

# Serious Games in Economics

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**Abstract:** The European Leonardo da Vinci Transfer of Innovation project “Teacher training to improve attractiveness and quality of management education through the simulation tool ‘Emerald Forest’” which emphasizes on using the computer simulation tool for increasing attractiveness of teaching and learning in economics is presented in this paper. The observation of using computer systems and especially serious games in education is provided as well.

Keywords: Serious Game, Project, Economics

*“Education is not the filling of a pail, but the lighting of a fire”*  
William Butler Yeats

## 1 Introduction

**E-learning** includes all forms of electronically supported learning and teaching. It is the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, multimedia presentations. It includes media in the form of text, image, animation, streaming video and audio.

Nowadays, the new technologies can strongly help in education. In young ages especially, children can use the huge interactivity of new media, and develop their skills, knowledge, perception of the world, under their parents monitoring, of course. In no way traditional education can be replaced, but in this era of fast technological advance and minimization of distance through the use of the Internet, everyone must be equipped with basic knowledge in technology, as well as use it as a medium to reach a particular goal.

Edutainment (Educational entertainment) is any entertainment content that is designed to educate as well as to amuse. Content with a high degree of both educational and entertainment value is known as edutainment. There also exists content that is primarily educational but has incidental entertainment value. Finally, there is content that is mostly entertaining but it has some educational value.

Game-based learning – It is the modern way of teaching actively engage students with a game. In this way the minds are experiencing the pleasure of working with a

new system. There is a difference whether the game is considered “entertainment” or “serious”.

Serious games (SGs) overlap and extend the terms e-learning, game-based learning and edutainment. They refer to computer-based games used for training and learning. These games are programmed using modern multimedia technologies. The computer simulations present different process, objects and help people to learn better and easier. It is possible SG to be used for transfer of knowledge as well.

The SGs play the important role in preparation of future teachers, engineers, philologist, and economist. The SGs can be used also for teaching of children with special educational needs.

The common elements of SGs include back story, rules, environment (2D/3D animations) and interactivity. SGs players have to perform a set of actions and take different decisions, following preliminary defined rules [1].

Usually “players” receive instructions and feedback about their performance and are assisted virtually or by the mentor (teacher).

The experience of the Veliko Turnovo University in this filed wile working on the European project will be presented here.

## **2 Content of the Project**

European project “Teacher training to improve attractiveness and quality of management through the simulation tool `Emerald Forest`” is a project under Lifelong Learning Programme (Leonardo da Vinci Transfer of Innovation Project) and it is financed by the European Commission’s General Directorate of Education and Culture.

The content of the project consists of introducing and implementing the software package for virtual, internet-based simulation of the decision-making processes, connected with business management and mainly with small and medium enterprises (SMEs). The packaged is called “Management Simulation Tool “Emerald Forest” (MST-EF) and is developed and provided by one of the project partners – NHTV Breda University of Applied Sciences, which team has a leading role in the process of game realization and valuation of the results [2, 3, 4].

### **2.1 Project Partners**

Universities from 6 countries are the project partners. They are the following:

- Vidzeme University of Applied Sciences (Valmiera, Latvia) – project coordinator;
- NHTV Breda University of Applied Sciences (Netherlands);
- St. St. Cyril and Methodius University of Veliko Turnovo (Bulgaria);
- Tallinn University of Technology (Estonia);
- Kaunas University of Applied Sciences (Lithuania);
- Karlshochschule International University (Germany).

NHTV Breda University of Applied Sciences is transferring partner that develop and introduce simulation software MST-EF and provide teacher training from partner universities. The project implementation is realized also according with advises from European Educative Projects BV (Netherlands).

## **2.2 Goal and Objectives of the Project**

The main goal of the project is to provide practical training of the students to manage SMEs in quazi-real conditions – highly competitive market and turbulent environment.

The objectives, deriving from the realization of the main goal, are following:

- Teacher training in improving preparation of the students in making different management decisions in conditions which are very near to the reality;
- Improving and implementing of the simulation package MST-EF in curriculums and syllabus;
- Stimulating teachers and students to work together and to communicate with teachers and students from other countries in English language, thus they learn and take into consideration cultural differences – ethnic, religious, social aspects, management style etc.;
- Obtaining practical skills in decision making in management of the financial, material, information and human recourses;
- Dissemination of the results among business trough constituting local groups for discussions, organizing working meetings, seminars, information sessions etc.

## **2.3 Organization of the Project Work**

Fundamentally in the project realization is organizing competitions in individual partner universities, according the working plan. The competitions take part through setting up student teams and each team is management team of a company. The companies maintain and develop bungalow park for relaxation and recreation.

### **Competition at St. St. Cyril and Methodius University of Veliko Turnovo provided on 13-17 February 2012**

The “rival companies”, respectively teams, were ten, and three or four students took part in every team. The selection of the students in teams was conducted by teachers – coaches of the teams and each team consists of students, trained in the field of economic sciences and one student, trained in the field of computer sciences.

There are two aspects in the game – competition in financial results and competition in creativity.

The competition is held within five days. The main activity within the first day is so called Trade fair, where individual teams introduce the name, the logo, the slogan and the firm strategy. The teachers – coaches and the visitors evaluate participation of

the competitive teams. The other task of the teams within the first day is to prepare internet page of the company, which should be actualized during the game.

The individual rounds are held within the rest four days. Every round presents one financial year from the company's life. During the individual rounds the teams make management decisions, concerning:

- Prices per bungalow per week for various submarkets (leisure, business, group tour and institutional markets) for high season and low season;
- Allocation of bungalows to submarkets;
- Level of maintenance and upkeep;
- Promotional expenditure;
- Personnel policy (extra rewards to the personnel, training, education);
- Social responsibility policy;
- Support of distribution (new distribution channels or renewing existing channels);
- Strategic policy (new facilities, infrastructure, renovations etc.);
- Response to sudden situations and events – floods, fires, food poisoning, client complaints etc.

After the decisions have been made, they have to be input in Internet platform of the game (<http://www.emerald-forest.eu/>) via two basic forms – Decision form and E&E form (Evaluation and Explanation Form).

During the rounds each team can use help through platform (Help section), can ask question, receive answers from coaches' on-line (Shout box) and can use all available information in virtual space.

At the end of the round (working day) decisions of the teams are evaluated via software algorithm and by coaches. There is possibility for giving extra bonuses for creativity and innovations. The performance as management team is graded depends on two aspects – financial results (therefore, equity capital and creativity).

After the end of the third round of the competition there is additional possibility for teams to introduce their company through "Three Minutes of Fame". The teams have rich arsenal of instruments – Power Point Presentation, short movie, posters, personal presentation etc. Each team and coaches give rating for two teams, that have been performed in the most expressive and original way. This mark is added to evaluation for team creativity.

In the beginning of the competition students' teams receive so called Linked Assignments – tasks developed by the coaches, which are connected with the game essence and which aim at additional check of the knowledge and skills of the students. At the end of the competition teams submit tasks' decisions; coaches evaluate them and take into consideration for the final grading.

#### **European competition at Vizdeme Universiti in Valmiera provided on 4-8<sup>th</sup> of June 2012**

After the competition in St. St. Cyril and Methodius University of Veliko Turnovo, the coaches make selection for the European contest, which took place in Valmiera,

Latvia from 3 to 9 June 2012. In selection process the priority is between students from teams that win competition on financial results and on creativity.

The focus in setting up teams in European contest is on the work in multinational groups. That's why there are formed 8 teams with 4 participants (students) from different countries. Instead of managing the bungalow park, the teams manage recreation hotel, but again in high competitive and uncertain environment. The game platform has been modified and elaborated because of the noticed imperfections in national contests and new rules of the game. In one of the rounds the teams play in real conditions – hotel Diklu Pils, which is situated near to Valmiera. In evaluation process managers and experts from hotel business take part also.

Besides very competition in European contests there are other activities, which aim acquaintances of individual national cultures and improving communication between the participants, such as: Nation's evening, orientation contest, Team building through work in Diklu Pils, Nation's presentations, interviews from national teams to national tourism representatives etc.

### **3 Basic Results and Contributions of the Project**

Management Simulation Tool “Emerald Forest” is an implementation of European good practices in Bulgarian education that contributes to improving the quality of teaching through its practical orientation.

Through “Emerald Forest” the teaching of the students is derived from pure theory and is put close to real business conditions that allow practicing studied theories included in the curriculum. They put into practice their knowledge in business management, finances, marketing, pricing and foreign language training. The simulation gives an opportunity for the students to gain practical experience and to practice it through teamwork. In addition, the students should correctly share the different tasks among the members of the team, concerning their personal qualities, in order to achieve the common goal – a more competitive company.

During the simulation students should make decisions in uncertain conditions and risk, which are similar to real business environment. To have a successful business, students are required to make a market assessment having insufficient market information about the future plans of their competitors. This implies creativity, entrepreneurial spirit in order to use most effectively their limited financial resources and timely look for and identify new opportunities for gaining higher profit. The simulation imposes a quick reaction and adaptation to rapidly changing business conditions dictated by the decisions of the competing teams.

Education through simulation helps students develop qualities like creativity, initiative, independence which are useful for their future professional realization.

The national competition ends with arranging a meeting with business representatives and getting a feedback by them about the quality of education and in particular the benefits of simulation tools such as “Emerald Forest”. The real business sector appreciates this type of training and emphasizes its importance for the future profes-

sional realization of participants. Business representatives accept to participate in such initiatives.

The following results and contributions are achieved from national and European competitions:

- Skills for working in teams;
- Skills for making decisions in the field of finance management, marketing and logistics management, personnel management;
- Skills for time budget management and reaction in crisis situations;
- Skills for working in international teams;
- Creativity thinking and awareness stimulation in the decision making process;
- Dissemination of the projects results among students, teachers and representatives of business circles from Veliko Turnovo region;
- Implementation of the new methods and forms in curriculums and syllabus for teaching and obtaining practical skills;
- Realizing the international collaboration in the field of economic sciences.

#### **4 Conclusion and Future Work**

Serious Games are very modern instrument of teaching and learning. Performing simulations motivates the students to study hard and obtain more theoretical knowledge about establishing a business, its management and assessment of market conditions.

The results of realising European project “Teacher training to improve attractiveness and quality of management through the simulation tool `Emerald Forest`” showed that the simulation tool “Emerald Forest” helped students to understand better management process. The quality of teaching was higher.

The future plans are to use the simulation tool “Emerald Forest” in teaching economics specialties students at the Veliko Turnovo University. Simultaneously with this Computer Science specialty students will study how to design such a kind of tools.

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