTS

The report [12] on the impact of the games on the children's learning in project participating countries concludes positive educational outcomes:

- The children learned new knowledge, new technology skills, improved generic skills, improved social skills.
- Game playing stimulated other work such as artwork, acting, writing and video making.
- Teachers believe that games do allow them to achieve their intended learning outcomes.
- In half of the schools involved, teachers cite evidence that children remembered what they had learned through game playing, although other schools were not sure of this or did not know.
- Children who do not respond well in the traditional classroom setting often emerged as positive and enthusiastic learners in the context of the games.
- The evidence which we gathered suggests that, when the concept is carefully explained to them, parents are supportive of this kind of learning.
- The children enjoyed playing the games and, as a result, were highly motivated both to participate and to complete their assignments.

The game implementation also faced barriers to successful:

- It is critical to manage the amount of time which teachers have to devote to the development, customization and deployment of games if their potential for enhancing children's learning experiences are to be realized. This issue of time also applies, but in a different way, to the deployment of this type of game. Time could not always be found during school hours to play the game. Embedding the game in the curriculum proved relatively easy for teachers, but embedding the game into the school timetable was not.
- One of the barriers to learning which we observed was poor design of mobile devices and of applications, and network/GIS failures.

In comparison the project results in Lithuanian showed greater similarities:

- the structure of the eMapps.com games allows the use of the games methodology in a wide range of curriculum subjects and in cross-curriculum activities.
- The games combine the content of different subjects and this makes them attractive. In order to maintain the attention of the learners (primary school students) a preferred methodical approach is to integrate as many teaching subjects as possible. The pedagogical approach may therefore be seen as transferring common teaching approaches in a holistic direction.
  - school students like dynamic activities;
  - the learning process extends beyond the classroom door;
  - the games contribute to a wider transfer of knowledge than individual curriculum subjects.

The parents in Lithuania were less supportive as there is not a tradition to involve parents in educational activities.

The common barrier was a time management embedding the game into the school timetable. The participating Lithuanian schools have discussed and prepared future plans as to how the games could be integrated within the curriculum. The most obviously feasible way to use the game platform available in the project is extra-curricular and the majority of involved teachers see the work involved as only possible outside their ordinary school timetable classes.

## 8. CONCLUSIONS AND FUTURE DIRECTIONS

The key findings to date in terms of successful educational environments as agent for building the learning communities using eMapps.com game prototype points the equal important and synergy between key components: the didactical approach, social dimension and the technological capacity to implement cross-curricular learning and to use methods which stimulate creativity and motivation.

The project has great importance for Lithuanian as the project results have a significant impact in validating new learning paradigms in both school and informal settings and contribute to strategic thinking about the school and the curriculum reform process and digital educational content in Lithuania.

The eMapps.com project prototype can be used in Lithuanian educational context as the agent for building learning communities and educational stimulation. Future research should include investigations on school environment, the key factors influencing education and future developments proposed prototype model.

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