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THE CONCEPT OF GAMIFICATION AND STATISTICAL ANALYSIS OF EXISTING MOBILE APPLICATIONS ON INTERNATIONAL BUSINESS

Summary. The article considers the genesis of gamification and its implementation in the educational process. The essence of gamification experience, its role at the present time, and the perspectives of its adaptation for the students are discovered. The growing tendency of gamification popularization is analysed based on data of Google Scholar. The authors suggest gamification as a tool to infuse ordinary activities with principles of engagement based on the gaming idea. The essence of applying gamification in the educational process for the motivation of students is proved. In the practical part of the research, 100 existing mobile applications regarding the business activity and international business sphere are analysed based on the data of Google Play. The founded applications and games are investigated by their availability according to prices, types, developers by countries, and recommended age for users. The authors consider the frequency of functions of applications to reveal the most used types of mobile applications with the prospect of creating the most appropriate application for studying. The authors put forward some of the applications for detailed research to identify their specific features and aspects. At the final point, the structure and content of an appropriate application according to the vision of authors are proposed.

Key words: gamification, business games, gamification in education, statistical analysis, mobile business applications.

Formulation of the problem. The world of mobile applications and games is full of numerous spheres, including business field. Gamification concept has been implemented and widely developed since 2008. However, having analysed 100 applications on international business, there was realized the fact of the absence of an appropriate game, which can be implemented in the education process for students, studying international business.

Analysis of recent research and publications. The issue of gamification and education through gamification focuses on applying gamification in education using computer games [1], investigations of essence and impact of gamification process [2; 3; 5], discovering its needed aspects and practical implementation [4; 6]. Nevertheless, the topic of gamification requires detailed analysis in order to reveal its benefits.

Novelty. To engage users and solve problems, the new method – gamification – is applied all over the world. But this concept is not fully adapted to the educational process through mobile devices. This paper more emphasizes on the

using gamification concept nowadays and features of existing applications. Moreover, there is an increasing focus on the discovering parts and functions that such applications lack but can be useful for developing the interest of students in the learning process.

The purpose of the article. The research is aimed at discovering the essence of gamification, examining its current situation, position, and implementation in the educational process. The main part is dedicated to analyzation of 100 mobile applications concerning international business and business activity, defining what features a game on International Business must have for its implementation and practical usage by students in universities. The tasks include the identification and analysis of types and structures of existed applications, their practical orientation, elements and functions needed for the successful applying.

Presentation of the research material. Since 2008 different approaches have been made to define gamification. Gamification and Its Application to Education Games and

game-like elements have invaded various domains of the real world, including marketing, politics, health and fitness. Gamification attempts to harness the motivational power of games and apply it to real-world problems, such as the motivational problems of students in schools [1, p. 99].

From that perspective, gamification is a chance to increase the interest of children, students and youth, their motivation, connection and empowering their communication and sharing within the educational system, in their natural environment.

At the same time, Gabe Zichermann wrote his Game-Based Marketing, in which he defines the gamification as *"process of using game thinking and mechanics to engage audiences and solve problems."* World leading consulting firm The Gartner Group defines gamification like: *"the broad trend of employing game mechanics to non-game environments such as innovation, marketing, training, employee performance, health and social change"* [2, p. 199].

The important point is that the application of gamification in the educational context can help to increase student motivation in learning. Educational institutions are interested to understand how education can be delivered through computer-based, android or windows based games. In order to do so, teachers or professors and game designers need to work together. Games, if appropriately designed, can keep users engaged with potentially difficult assignments and learning tasks. This gamification experience can help to give students a clear, actionable task and promise them immediate rewards instead of vague long-term benefits. Games allow repeated failure, and after each failure, the student learns something new. In this way, students can learn from their mistakes while taking failure and the negative experiences in a positive and meaningful way. Thus, gamification has the advantage of reframing failure as a necessary part of learning [1, p. 100].

It is defined that a game as an activity should have the following characteristics [3, p. 15]:
• fun: the activity is chosen for its light-hearted character
• separate: it is circumscribed in time and place
• uncertain: the outcome of the activity is unforeseeable
• non-productive: participation does not accomplish anything useful
• governed by rules: the activity has rules that are different from everyday life
• fictitious: it is accompanied by the awareness of a different reality.

The trend of gamification is rising. According to Karl M. Kapp, there are no signs that the gamification is about to stop. Moreso, the span of use and success of gamification results is growing on almost all continents. Karl M. Kapp says: "Colleges and universities through audience response system, online simulations, and interactive storytelling are quickly integrating game-thinking into the curriculum" [2, p. 200].

The results from Google Scholar about the number of articles and works related to gamification process since 2008 till present times (Figure 1) prove this tendency.

Educational gamification proposes the use of game-like rule systems, player experiences, and cultural roles to shape learners' behaviour. To understand the potential of gamification, however, the deployment of these techniques in practice is considered [4, p. 3].

Certain underlying dynamics and concepts found in game design are shown to be more consistently successful than others when applied to learning environments, these are:

1) Freedom to Fail

If students are encouraged to take risks and experiment, the focus is taken away from the final results and re-centred on the process of learning instead. As Kapp notes, this doesn't mean letting students have four chances at a multiple choice question with four possible answers. What it means is "encouraging learners to explore content, take chances with their decision making, and be exposed to realistic consequences for making a wrong or poor decision."

2) Rapid Feedback

The more frequent and targeted the feedback, the more effective the learning. James Gee notes that "level design ensures players get lots of practice applying what they have learned […] feedback is given moment by moment, and often summarily at the end of a level or in boss battles, which require players to integrate many of the separate skills they have picked up in prior battles with lesser enemies."

3) Progression

Progression is seen throughout game design in the form of levels or missions.

4) Storytelling

Providing a unifying story throughout a curriculum can put the learning elements into a realistic context, in which actions and tasks can be practiced, something that is considered extremely effective in increasing student engagement and motivation [5].

While the concept of gamification may be simple, effectively gamifying a concept isn't. However, it can be simplified by the following five-step process:
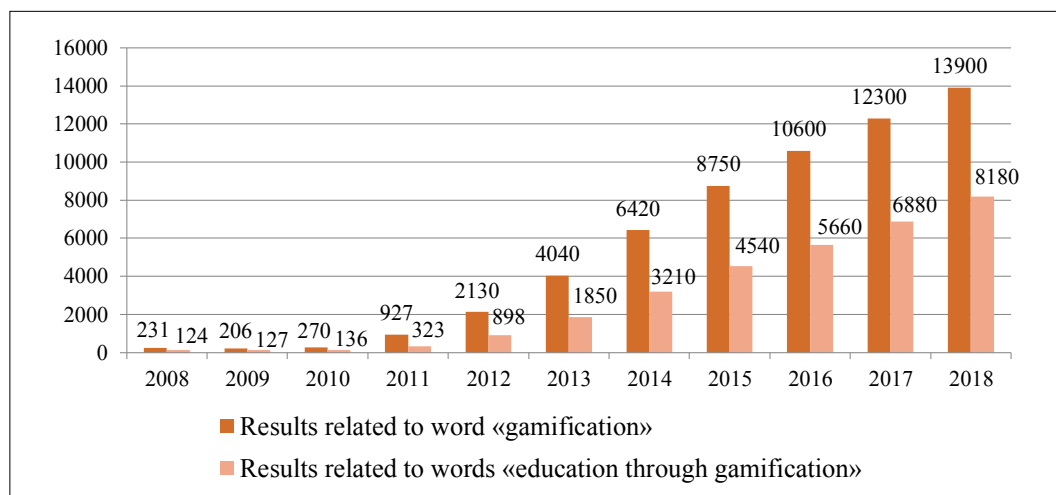

Fig. 1. Number of articles dedicated to gamification and education through gamification

Step 1: Understanding the Target Audience and the Context

While an analysis of the target audience will help you determine factors like age group, learning abilities, current skill-set, etc., analysing the context can provide you with details of the student group size, environment, sequencing of skills, and the time frame [6, p. 7].

Step 2: Defining Learning Objectives

Specific Learning Goals, which could include the student understanding a concept, being able to perform a task after the training, or completing the learning program. Behavioural Goals, which may require the student to concentrate in class, complete assignments faster, minimize distractions in class, etc. [6, p. 9].

Step 3: Structuring the Experience

Stages and milestones are powerful and work well for students as well, as it makes the ultimate objective seem more achievable and measurable while ensuring that obstacles within and between each stage are easily identifiable.

Students who are unmotivated to push onto the next stage may be experiencing fatigue or boredom. In this context, a push is defined as the motivation to advance from one stage to the next [6, p. 10].

Step 4: Identifying Resources

Once the stages/milestones have been identified, the instructor can more easily judge which stages, if any, can be gamified, and how. Questions an instructor should think about while considering gamification include:

• Can a tracking mechanism be applied to this specific stage?
• What would be the currency and what determines the accomplishment of a level?
• Are there clear rules that can be implemented?
• Does the overall system give the student and/or instructor feedback? [6, p. 11]

Step 5: Applying Gamification Elements

Here come *self-elements*, which can be points, achievement badges, levels, or simply time restrictions. These elements get students to focus on competing with themselves and recognizing self-achievement.

While *Social-elements* are interactive competition or cooperation, like for example leaderboards. These elements put the students in a community with other students, and their progress and achievements are made public [6, p. 13].

Using a specific type of element can trigger different reactions from students and when not used correctly, gamification may backfire on the instructor. For example, to complete a stage, a student may be required to acquire certain abilities and skills [6, p. 14].

Investigating the topic of applying gamification in education, it would be reasonable to consider existing applications that belong to the field of business and may be used in a studying process. According to the given topic, it was found out that the Play Market service [7] created and developed by Google provides more applications on International business even than AppStore by Apple. There is no information about how much applications exist in the sphere of business because there is a bunch of them in the Play Market. However, there are the most closely related apps according to the given topic.

The found applications provide free contents and free contents with paid services (Table 1). There exist more apps that

Table 1

Game's availability according to prices

Content's price	No. of apps	Percentage value
Free	58	58%
Free (+paid content)	42	42%
Total	**100**	**100%**

offer the information for free but 42% of them require paying for the content.

Among the discovered by us apps, there are such types and their value in the total amount of the applications (Figure 2):
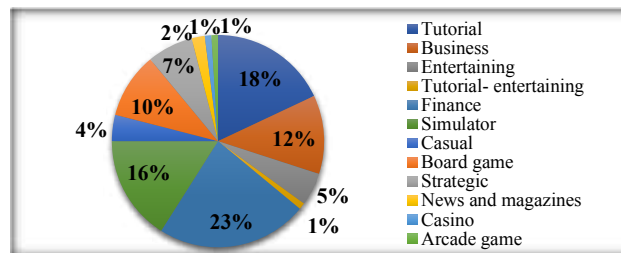

Fig. 2. The quantity of games by types

Among all apps, there is such frequency of the recommended age for users (Figure 3):
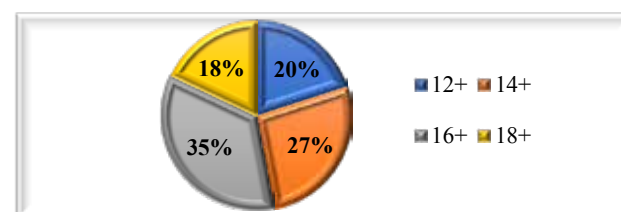

Fig. 3. The frequency of the recommended age for users

According to the given functions, their frequency is also analysed (Table 2). The most of them provide information and knowledge for the beginning of own business, some discover fields of international business; others discover business deals and transactions in the business environment.

Taking into account the collected data, most of the applications are finance and tutorial, all of them completely involve you in the business sphere, giving the tips and providing different options, concerning deals, marketing branch, financial ones, and many others. There are also a bunch of useful apps for stock traders and beginners in that sphere.

According to Appfigures data [8], most applications in the previous year were created by developers from the US – 33.5% of the total number of services that appeared. In the top ten also entered China, India, UK, Brazil, Germany, Japan, France, Russia, and Canada. Among the analysed apps, there are such countries as (Figure 4):

Analysing the existing applications can help to understand what sort and types of apps exist, which features they have, and how they can be developed to be perfectly implemented in studying program. The total quantity of all applications is enormous, thus let us observe only most functional and interesting of them.

The application **International Business** [9] is quite useful in many cases. It provides short articles with actual information and discovers the bases of IB in a simple way. It explains what IB and, for example, WTO is; app gives a clear understanding of global competitiveness, major trade blocks and associations, modes of entry to the market. What is more, it even deals with business environments and business etiquette. This application is an appropriate one for the students who only start learning IB and its essence as a whole. It could be a good addition to the course "Introduction to International Business".

In some ways, **World of Business** [10] application fell below the expectations. It provides a lot of articles, useful content, and also has an attractive interface, but in this case, you can use it for a certain price. It discovers a lot of topics

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Table 2

Functions and utensils of games

№	Functions and utensils	Frequency
1	Designed especially for students of business specialties	5
2	Discovers and provides business (money) transactions	16
3	Provides knowledge and options for doing own business, and strategies for its development	45
4	Provides lessons and tips in various fields of international business, discovers the sectors of international business	21
5	Helps in concluding real business deals, earning money and finding international partners in the real world	7
6	Simple business app in the form of a game	34
7	Provides training of your skills as a manager or entrepreneur	46
8	Provides career development	4
9	Provides news content and articles	12
10	Contains multimedia for better perception of information	3
11	Contains articles that help to form an entrepreneurial mindset	11
12	App for cost tracking and planning of own budget	2
13	Provides info given by successful entrepreneurs, investors, and incubators	2
14	Develops investment skills	14
15	Widely discovers the process of investments	8
16	Widely discovers marketing activity	4
17	Provides practice of marketing skills	1
18	Provides training in the stock market and financial activity	16
19	Provides online communication with players	4
20	Provides analysing real occurrences for making stock markets' forecasts	8
21	Provides financial data (economic calendar, exchange rates, stock market indexes, government bond yields and commodity prices)	15
22	A game with AI can be learned during the game with you	1
23	Discovers the import-export relations	4
24	Provides data for users about export and import trading	3
25	Provides statistics according to your stock activity	1
	Total no. of apps	**100**

which IB manager should know, so if you want to be informed about IB details, then pay for such an opportunity.

International business [11] application stands out between others. An important feature is that it has knowledge tests on provided courses: study flashcards, true/false exercises, matching the answer, multiple choice questions, and even "hangman" game, written test (definitions), game for two players (when the screen is divided into 2 parts and provides scores obtaining for true/false exercises; the person who answers correctly quicker becomes a winner). Besides, it has such sections as Skills, Practice, and Teaches that have articles about international business, world economy, and business administration. Each course also provides case studies and homework. If you want to discuss some questions with like-minded people, you may use a Chat room.

The application **Business Management – Increase Managerial Skills** [12] is an appropriate addition to Management course. It provides articles on a certain topic, latest news, the possibility of making notes, and chatting room. Moreover, it has a knowledge test in a quiz form. To study some areas, you need just to choose a category. While you study some material, the application shows you the learned material in a percentage form.

Learn International Business Management [13] provides different articles on a chosen topic, unfortunately, without any practice. It is quite similar to the first application "International Business" that discovers the bases of IB, different world organizations, a major trade, etc. The application is created for the students of International Business, Management, Marketing, and Law.

The application **International Finance** [14] provides articles according to the financial sphere, where the information about currency, interest rates, the balance of payments, etc. can be found. The concept and interface are familiar with the "International Business" application.

Conclusions from research and prospects. The successful application of suitable and attracting gamification techniques, the delivery of the information can transform a boring or mundane task into an addictive learning process for the students. For students, gamification serves the purpose of minimizing negative emotions that they usually encounter in traditional forms of education.

It can be concluded that a real game on international business should contain a specified structure of some blocks and levels. Such structure allows a player to form an understanding of what international business is and which spheres it includes. The game should contain articles either in English and in Ukrainian, reproduced with audio, so that a student can improve listening skills and increase English vocabulary. It can contain links to Facebook, YouTube, and other social media, which contain business and economic news, articles, etc.

An appropriate feature that can make more interesting is the availability of simple games for two players, such as a Hangman, crossword, puzzle, etc. At the same time, each block must have various knowledge tests: study flashcards, true/false exercises, matching the answer, multiple choice questions, and logical pairs.

Such approach to the game concept will increase knowledge and skills of students, using the learn-by-failure technique that is popular in game-like environments, without the embarrassment factor that usually forms a part of classroom education, and making an education process more gripping and valuable.
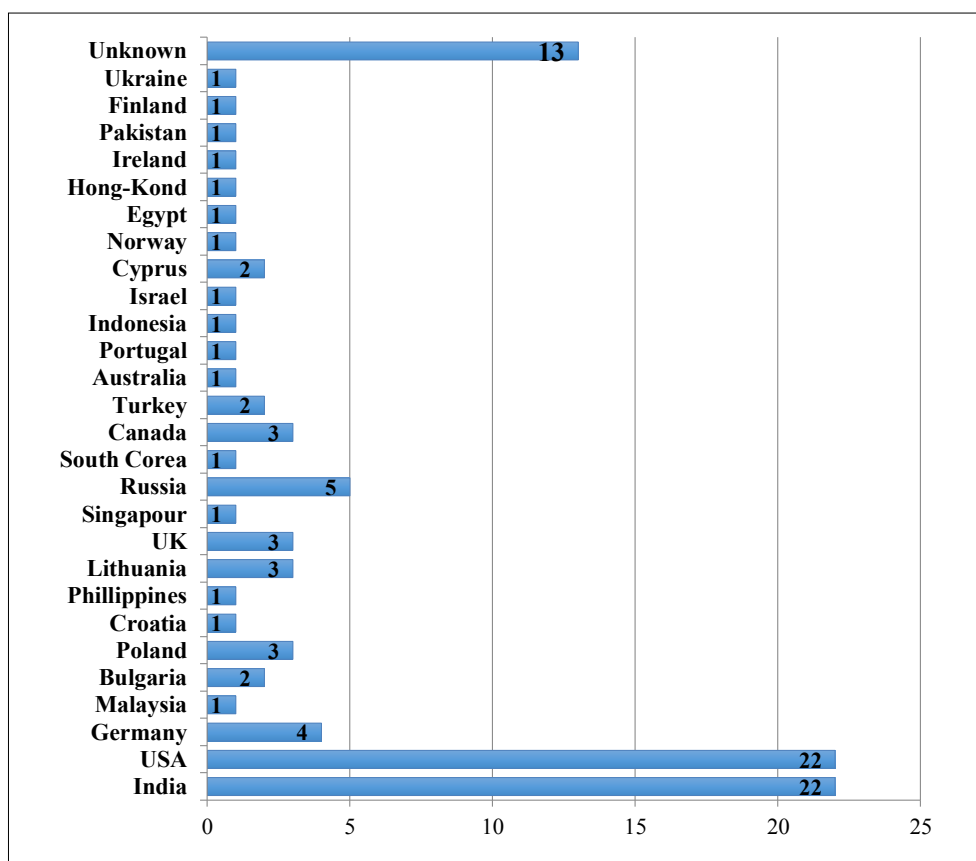
Fig. 4. Number of developers by countries

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КОНЦЕПЦІЯ ГЕЙМІФІКАЦІЇ ТА СТАТИСТИЧНИЙ АНАЛІЗ ІСНУЮЧИХ МОБІЛЬНИХ ДОДАТКІВ З МІЖНАРОДНОГО БІЗНЕСУ

Анотація. У статті розглянуто початок дослідження гейміфікації та її впровадження в навчальний процес. Розкрито сутність досвіду використання гейміфікації, її роль в даний час, перспективу адаптації для студентів. Автори розглядають основні риси та елементи гри в рамках дослідження концепцій гейміфікації. Проаналізовано зростаючу тенденцію популяризації гейміфікації на основі даних Google Scholar. Автори досліджують структуру та зміст, необхідні для успішного застосування гейміфікації в тренінгах для студентів з метою збільшення їхньої зацікавленості у навчальному процесі. Автори пропонують гейміфікацію як інструмент для підтримки звичайної діяльності принципами взаємодії на основі ігрової ідеї. Обґрунтовано сутність застосування гейміфікації в навчальному процесі для мотивації студентів. Охарактеризовано важливість правильного встановлення цілей навчання та наявність зворотного зв'язку у даній концепції. У практичній частині дослідження проаналізовано 100 існуючих мобільних додатків щодо бізнес-активності та сфери міжнародного бізнесу на основі даних Google Play як найбільш використовуваної платформи у сфері ігор. Додатки та ігри досліджуються за їх доступністю за цінами, типами та рекомендованим віком для користувачів. Автори розглядають частоту функцій додатків, щоб виявити найбільш використовувані сорти та типи мобільних додатків з перспективою створення найбільш доцільного додатку для реалізації. Розробники 100 додатків згруповані за країнами з метою аналізу поточної ситуації в сфері гейміфікації та пошуку областей з найвищою реалізацією значення гейміфікації. Автори висунули деякі з додатків для детального дослідження та визначили їхні особливості та аспекти. На кінцевому етапі дослідження запропоновано структуру та зміст доцільного додатка-гри відповідно до бачення авторів.

Ключові слова: гейміфікація, бізнес-ігри, гейміфікація в освіті, статистичний аналіз, мобільні бізнес-додатки.

КОНЦЕПЦИЯ ГЕЙМИФИКАЦИИ И СТАТИСТИЧЕСКИЙ АНАЛИЗ СУЩЕСТВУЮЩИХ МОБИЛЬНЫХ ПРИЛОЖЕНИЙ ПО МЕЖДУНАРОДНОМУ БИЗНЕСУ

Аннотация. В статье рассмотрены исследования геймификации. Раскрыта сущность использования геймификации, ее роль в настоящее время, перспектива адаптации для студентов. Авторы рассматривают основные черты и элементы. Проанализирована тенденция популяризации геймификация на основе Google Scholar. Авторы исследуют структуру, предлагают геймификацию как инструмент для поддержания деятельности на основе игровой идеи. Обосновано сущность применения геймификации в учебном процессе. Охарактеризованы важность целей обучения и наличие обратной связи. В практической части исследования проанализированы 100 мобильных приложений в сфере международного бизнеса на основе Google Play. Приложения исследуются по ценам, типам и рекомендованным возрастом. Авторы изучают функции приложений, чтобы выявить наиболее используемые типы приложений с перспективой создания наиболее целесообразного для реализации. Разработчики 100 приложений сгруппированы по странам с целью анализа областей с высокой реализацией значения геймификации. Авторы выдвинули некоторые из приложений для будущего исследования и определили их особенности. В конце предложена структура и содержание приложения-игры в соответствии с видением авторов.

Ключевые слова: геймификация, бизнес-игры, геймификация в образовании, статистический анализ, мобильные бизнес-приложения.