Gamification as a Tool for Stimulating the Educational Activity of Students of Higher Educational Institutions of Ukraine and the United States

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Abstract: This study has experimentally tested how the introduction of simulations, adapting the experience of higher educational institutions of the United States, including the elements of gamification, in the training course Professional Foreign Language stimulates the educational activity of students at higher educational institutions of Ukraine students’ educational activity through the involvement and creation of activity for constructive competition and cooperation, stimulation of interests and motives, maintaining cognitive attention of students and encouraging feedback. To carry out this research, a script, a methodology for arranging the simulation Coffee Import-Export Procedure was developed. To process the collected statistical information, Covariance-based Structural Equation Modeling (SEM) software, including two-way ANOVA for Mixed Measures, was used, and the Textalyzer software was used to process the answers of the experimental group’s students to the open-type questions. It was found out, that the simulation model Coffee Import-Export Procedure with elements of gamification develops value-motivational, cognitive and activity-reflective components of educational activity of students, develops self-education skills, which are included in the list of key life and career Skills of the 21st Century, moving the formation of competences of self-education from minor to dominant positions, forms the model of future professional activity of students. The scientific and practical results of this research can be used in the practice of corporate training of company's personnel, professional training of future specialists in management, international business, organizational psychology, law, etc., as well as for the organization of professional training for people with limited access to higher professional education or for those who needs retraining.

Keywords: Gamification, gamification of training, simulation, higher professional education, flipped classroom technology.

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Introduction

Gamification as a modern ultra-trend shows a significant educational potential (Giang, 2013; Glover, 2013; Zichermann & Cunningham, 2011), since this approach has a direct impact on the person's interest in acquiring new knowledge, skills and experience, motivating the participant in the learning process to continue education and forms the satisfaction from what has been achieved (Dicheva, Dichev, Agre, & Angelova, 2015). This approach is based on application of a number of mechanisms, tools and modes of interaction like problem-solving-purpose collaboration and communication, to encourage participants to engage with their peers or colleagues, often just for fun and possibility to win some award (Lee & Hammer, 2011). There are different definitions of the term 'gamification' and they summed up as a combination of game elements with game thinking in the activities whose key purpose is to solve problems (Kapp, 2012).
As Zichermann and Cunningham (2011) point out, the application of game mechanics in the learning process increases the ability to master new skills by 40%. Gamification has been adopted in different business spheres owing to its potential to shape employees’ behaviour in a desirable direction (Deterding, Dixon, Khaled, & Nacke, 2011). According to Growth Engineering, (2019), more than 80% of organizations in the United States will use gaming tools to organize at least one field of their business.

The various aspects of this approach to the organization of student and employee training, which is mainly associated with the use of smart as well as information and communication technology (ICT), are explored and tested by academicians, corporate environment specialists and educational institutions (Dicheva et al., 2015; GAMEHUB, 2016; Giang, 2013; Glover, 2013). There are plentiful theoretical studies focusing on categorizing games by game elements used in educational contexts (Deterding et al., 2011), game design elements (Werbach & Hunter, 2012), a game dynamic (Josup & Epema, 2014), a game mechanic (Zichermann & Cunningham, 2011), gamification design principles (game design methods and processes) (De Schutter & Abeele, 2014; Mak, 2013), a motivational affordance (Hamari, Koivisto, & Sarsa, 2014), a type (purpose) of application (Kapp, 2012), an outcomes (achievements) evaluation system (Morrison & DiSalvo, 2014).

The tools and techniques of educational gamification are increasingly being used in higher education institutions to better solve the urgent tasks of vocational education, namely: the transfer of knowledge and educational experience through a flexible system of interaction between the teacher and the student, and between the students themselves, which involves the engagement and creation of activity for constructive competition and cooperation, stimulation of interests and motives, maintaining students’ cognitive attention and maintaining feedback (Khaleel, Ashaari, Wook, & Ismail, 2016; Zichermann & Cunningham, 2011).

**Different concepts of gamification**

Since gamification is often associated with simulations, applied (video) games or entertainment games, we believe that the latter are just different types (conceptual solutions to the implementation) of the gamification phenomenon, the common feature of which is to support learning process and improve the interaction of game participants (Marczewski, 2013; O’Donovan, Gain & Marais, 2013). Given the incentive tools that are the basis of gamification and that are used in simulations, applied (video) games or entertainment games, such as levels, points, badges, leaderboards, virtual gifts, virtual currency, etc., there are 3 levels of gamification: simple (incentivizing), storyline or atmospheric (more expanded) and combined (combining knowledge and entertainment) or interactive (Greenberg, 2015). We singled out the simulations for the use in this experiment, since they are in line with the conceptual framework of the implementation of the competency-based approach implementation in higher education, consolidate the process of vocational training, contribute both to the formation of graduates’ adaptive abilities to match the requirements of the labour market, and the translation of the final package of professional knowledge into the conditionally created professional activity, active independent educational and cognitive activity of future specialists in the field of their future professional activities (Institute of Higher Education, 2019).

**Experience of Applying Simulations in the USA**

Since the use of simulations in domestic professional education has not yet become widespread as in the United States of America, and predicting the high efficiency of this model of education, we resorted to the study of the US experience in applying simulations as a type of gamification of educational process to intensify the learning activities of students of higher education institutions (Honey & Hilton, 2011; Rutten, van Joolingen & van der Veen, 2012). We found that the application of simulations is most commonly used in business education, medical education, and military education (Kincaid, Hamilton, Tarr, & Sangani, 2003). Such a situation, in our opinion, is related to the high price (financial, material or number of people’s lives) of mistakes of a future specialist while performing his professional duties in real conditions. The most well-known business simulations of the US universities are FAST (Financial Analysis and Security Trading), computer stock trading simulation and Global Management Game (Business Management Simulation) developed by Carnegie Mellon University (Pittsburgh, USA).

**The problem of this study**

The quality of higher education in Economics in Ukraine is decreasing as well as satisfaction and motivation of students. This issue was widely discussed at the Vth Scientific and Methodical Conference held in Kharkiv Institute of Finance on 9 February 2018 (KHIF KNTUE, 2018). The above results in damaged reputation of tertiary schools and moving the youth to study abroad. This crisis-like situation requires innovative solution. One innovative solution may be a gamified educational model based on the flexible format of simulations that is able to integrate various professional and applied disciplines in higher education. This study will test experimentally how the introduction of simulations adapting the experience of higher educational institutions in the United States, including the elements of gamification in the training course of English for Specific Purposes stimulates the educational activity of students of Ukrainian higher educational institutions. To fulfill this goal, this quantitative research will survey students, test their personality, communicative skills. It will determine the progression of the development of value-motivational, cognitive and activity-reflexive components of students’ educational activity at higher educational institution due to involvement in simulation.
accompanied by elements of gamification. The experimental work result will undergo quantitative and qualitative analysis, analytical interpretation, and statistical significance determination. This study will show whether using this model increases the overall effectiveness of their learning activities, shifting the emphasis from traditional mode of studies to autonomous learning. Therefore, to identify the effects of the simulation-based gamified model on the students' educational activity and academic achievement at tertiary school, this study aims to answer the following research questions:

1. To what extent does the simulation-based gamified model stimulate students' learning activity and improves their academic performances?
2. What are the opinions of students about the model?

Materials, Methods and Procedure of the Research

To conduct an empirical experimental study of the problem of introducing gamification into a training course in order to intensify the educational activities of students of higher educational institutions, a set of general scientific theoretical, empirical and statistical methods was used. Theoretical methods: an analytical review of scientific and pedagogical achievements of Ukrainian and American scholars-educators to single out the directions of research of the said problem research, analysis of the foreign experience of gamification implementation in the training course, and simulations in particular, and opportunities for its adapting in the learning process of the national higher education institution, the technique development for diagnostics of efficiency of gamification efficiency in professional education. Empirical methods: diagnostic: questionnaires for getting feedback from students, the method of “brainstorming”, expert assessment cards, the method of studying the motivation of professional activity (Dobre, 2013; Psychology, 2012), the method of identifying value orientations of personality of “Square of Values” (Murzina, 2014), card for the level of development of communicative skills by V. Hordienko (Trotskyi, 2018), orientation questionnaire “Personality Orientation” of B. Buss (Psychology of Happy Life, 2008); V. Henning’s “Structure of Interests” method; modified diagnostic techniques of “Motives of Studying at a Higher Educational Institution” by V. Semychenko (2004), emotional state self-assessment methods of A. Wessman and D. Rick (Kokin, Pishko, Lozinska, Kopanytsia, & Malchazov, 2011, p. 94), Cognitive Function Test (Food for the Brain, n/d.); scaling, ranking – to study the criteria, indicators of the influence of gamification on the progress of students in their general professional training; experimental: an experiment to determine the degree of influence of gamification implementation on the state of development of value-motivational, cognitive and activity reflexive components of students' educational activity at higher educational institution; statistical methods: quantitative and qualitative analysis of the experimental work result, their graphical and analytical interpretation, statistical significance determination of the research results. To process the collected statistical information, Covariance-based Structural Equation Modeling (SEM), in particular two-way ANOVA for Mixed Measures was used to evaluate the results, since the cognitive component of student's learning activity at higher education institution includes subcomponents of latent structures. Textalyzer (http://textalyzer.net/) was used to process the answers of experimental group's students to open-type questions.

The experiment consisted of two stages: diagnostic-conceptual and experimental. Namely: the diagnostic-conceptual stage of the experiment, which was implemented in 2017, and was aimed at determining the subject of study - analysis of the portfolio of future specialist competence in the field of foreign business and economy. For realization of the aforementioned, the Department of Modern European Languages of Kyiv National University of Trade and Economics, jointly with the Departments of International Economic Relations, Management, Marketing, Commodity Research and Customs, Trade and Logistics, Computer Science, professional practical aspects (according to specialization of the department) that are key to the future specialist in the field of foreign economic activity were identified. To fulfill this task, we also attracted graduates of the past years and representatives of the YEP Business Club on the basis of Kyiv National University of Trade and Economics. In addition, an analysis of the content of certain topics of the disciplines Professional Foreign Language, general economic subjects, courses on marketing and information technologies was carried out, the scenario, the methodology of organizing and conducting the simulation Coffee Import-Export Procedure (see Appendix A) were developed.

The experimental phase of the study began immediately after obtaining permission to conduct a study from the Academic Council and the University Administration and lasted until 2018. At this stage, control and experimental groups of students were formed, which numbered 27 and 29 students accordingly of the 3rd year of the Faculties of International Trade and Law, Trade and Marketing, Specialty: Management, Marketing, Specialization: Trade Organization, Trade and Marketing, Economics, Management and Psychology The control group students studied according to the traditional model, and the educational activity of the experimental group was implemented through the use of blended learning, Flipped Classroom, and the teaching of a foreign language through the content of the subjects (Content and Language Integrated Learning). Such an organization of the students' educational activity was accompanied by tutor/moderator support and supplemented - a simple-level gamification element - by jointly building an erector set LEGO Maersk Sealand Container, which has 908 parts, which the students of the experimental group
were aware of before the game, and that the container should become the final result of simulation and that the quality of their work will be rewarded by moderators of the game with a certain number of pieces of the container carrier.

Simulations were conducted in several stages: preparatory, implementation and reflexive. The preparatory stage included the creation, in Office 365 cloud services, attributes of companies, banks, and an insurance company (websites of the companies, mini-advertising companies, mini-presentations of companies’ commercial offers (Sway service), Yammer social network pages of the companies) and the environment for their interaction (working space). The lecturers of the aforementioned departments developed a theoretical support for individual cases and tests of business game and posted them at Office 365 services, such as OneDrive, OneNote, Forms. The students additionally used software such as Prime Decisions for training managerial decision-making and MS Project to substantiate the sequence of actions in the import-export procedure. The implementation stage – fulfilment of active communicative team tasks, analysis and presentation of information, decision-making, negotiating, etc. The reflexive stage – summing up the results of the participation in the business game in the format of the round table, repeated testing of the degree of development of value-motivational, cognitive and activity-reflexive components of the educational activities of students of the control and experimental groups. The simulation was run in a "semi-virtual learning environment" using e-mails and videoconferencing, face-to-face sessions. The model based on the simulation accompanied by gamification elements is provided below (See Figure 1).

![Simulation Flow](image)

**Figure 1. The design of simulation accompanied by gamification elements model.**

**Data Collection Tools**

Multiple data collection tools were used in this study. An achievement test was used to respond the first research question. Focus group surveys, on the other hand, were used to answer the second research question.

**Achievement Test**

Given the time allocated to each topic, the 22 multiple-choice-item test was designed and then evaluated by four knowledge field experts and the expert in the field of measurement and evaluation. The test items were aimed to distinguished between students who are masters and non-masters. To validate the test internal reliability, it was run the Kuder-Richardson Formula 20, resulted in a reliability coefficient, which was 0.74 and indicates internal reliability.

**Focus-Group Survey**

To increase the validity of the results, a detailed literature review in the relevant field was performed before the survey questions were developed. Textalyser was used in the analysis procedure. A total of 12 students (6 male and 6 female students) were involved in the focus group surveys including. The questionnaire consisted of 5 below questions:

1) How much study time per week did you dedicate to the simulation-related activities?
2) What kind of activities did you specifically do?
3) What are the benefits of taking part in the simulation for you?
4) What are the problems you faced when taking part in the simulation?
5) What do you suggest doing to solve the problems you experienced?

**Data Analysis**

In order to analyze the quantitative data, a 2X2 split-plot design was used. There was used two-way ANOVA for Mixed Measures to designate the main effects for column and row factors and their interaction effect related to the efficacy of the experiment (Buyukozturk, 2016). The data obtained through the survey were organized according to the themes.
and were analyzed though descriptive analysis. When analyzing, to ensure validity, a coding list was formed, and these codings were peer reviewed. Upon finishing analyses, another expert coded and interpreted some parts of the interview data by means the same coding list. The results of the two analyses were compared, and the differences were discussed and negotiated.

**Study Group**

At the empirical stage, surveys were conducted among 544 teachers/tutors and students of Kyiv National Economic University, named after Vadym Hetman, Ternopil National Economic University and Kyiv National University of Trade and Economics majoring in Economics to investigate the state of teaching Business English and English For Specific Purposes (ESP). Due to application of exclusion criteria list such as: student age, major, English learning purpose, teacher/tutor willingness to implement a simulation-based model in their work, location of the institution, the population was reduced by 436 people and it was obtained the population size of 108 people. In order to determine the sample size to ensure the quality and reliability representativeness, the Sample Size Calculator (Google Apps) was used. It was established that N (population size) = 108, confidence interval = 8.96, and e=.05 at 95% confidence level. Therefore, the required sample size obtained was 57 people and this number was used to form the experimental and control groups for this study.

The control and experimental groups of students were mostly homogeneous in terms of demographic and performance indicators, namely the control group numbered 27 people, of which 18 were young women aged 20-21 and 9 young men aged 20-22. Of 29 individuals in the experimental group, 14 were young women aged 20-21 and 15 were young men aged 20-22. All participants of the study were students of the 3rd year full-time, Specialties 051 “Economics”, 292 “International Economic Relations”, 073 “Management”, 075 “Marketing”.

The t-test was administered to identify whether there were any statistically significant differences between the pre-test scores of the two groups (see Table 1).

**Table 1. The Results of the T-test According to the Pre-test Scores of the Groups**

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>SE</th>
<th>t-test</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>29</td>
<td>3.5</td>
<td>0.118</td>
<td>85</td>
<td>0.71</td>
<td>0.477</td>
</tr>
<tr>
<td>Control group</td>
<td>27</td>
<td>3.29</td>
<td>0.113</td>
<td>95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. P<.05; n, the number of students; M, arithmetic average; SD, standard deviations; SE, standard error.

Table 1 shows that both groups can participate in the experimental process as there were no statistically significant inconsistencies between the mean scores of the students (t(56)=0.71, p>0.05).

**Results**

The experiment was carried out in the natural conditions of the educational process, optionally. And the suggested model contributed to the student’s academic achievements. The below table (see Table 2) illustrates the standard deviation values and the means of the pre-and post-test scores of the students in the experimental and control groups.

**Table 2. Achievement Test Scores of the Experimental and Control Groups**

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test M</th>
<th>Pre-test SD</th>
<th>Post-test M</th>
<th>Post-test SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>59.31</td>
<td>18.876</td>
<td>54.22</td>
<td>16.14</td>
</tr>
<tr>
<td>Control</td>
<td>55.48</td>
<td>18.46</td>
<td>57.62</td>
<td>12.97</td>
</tr>
</tbody>
</table>

Note. SD - standard deviations; M - arithmetic average.

It is noteworthy that while the figures (mean scores) for pre- and post-test for the experimental group decreased (from 59.31 to 54.22), the figures (mean scores) for the control group increased (from 55.48 to 57.62).

Table 3 shows whether the changes in the students’ scores show statistically significant differences and depend on the model used to teach them: simulation-based or traditional (paper course-book-based).
Table 3. The Results of ANOVA for Mixed Measures on the Students' Pre- and Post-test Scores depending on the use of either simulation-based or traditional (paper course-book-based) models

<table>
<thead>
<tr>
<th>Variance Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F-value</th>
<th>p</th>
<th>η²</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between-Groups</td>
<td>23001.27</td>
<td>57</td>
<td>33.34</td>
<td>.082</td>
<td>.773</td>
<td>0.001</td>
<td>57</td>
</tr>
<tr>
<td>Group(Experimental/Control)</td>
<td>32.44</td>
<td>1</td>
<td>33.34</td>
<td>.082</td>
<td>.773</td>
<td>0.001</td>
<td>57</td>
</tr>
<tr>
<td>Error</td>
<td>22959.48</td>
<td>56</td>
<td>412.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within-Groups</td>
<td>10841.72</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement /Pre-test/Post-test</td>
<td>11.24</td>
<td>1</td>
<td>11.24</td>
<td>.059</td>
<td>.798</td>
<td>0.001</td>
<td>57</td>
</tr>
<tr>
<td>Group*Measurement</td>
<td>1683.31</td>
<td>1</td>
<td>1683.1</td>
<td>.899</td>
<td>.344</td>
<td>0.016</td>
<td>57</td>
</tr>
<tr>
<td>Error</td>
<td>10579.03</td>
<td>57</td>
<td>186.165</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20683.07</td>
<td>117</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. p>.05; ANOVA, analysis of variance; SS – sum of squares; df – degrees of freedom; MS – mean square; η², measure of strength of relationship (eta squared); n – the number of students.

It cannot be observed statistically substantial difference between the mean scores of the students learning through the simulation-based model and traditional mode. There was even a small decrease observed in the mean scores of the students taught through the simulation-based model as seen in Table 2.

To address the relationship between the simulation-based gamified model learning and improvement of students' learning activity, the descriptive statistics related to the variables of the research (learning readiness, academic motivation, and perceived learning) and the correlations between them were examined (see the results in Table 4).

Table 4. Descriptive Statistics and Correlations Between Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Learning Readiness (LR)</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Academic Motivation (AM)</td>
<td>.41**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>3. Perceived Learning (PL)</td>
<td>.69**</td>
<td>.43**</td>
<td>1.00</td>
</tr>
<tr>
<td>Mean (Likert type mean score)</td>
<td>74.13 (4.11)</td>
<td>140.03 (5.00)</td>
<td>17.37 (3.47)</td>
</tr>
<tr>
<td>Standard Dev.</td>
<td>11.70</td>
<td>24.29</td>
<td>3.97</td>
</tr>
</tbody>
</table>

*p > .05; **p < .01.

As it is seen in the Table 4, there are positive and significant correlations between LR, AM and PL figures. It was found that there is a positive noteworthy relationship between LR and AM (r=.41, p> .05); a positive substantial relationship between LR and PL is also observed (r = .69, p > .05); and there is a positive noteworthy relationship between AM and PL (r = .43, p> .05). All correlation values are positive which means that the simulation-based gamified model stimulate students’ learning activity.

Results of processing student opinions obtained through a focus group survey

1) How much study time per week did you dedicate to the simulation-related activities? The participants were asked how much time they spent on performing simulation-related activities a week. 2 out of 12 stated they dedicated-two hours to do the above, 2 students reported spending three-four hours, while the other students spent four-five hours.

2) What kind of activities did you specifically do? When asked what the students specifically did, they primarily mentioned doing web-research to perform project work (4 out of 12 people), collect information for presentations (9 out of 12 respondents), reviewing and drafting documents (7 students), watching instructional video (11 students).

3) What are the benefits of taking part in the simulation for you? To respond this question the students stated that they were able to apply professionalism-related knowledge into practice (11 students), to increase their academic performance (7 students), to experience the settings and specifics of their job (9 students), to raise their confidence and motivation (10 students).

4) What are the problems you faced when taking part in the simulation? When asked what problems the students encountered while learning through participating in this simulation, 2 out of 12 stated they sometimes experienced motivation problems, 9 students said they were challenged with the content, 2 students faced problems related to learning mode and 1 - procrastinated all the time.
5) What do you suggest doing to solve the problems you experienced? As for the students’ suggestions to resolve the problems, 2 out of 12 students responded they would give preference to course-book-based learning to deal with the content, 5 suggested increasing the amount of face-to-face portion of instruction.

Below, we graphically present (Figures 1, 2) the dynamics of the gamification influence on the development of value-motivational, cognitive and activity-reflexive components of the educational activity of students of control and experimental groups using a 5-point scale.

Comparing the visualized indicators of the degree development of value-motivational, cognitive and activity-reflexive components of the educational activity of the students of control and experimental groups before and after the experimental stages, we note the positive dynamics of the influence of gamification on the development of the above-mentioned components of educational activity in the process of studying professional-oriented courses in higher education institutions. In contrast to the control group, where the growth of the indicators was relatively smooth and insignificant, in the experimental group the largest changes occurred in the activity-reflexive component and amounted to 1.2 points of growth, while the same increase occurred in the other two components with a difference of 0.7 in the cognitive component and 0.6 in value-motivational one.

Figure 2. Progression of development of value-motivational, cognitive and activity-reflexive components of educational activity of students of control and experimental groups at the beginning of the experiment

Figure 3. Progression of development of value-motivational, cognitive and activity-reflexive components of educational activity of students of control and experimental groups after the treatment
Moreover, 84% focus group students surveyed after the treatment reported improvement of their academic achievements in those professionalism-related courses where internet research is required and Achievement Post-Test Scores showed a positive change of approximately 10%.

Restrictions of the study

The main restriction of this study is the participation of only one higher educational institution in it. One more restriction can be considered the age category of students of control and experimental groups, because only bachelor qualification level students of the 2nd year were involved in the simulation. Prejudice of the members of the research group can also be considered a restriction, as some of them were involved in the development of the scenario, the methodology of the organization and carrying out simulation of the Coffee Import-Export Procedure.

Discussion

It is important to note that such a training model - simulation with elements of gamification - is competent-oriented, and is aimed at engaging students to various activities to create a learning intrigue and maintaining concentration, interest and motivation of a student to study. Furthermore, it goes in line with Sun & Wu (2016), performing group work (project work) under the supervision of the instructor motivates the students. Simulations provide the purpose and tailored settings and self-study and self-reaching goals help students gain the feeling of self-confidence (Blazic, Ribeiro, Fernandes, Pereira, & Arh, 2012). Such a model is also aimed at developing self-education skills and skills, which are currently considered crucial and featured in the list of key life and career Skills of the 21st Century (Bellanca & Brandt, 2010; McGonigal, 2011).

However, Wawer, Marek, Muryjas, & Magdalena (2010) outlined some limitations in the use of simulation games:

- Underperforming the reality;
- Player’s decisions lack responsibility;
- Impossible without area and hardware resources;
- Education occurs in the limited to the scope of the game environment;
- Participants often treat games as entertainment but education;
- There is a significant difference in behavior patterns of participants when they are in game and when they are in real life.

As we have also found, despite the researchers’ attempts, the methods used to measure student progress in the learning process as part of the simulation do not directly assess the performance of the educational activity resulting from the simulation. Therefore, in this study, we have attempted to identify tangible (more or less measured) and intangible (difficultly measured) improvements. In addition to the results of the above tests or surveys, we have taken into account the results of professional quizzes, projects, answers to questions in the questionnaire on student satisfaction with participation in such a business game as indicators of improving the assessment of the final control of mastering the English language. In our opinion, important indicators of progress in the study were the interest of students in participating in the business game, their confidence in their abilities, responsible attitude, and motivation, although, in our opinion, these were intangible factors (improvements).

Taking into account the above, the methods for evaluating the effectiveness of simulations with the components of gamification used in our study are largely similar to those used by Boucher et al. (2013), Findlay-Thompson and Mombourquette (2014), Alomair, Ahmad, and Alghamdi, 2015. They compared data from conducted tests, test results, test quizzes to measure the progress of their students.

This research has shown that the introduction of simulations with the elements of gamification in the educational process has the potential to intensify the educational activities of students of higher educational institutions of Ukraine. Teaching students with the use of this model increases the overall effectiveness of their learning activities, as they get the opportunity to study in their own pace, shifting the emphasis from creating an initial environment in the audience for autonomous learning of a student.

In addition, this study contributes to the study of the problem of integration of simulations with components of gamification in the educational activity of students of higher educational institutions in Ukraine, the use of methods for evaluating the effectiveness of such a training model, extends scientific ideas about the use of “flipped classroom” for the course Professional Foreign Language for students through the example of those who specialize in economics.

Conclusions and Recommendations for Future Research

The use of the simulation Coffee Import-Export Procedure with elements of gamification in the organization of educational activities of students of higher educational institutions positively affects the state of development of value-motivational, cognitive and activity-reflexive components of educational activity of students, and as an example - students of economic and managerial specialties. In general, students expressed positive opinion about the format and content of the course. Most students of the experimental group reported improvement in the results of communicative
foreign language skills, speed of thinking, and flexibility in problem solving, teamwork skills. In addition, a business game organized according to the algorithm tested in our study allows moving the formation of competences of self-education, which is a priori a secondary process in traditional teaching, to a dominant position, where the subjective “value” of professionally significant subjects and, as a result, professional formation and personal development, increases. Participation in simulation business games as educational projects creates the basis for students to understand the main direction and the model of their future professional activities oriented to the formation of personal and professional qualities of a specialist, and not only to obtain a certain volume of professional knowledge.

Taking into account the above, we propose the introduction of incentive programs for motivating educational and research staff of higher educational institutions to develop and implement simulation training models that allow joint training and knowledge creation. We foresee a good prospect for further expanding and deepening the experience of using simulations for audiences with limited access to higher professional education or those who need retraining.

References


Appendix A. Simulation Scenario

COFFEE IMPORT-EXPORT PROCEDURE SIMULATION FOR THE STUDENTS MAJORING IN INTERNATIONAL ECONOMICS

PARTICIPANTS:
1. KAVA GloBest IMPEX, Kyiv, Ukraine – importer (3–5 people)
2. GUATEX, Calle de Vasco da Gama, Guatemala City, Guatemala – exporter 1 (3–4 people)
3. Coffee Export, Avenida de Vespucci, Puerto Barrios, Guatemala – exporter 2 (3–4 people)
4. Antigua Coffee Export, Via de San Ignacio, Antigua, Guatemala – exporter 3 (3–4 people)
5. Odessa Shipping Line – shipper (3–4 people)
6. Ukreximbank – finance provider (3–4 people)

SIMULATION SCENARIO ASSIGNMENTS FOR THE PARTICIPANTS:

STAGE 1. Participants: KAVA GloBest IMPEX (Importer), GUATEX (Exporter 1), Coffee Export (Exporter 2) and Antigua Coffee Export (Exporter 3).

Assignment 1:
- KAVA GloBest IMPEX (Importer): You are Oleksandr (Oleksandra) Dyachenko, an employee in the International Trade Department for KAVA GloBest IMPEX with its head office at: 14A, Obolonsky Avenue, Kyiv, 04205, Ukraine. You have read in the “Financial Times” of 11th June that the price for coffee beans has fallen on the world market. In the magazine “COFFEE TRADE” of 12th June you had seen two advertisements (Handout 1) of Guatemalan exporters of coffee beans: GUATEX, Calle de Vasco da Gama, Guatemala City, Guatemala and Coffee Export, Avenida de Vespucci, Puerto Barrios, Guatemala. They offer coffee beans and blends of all kinds “at extremely low prices” and “on extremely favourable conditions” respectively. As you are running short of coffee you decide to send enquiries to these two firms and also to Antigua Coffee Export, Via de San Ignacio, Antigua, Guatemala, which has been your supplier up to now.
- You want to order 20 tonnes of coffee beans of premium quality and Highland blend.
- 1. Write a letter of enquiry to GUATEX and Coffee Export. Enquire about the quality of the coffee, the new prices, about terms of delivery and terms of payment.
- 2. Send a fax (use a fax cover sheet) to your normal supplier (Antigua Coffee Export), informing him about what you have read in the paper and ask him for a new quotation for coffee.

See the below diagram to follow.

Assignments 2. Participants: Insurance Company.
- A. Use the information from your company website (See Handout 2) to prepare a 2(3) minute-presentation of your insurance options to your potential customer (KAVA GloBest IMPEX).
- B. Study the typical marine open cargo insurance policy (See Handout 2a) and prepare a brief overview of it for your customer.

Assignment 3. Participants: Ukreximbank
- Use the information from the annual report (got to: https://www.eximb.com/upload/app_links/IFRS-FY2016.pdf) to prepare a 2(3) minute-presentation of your trade facilitation options to your potential customer (KAVA GloBest IMPEX).
- See Handout 3.
**STAGE 2.** Participants: KAVA GloBest IMPEX (Importer), GUATEX (Exporter 1), Coffee Export (Exporter 2) and Antigua Coffee Export (Exporter 3).

**Assignment 1.**

GUATEX (Exporter 1): It is 15th June 2017 today. Respond the letter of enquiry you received on 13th June and provide your potential buyer (KAVA GloBest IMPEX) with the following information. *Write a complete and properly laid out business letter.*

Highland Coffee Beans Quality 2 at EUR 3700.00 per 1000 kg unloaded weight FOB Puerto Barrios INCOTERMs 2010 including seaworthy packing. Packing: 275 sacks of 69 kg net each, shipped in a 20’ hardtop container with slits for the coffee to be aired; Terms of payment: Confirmed Documentary Credit payable at sight through a bank in Guatemala City. Documents: 3/3 clean on-board Bills of Lading made out to order commercial invoice. Presentation of Documents: 15 days from date of shipment. This offer is valid for one month from today’s date. Your letter registration details: CC/hl

Coffee Export (Exporter 2): It is 15th June 2017 today. Respond the letter of enquiry you received on 13th June and provide your potential buyer (KAVA GloBest IMPEX) with the following information. *Write a complete and properly laid out business letter.*

Highland Coffee Beans Quality 2, Price EUR 3,650.00 per 1000 kg unloaded weight CIF INCOTERMS 2010. The price includes:

1. Seafreight: USD 1,200.00
2. Bunker Adjustment Factor: USD 95.00 (subject to variation)
3. Terminal Handling Charge: EUR 150.00
4. Load on / Load off: EUR 100.00
5. Insurance Premium: 0.5% on insurance value (invoice value plus 25%)

Insurance will be effected through PBMI Puerto Barrios Marine Insurance. Packing: 275 sacks of 69 kg net each, shipped in a 20’ hardtop container with slits for the coffee to be aired. Payable net by documentary credit at 30 days’ sight through BANCO DE BARRIOS in Puerto Barrios. Bank charges: for your account. Documents:

- 3/3 clean on-board Bill of Lading, to the order of Ukreximbank, Kyiv
- insurance certificate (invoice value plus 25%)
- commercial invoice.

Your letter registration details: TC-ex

Antigua Coffee Export (Exporter 3): It is 15th June 2017 today. Respond the letter of enquiry you received on 13th June and provide your potential buyer (KAVA GloBest IMPEX) with the following information. *Write a complete and properly laid out business letter.*

Highland Coffee Beans Quality 2 for the price: EUR 3650/1000 kg unloaded weight FOB Puerto Barrios INCOTERMS 2010. Extra charge is imposed for seaworthy packing: EUR 12.00 per 1000 kg. The coffee will be shipped on pallets in a 20’ hardtop container (with slits for the coffee to be aired) of 275 sacks of 69 kg each. Terms of payment: Documentary Collection / Documents against Acceptance through BANCO DE GUATEMALA, Ukrainian branch. All bank charges: for our account. We suggest the following documents: – 3/3 clean on board bill of lading, made out to order commercial invoice. You would suggest LATINO SHIPPING LINE, Brazilia, Brazil (Puerto Barrios Branch) for the purpose of checking the weight. The price you have quoted includes the costs of this checking and is valid for one month from today's date.

Your letter registration details: PA/gb

*See the below diagram to follow.*

[Diagram showing the flow of letters between KAVA GloBest IMPEX, GUATEX, Coffee Export, and Antigua Coffee Export]
STAGE 3. Participants: KAVA GloBest IMPEX (Importer), Odessa Shipping Line (Shipper)

Assignment 1a. KAVA GloBest IMPEX (Importer):
Send a fax to Odessa Shipping Line, 1 Customs St. Odessa, Ukraine and enquire about their freight rates for transporting a 20’ container (FCL/FCL Carriers Haulage) about 21 tonnes gross weight from Puerto Barrios to Odessa.

Assignment 1b. Odessa Shipping Line (Shipper):
It is 20th June 2017 today. Respond the enquiry fax you received on 16th June and provide your potential buyer (KAVA GloBest IMPEX) with the following information. Write a complete letter and a fax (use a fax cover sheet).

<table>
<thead>
<tr>
<th>Freight rate:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FCL/FCL 20’ container: approximately 21 tonnes gross weight</td>
<td></td>
</tr>
<tr>
<td>Freight rate Puerto Barrios – Odessa: USD 1,550.00</td>
<td></td>
</tr>
<tr>
<td>BAF</td>
<td>USD 92.00 subject to change</td>
</tr>
<tr>
<td>THC (Odessa)</td>
<td>EUR 150.00</td>
</tr>
<tr>
<td>Lo/Lo (Odessa)</td>
<td>EUR 100.00</td>
</tr>
<tr>
<td>Insurance premium:</td>
<td>0.6% on the insured value.</td>
</tr>
<tr>
<td>This quotation is valid for 1 month from today’s date.</td>
<td></td>
</tr>
</tbody>
</table>

Your letter registration details: LR/DD

See the below diagram to follow.

STAGE 4. Participants: KAVA GloBest IMPEX (Importer):

Staff meeting
Make calculation for 18,975.00 kg (the contents of a container). Consider the exchange rate: USD 1 – EUR 1.23. Compare the prices of the three quotations for coffee beans and hold a meeting to decide which offer you want to accept. Remember that you want 125% of the CIF value insured.

Follow up assignments
Assignment 1.
It is 16th June 2017 today. Write a complete business letter to the supplier who offers the coffee at the most favourable price. In addition to the documents suggested in the offer you would like to have the net weight checked at their side and at their expense and a quality certificate issued at their cost. You must insist on getting an original negotiable insurance certificate. Tell them also that you understand that they will pack a 20’ container using palettes (FCL/FCL Carriers Haulage) that will be shipped on the 15th July at the latest and will be transported by the Odessa Shipping Line from Puerto Barrios to Odessa direct. Ask them to arrange the sea transport. An irrevocable L/C has been opened by your bank Ukreximbank, Kyiv, Ukraine by SWIFT for their benefit. It will be advised through Banco de Barrios, Puerto Barrios. The L/C amount is a maximum of EUR 73,500.00.
Assignment 2.

It is 16th June 2017 today. Complete and send a contract draft to Coffee Export to sign. Let Coffee Export make any changes to it. See Handout 4.

Quick Whole Group Discussion 2

1. What INCOTERM is to be quoted in the contract and L/C? Why is only one INCOTERM supposed to be correct?
2. Why is the L/C-amount “a maximum of” EUR 73,500.00?
3. Why do you mention getting the coffee beans on palettes?
4. What has to be done for the sales contract between KAVA GloBest IMPEX and Coffee Export to come into existence? Or is it already formed after you have sent the order? Give evidence for your answer.
5. Look at the way in which the weights are expressed in the offers:
   a. Explain the meaning of the phrase “per 1000 kg unloaded weight FOB Puerto Barrios”.
   b. Why may KAVA GloBest IMPEX want to have the weight checked?
   c. What would happen if you ordered 20 tons instead of 20 tonnes?
6. Explain what the INCOTERMs suggested in the three offers imply for your firm as regards risks, costs and the obligation to provide transport and insurance.

STAGE 5. Participants: Insurance Company
Assignment: Services to Offer Presentation
Take 2–3 minutes to present the services your company offers to the potential customers, involved into international trade.

Quick Whole Group Discussion 3

1. In the letter from Coffee Export, Puerto Barrios it says: “invoice value plus 25%”.
   a. What does that mean for KAVA GloBest IMPEX?
   b. What influence does that have on the insurance premium?
2. Who will have to provide insurance – Coffee Export, Puerto Barrios or KAVA GloBest IMPEX?

STAGE 6. Participants: Coffee Export (Exporter) VS Insurance Company
Meeting: Take 10 minutes to discuss the conditions and sign the insurance policy (See Handout 2a).

Coffee Export
Discuss the options for obtaining an original negotiable insurance certificate.
1. Who would be the first (initial) beneficiary of the insurance certificate?
2. How can you be sure that the goods are not underinsured?

Insurance Company
Briefly describe the insurance shipment conditions you offer to your regular customers.
Answer your customer’s questions.

Assignment: Issuing both insurance policy and insurance certificate to Coffee Export (See Handouts 2a and 5)
Complete the insurance certificate form considering the points you have previously discussed, the insurance policy information and the details further provided.

Insurance company name: PBMI Marine Insurance Puerto Barrios Marine Insurance (An agent for Baoviet Tokio Marine Insurance)
Insurance Certificate No. 45571/20
Type: Original / negotiable with premium paid
By payment against one specimen the other ones will become null and void.
Is to deliver from: Puerto Barrios, Guatemala to: Odessa
The name of the vessel: Alpina
Conditions: C (Institute Cargo Clauses)
Claims to be ascertained by: EMONS UKRAINE Ltd.
40 Krasnotkatska St.
STAGE 7. Participants: KAVA GloBest IMPEX (Importer)

Assignment 1
Write a letter to Ukreximbank and ask them to open the L/C required. Give them the necessary details:
Valid until 30 July.

Assignment 2. Completion the application form for the L/C and issuing of a documentary credit.
Include the below provided information in both documents (use the application form for the L/C and a form for issuing of a documentary credit):
- Date of expiry: 30 July 2017
- Beneficiary is Coffee Export
- Partial Shipments and Transshipments are not allowed
- Amount required is Maximum of Euro 73,500.00
- Shipment/Dispatch from/at Puerto Barrios
- Not later than (date) 15 July 2017
- To: Odessa Port
- Documents required: Signed Commercial Invoice in Triplicate, CIF, full set of clean paid marine bills of lading, Insurance Policy/Certificate endorsed in blank for 110% of the Invoice Amount covering “All Risks”.
- DESCRIPTION OF GOODS (Brief): Highland Coffee Beans Quality 2
- KAVA GloBest IMPEX (Importer) is the beneficiary.
- Signing number: 6158

STAGE 8. Participants: Ukreximbank

Assignment: Services to Offer Presentation
Take 1 minute to present the services your organisation offers to the potential customers, involved into international trade.

STAGE 8. Participants: Odessa Shipping Line (Shipper) & KAVA GloBest IMPEX (Importer)

Assignment 1. For Odessa Shipping Line (Shipper)
Examine the form of the bill of lading. Write a fax to enquire information you need to complete the bill of lading with.

Assignment 2. For KAVA GloBest IMPEX (Importer)
Respond the fax from Odessa Shipping Line.
Assignment 3. For Odessa Shipping Line (Shipper)

Complete the bill of lading (use a bill of lading form) and the commercial invoice (use the commercial invoice form) using the details you received from KAVA GloBest IMPEX and add some reference details further outlined.

Voyage No. 33090166
Shipper’s reference: 505/1098/7

Quick Whole Group Discussion 5

Look at the bills of lading and answer the questions.
1. Why should the bills of lading be clean bills of lading?
2. Would there be any difference if the letter had not mentioned that it should be a clean bill of lading?
3. Why should the bills of lading be on-board bills of lading?
4. Which other kinds of bills of lading do you know? Describe them.

Summing Up Round Table Discussion

1. Explain the meaning of “made out to order” (A letter of enquiry to Guatex & Antigua Coffee Export)
2. Why should the bill of lading in the present scenario be made out to the order of Ukreximbank, Kyiv?
3. Which role does that bank (Ukreximbank) play in the system of the L/C?
4. If this bill of lading is handed on, who will be the first endorser?
5. Look again at the bill of lading requested in (See the sample in the Answer Key). Who will be the first endorser?
6. Have a look at the bill of lading (See the sample in the Answer Key) and answer the following questions:
   a. Can KAVA GloBest IMPEX be sure that the coffee beans are not mouldy?
   b. Explain the phrases and their significance:
      b1. one of which being accomplished, the others to be void
      b2. said to contain (s.t.c.)
   b3. FCL/FCL Carriers Haulage
7. What would be different if you had agreed on FCL/FCL Merchants Haulage?
8. What would be different if you had agreed on LCL/LCL?
9. Check the enclosed documents: Do they comply with the L/C?
10. The L/C deals only in documents: What should the importer, therefore, include in the L/C to make sure that he receives the quality and the amount he has ordered?
11. When Coffee Export has shipped the coffee and received the bill of lading, will they get paid?
12. If KAVA GloBest IMPEX went bankrupt after the L/C being opened, what would happen to goods and payment:
   a. in the case of an unconfirmed L/C?
   b. in the case of a confirmed L/C?
13. Under which conditions should Coffee Export insist on a confirmed L/C?
14. You hear that the ship has got into a storm, i.e. that the goods will not arrive undamaged:
   Would you be able to refuse?
14a. acceptance of the goods
14b. payment