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Educative valences of using educational games in virtual classrooms

Anișoara Dumitrache, Beatrice Almășan

Abstract

The communication and collaboration between different factors involved in educational process leads us to address concepts related to the use of educational games through online educational platforms, in distance learning. The difficulty of this process varies according to several factors. The educational valences of using educational games in virtual classrooms, in ODL (Open Distance Learning) Department of University of Bucharest have been identified, translated and exploited during the fourteen years of activity. The Information and Communication Technology (ICT), the existing information on ICT literacy, ICT courses developed during this time, different courses designed to improve the educational system, national and international projects which allowed us to highlight XXI century’s skills: creativity, critical thinking, problem solving, decision taking strategies, learning and teaching strategies, active citizenship, life, career, personal and social responsibility, all leads us to the valorization of the significant role of technology in training students. The use of educational computer games had a direct result in the quality of courses, in traditional or computer mediated courses. There were identified pedagogical situations which determine the student to identify their expectation and needs and also help in transforming the extrinsic motivation in intrinsic motivation. The aim of this paper is to present a case study which underlines the pedagogical consequences of computer use in education: stimulating imagination, developing the logical thinking, the student learning in its own way and pace, without negative emotions to alter its behavior in a restrictive way.

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* Anisoara Dumitrache. Tel: +40213158095; Fax: +40213158096

E-mail address: anisoara.dumitrache@credis.ro
1. Introduction

The educational process takes advantage on the continuously technology development adaptation to the process being needed. The students’ profile is changing according with the facile access to different technologies and devices. Didactical staff and institutions are obliged to be part of this change in order to offer quality learning environment in which technology to be used in students’ benefit.

Virtual learning environments (VLE) are used for many years but more significantly in distance and part time educational systems. The distance learning (ID) system is already well known and is characterized by the distance between students and didactical staff and the learning process is computer mediated. The part time study (IFR) system has common features both with distance and traditional learning, using also in a large measure technologies in order to communicate with students, to deliver learning materials. The preference of implementing VLE is given by the particularities of these educational systems: separation between students and didactical staff is the most important one, resulting in more particularities with effect on students’ performances and the overall quality of educational process. A special attention must be given to the study material’s design (as structure and content), with interactive multimedia sequences, introducing evaluation tests enclosed in study materials or separate, in order to allow students to self evaluate and also to the implementation of different communication tools to enhance the relation between actors, access to updated information.

The interactivity of study materials will help students to acquire information presented and will make course more attractive, encouraging students for individual study. Short movie sequences, audio files, exercises and educational computer games can be integrated in course materials or in e-learning platform in order to replace the static elements represented by a simple text to be covered by students.

2. Educative valences of using educational games in virtual classrooms

Computer aided instruction and blended learning used within the department changes the transmission and assimilation of knowledge, strategies for working with students, teacher's role as discipline coordinator and tutor's role as effective support in monitoring students' activities.

Therefore, we emphasize that GBL and its products, encourages active and flexible construction of knowledge, communication and cooperation within educational platforms by calling the imagination of students and their desire to bring new educational resources, promote resource sharing therefore enriching education.

Author D. Hawkridge (1990) motivates the usefulness and importance of integrating technology information issues in contemporary higher education as presented below:

- Socially: computer literacy in order to use the computer in a general sense;
- Vocational: studying computer technology as needed in the future professional activity;
- Teaching: the use of information technology in teaching subjects in order to "expand", "optimize", "enrich", "promote" teaching;
- Organizational - administrative: improving the efficiency of teaching, administration and management of education.

GBL leads to a conversion of how to acquire knowledge, making the transition from a passive memorization of information to an active participation, student oriented, centered on skills and attitudes towards knowledge.

The game approach is presented in the literature in two categories: on one side the teaching or educational game and on the other side simulation Games. Educational games designed for young ages are intensely studied by prestigious authors as J. Piaget, Ed Claparede, E. Planchard, J. Chateau, P. Osterrieth. In Romania we find Ursula Schiopu, Pantelimon Golu with valuable studies in the field of children’s development, the games educational value, and so on having an interest in empirical study of the subject. The educational game - and all games developed as software type present the interaction as a game play. The educational game is contained within many learning situations to increase motivation and to achieve certain specific educational activities.

The educational game has such a powerful interactive characteristic and also develops thinking, analysis and synthesis abilities, attention, increasing the distributive observation attention, logic, creativity, intellectual potential
by forming intellectual work habits, helping to emphasize the meaning of three verbs - "to know", "to do" and "to be", creating the autonomous and independent being.

To achieve these components presented above educational game should contain essential characteristics that can be applied to instruction: clearly defined objectives, well formulated and easy to understand rules, to motivate and maintain attention, to contain multiple levels of difficulty, to provide feedback and acknowledgement both to game producer and game user the constant need to improve pedagogical actions and messages sent.

We recall here the teaching game's functions: informative - cognitive function, motor - stimulating function, educational - formative function, toning - balancing function, therapeutic and social functions.

Simulation games lead us to other meanings because content and objectives can be adjusted after the virtual lesson is finished, by: type and predominant sociological competence required, the message used, images, sound and animation used, number of game participants allowing us to highlight an example: the student, positioned at the center of teaching, aiming at forming and development of cognitive, affective motivational and volitional - driving abilities, does not receive processed knowledge, from the teacher, instead discovers and practice learning in different contexts, through a multiple game based activities; the student continually self - evaluates himself and decides the best training route, being responsible for his own learning path decisions in changes during the training is his free will.

3. Game Based Learning (GBL)

The Game Based Learning approach is not a new one. There are many studies in the field underlining a clear relation between games and learning (Prensky (2001, 2005, 2007); Juul (2005, 2014), Charles et al., 2005). The video game is defined by Jesper Juul as a game played using computer and video display. The computer game’s market is continuously growing, with a various offer for a large age average and various profile. Even if the educational value of these games is subject of arguing, most of them are used by people regardless age. The graphical interface is high quality, the level of challenge also increased, elaborated strategies, characters and interactivity which make players involved and focused on results.

3.1. ODL experience in using games

The use of ICT is part of ODL development strategy since its establishment. The experience of providing students with online materials is long and gives us the opportunity for continuous improvements and researches in the field.

In this development strategy students are trained to use computers and also are trained to use computers in teaching (for students enrolled in study programs for teacher training). Didactical staff is also trained periodically in order to be updated with the new technologies. There were created e-learning courses in order to offer computer literacy and to cover all the IT introductory knowledge to correlate the 21st century skills with this century technology.

The preoccupation for improving teaching methods and approaches using technology is increased being open to new opportunities, taking into account the feedback received from our students. The GBL is included in the category of innovative approaches introduced for several disciplines included in different study programs.

Our experience in using computer games is also part of the ICT strategy and during the time, several initiatives were implemented, tested, continued or abandoned from different reasons. Of course, for introducing this new approach for learning it is necessary to have the infrastructure: computers, Internet connection and, licenses for such applications.

Starting with 2002 there were several disciplines where professors were introducing computer simulations for: Physics, Chemistry, Oscillations, Electronics and so on. These applications helped students to learn and to test natural phenomenon, reaction between different chemical reactions only by introducing different parameters as number, variables, into a safe environment. The idea is to use the power of modern personal computers in order to perform virtual experiments as an alternative to traditional experiments, based on real equipments. The results are completely different depending on the parameters and scenarios and each experiment can be replayed each time is necessary until all the process is understood by the student.
Another recent experiment started in 2010, when games were introduced for teaching and learning a discipline named “Personal and Entrepreneurial Development”. The reason to introduce simulations for this discipline is related to the complexity of the studied domain. There are several games and simulation games (usually commercial resources) to be used in classes, as sequence of a lesson. In the game environment, students have a larger independence in choosing the way they should follow, the adopted strategy during the game/simulation, having also the trainer’s individual support. In the course organization, apart the game itself, the theoretical concepts are also part of the training session as the debriefing session, conclusions, lessons learnt and further strategies. Students receive a self evaluation form (personal debriefing) after each learning session; they fill in these forms and at the end of the course each student will be able to know its potential in specific subject.

More recently, another initiative was implemented adopting “home made games” approach. Using the opportunity offered by a European project (ProActive - Fostering Teachers’ Creativity through Game-Based Learning: 2009-2011). In this context, there were created valuable games included in several training courses. The innovation in this case comes from the strategy of teaching teachers to create their own games. In this case, most of the problems occurred in the case of using commercial games and simulations (difficulty of integrating games in current curricula, difficulties in accomplishing specific learning objectives, technical requirements, financial issues) were overcome and the students’ feedback illustrates the success of this approach.

Giving the results obtained during last four years in game design, it was time to start another initiative regarding GBL: students were part of the design process, learning to use several free tools (game editors) and to create their own learning games. It is a complex process requiring involvement both from students and teachers. Using online resources (video tutorials) and face to face meetings, students have learned step by step how to work with game editors, and how to integrate the learning sequences (games) in real learning settings. The students were separated on workshops, based on their options (tool) and they worked individually to create their own educational game, during a semester (14 weeks). The trainers prepared study materials, demos, video tutorials and ensured permanent support for each student. The games were planned and designed according with students’ field of interest, on different themes and for different target groups, starting from general knowledge, language development, mathematics, physics, geography, human body and so on. The level of games’ complexity was different according to the students’ experience with game editors but each student has created a playable educational game.

4. Conclusions

The educational value of computer games is demonstrated through the experiences conducted during the time. It has been demonstrated that games enable the student to gain years of experience only in few minutes through the game playing. According with the games’ objectives they learn to anticipate, make strategies, solve problem, learn to manage crisis situation.

Games offer engaging environment, helping students in testing and retesting hypothesis, applying theory and see the results, with immediate feedback increasing self confidence and engagement, increasing motivation for learning.

The process of game design offers multiple opportunities for game designers, overcoming barriers that usually occur in the case of using commercial games. The results can be improved, edited; games can be used in different contexts, being adapted to the final users’ profile.

Potential of both ICT and GBL encourage innovation in addressing teaching and learning and thus becomes a essential solution for traditional education environmental issues.

References
