LONGITUDINAL USE OF BUSINESS GAME FOR ICT LEARNING FOR STUDYING BUSINESS

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Abstract

The university graduates who are creative find it easier to adapt to the job market and are more useful to the society. Thus, universities should encourage development of students’ creativity. We noticed that students using business game in each year become more creative compared with students who used business game only one or two times per study program. Longitudinal use of business game has allowed students to understand IT more deeply and has encouraged our students to design a new business game by themselves.

Keywords: Business game, education, simulation, ICT, GIS.

1 INTRODUCTION

The World Economic Forum [1] has identified complex problem solving, critical thinking and creativity as the top three skills required in the nearest future. Content skills (which include ICT literacy and active learning), cognitive abilities (such as creativity and mathematical reasoning) and process skills (such as active listening and critical thinking) will be a growing part of the core skills requirements for many industries [1].

We have decided to explore the possibilities to use a business game “HARD NUT” (“Kietas Rieštūtas”) [2] in order to develop the creativity of the students.

2 METHODOLOGY

In business game “HARD NUT” the students manage simulated enterprises producing boilers. Each period (simulating a year) they have to enter decisions concerning finance, production, marketing and sales (for example, amounts to be produced, selling prices, advertising expenses, dividends to be paid). They can try out different variants until the next period, when the market model distributes the sales to the enterprises. In each case the students get financial reports. They can also connect to the database of the game via ODBC. That is used in order to facilitate learning about ICT.

The research was performed with Business administration bachelor students of Kaunas University of Technology. They entered university four years ago.

For research the internet based business game Hard Nut was used in 4 modules:

− Introduction to Business (first year);
− Information Systems and Social Data Analysis (second year);
− Business GIS (third year);
− Simulation of business processes (forth year).

In the first year the students get just the panoramic view of business modelling and do not concern themselves with technologies. During debriefings they use basic tools of MS Excel and pre-prepared software for financial ratios.

In the second year the attention is turned towards databases. Students learn to create queries useful for business decision-making. That contrasts with conventional method when the students just do lab assignments without understanding their usefulness in business. Thus the students not only learn about finance and economics, possibilities of DBMS, but also understand the usefulness of queries.

In the third year the students learn about data visualization, GIS (the database is supplemented with data about localization). Thus the students get the opportunity to remember the databases and to study the GIS and their uses.
In the fourth year the students get acquainted with theoretical aspects of modelling and business games, try out different software packages meant for modelling, investigate the internals of BG “Hard Nut”.

In the end of the semester the students had to separate into groups and to create a scenario for a business game. They could choose both business type and scenario type (mostly a game or mostly a simulation).

After the last period of such studies the students were asked to answer a survey. Survey questions were mostly about students’ views concerning the described study organisation and creativity improvements.

3 RESULTS

3.1 Proposed business games

At first some students felt that the task of creating business games might be too hard, but ultimately it proved to be interesting and achievable.

Table 1 describes the simulations proposed by the students.

<table>
<thead>
<tr>
<th>Name of game</th>
<th>Simulated area</th>
<th>Number of author students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a cup of coffee yourself!</td>
<td>Modelling of services</td>
<td>3</td>
</tr>
<tr>
<td>Simulation of pizza ordering and transporting</td>
<td>Modelling of services</td>
<td>3</td>
</tr>
<tr>
<td>Beauty salon services model by yourself</td>
<td>Modelling of services</td>
<td>3</td>
</tr>
<tr>
<td>SMART Kaunas City</td>
<td>SMART city services</td>
<td>3</td>
</tr>
<tr>
<td>Hotel booking Simulation</td>
<td>Modelling of tourism services</td>
<td>3</td>
</tr>
<tr>
<td>L’AMOUR MODE Simulation</td>
<td>Modelling the clothing item before buying</td>
<td>2</td>
</tr>
<tr>
<td>Win against others</td>
<td>Modelling of economic, financial, business processes</td>
<td>2</td>
</tr>
<tr>
<td>Model the lunch menu in cafeteria</td>
<td>Modelling of traditional services</td>
<td>2</td>
</tr>
<tr>
<td>BOXOFRUITS</td>
<td>Simulation of packing of fruits</td>
<td>2</td>
</tr>
<tr>
<td>“Cake to bake”</td>
<td>Play and learn more about cakes</td>
<td>2</td>
</tr>
</tbody>
</table>

Generalising the Table 1 we can say that students preferred to model the services and not the industry. Yet simulation type and game type were similarly popular.

Also, none of the proposed games was similar to “HARD NUT” in a significant way, which also suggests significant creativity.

3.2 Survey results

The survey was done with 24 students of business administration.

The survey had several questions, but the main ones for the sake of this paper are those:

- K4-6 – development of business game improves creativity.
- K4-5 – In the future it would be a good idea to invite to a group also students of Informatics, so that they would actually implement the game.
- K4-4 – The created first BG is going to encourage creation of simulations for work;
- K4-3 – The knowledge of BG “Hard Nut” helped to create a scenario of the BG;
K4-2 – Developing a new game was interesting, but at first it looked too hard;
K4-1 – Developing a new game was interesting;
K3-5 – Organising the studies using BG multiple times is superfluous
K3-4 – I have used BG many times without learning anything new;

There were three possible answers: 1 (disagree), 2 (neither agree nor disagree) and 3 (agree).

Results of the survey (Fig. 1) have shown that all the students have agreed that this method does help to develop the creativity. Majority of students would like to have students of Informatics invited to the combined groups. Even 88.9% of respondents found developing a simulation interesting. The conclusions of all the reports pointed out importance of developing creativity, leading to creation of smart social system.

We have also looked for correlations between various variables. There was a rather strong correlation between K4-5 and K4-3 – 0.661 (p=0.003), average negative correlation between K4-2 and K3-4 – -0.540 (p=0.03), strong negative correlation between K4-3 and K3-5 – -0.745 (p=0.001). That would indicate that the students find the subject more useful after seeing its application right away. Notably, none of the games made by the students was like BG “Hard Nut”. It indicates the significant creativity.

4 CONCLUSIONS

The experiments suggest that long and detailed work with the business game does help to develop creativity.

Theoretical analysis of social system has shown the qualities that citizens of it should have: innovativeness, digital skills, thirst for knowledge etc. Investigation suggests that detailed and multifaceted use of business game helps to promote those qualities. For example, multiple students noted that analysis of database of the business game together with extension of its structure helped to improve their digital skills.

REFERENCES
