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**Design of a Serious Game: Citizen of the World**

With the ascending interest towards games, people have spent their time and become addicted. Especially among students, this problem leads to lack of motivation, concentration on school and also sometimes results in dropping out. Many investigations around the world show that the syllabuses of courses are not satisfactory. When the indifference of students towards courses combines with the inadequacy of course content and materials, the impact of courses has decreased. In order to overcome this problem in courses, I investigated the insufficiency of knowledge of the world among students and geography education in Estonia. Estonia is a country that has not been using paper since 2000 and elections have been made online since 2007. Moreover, Estonia provides their society with free WI-FI service in many social places and speed of download is the highest among the world with 40.81 Mbit/s (Gezimanya). In such an environment, schools have been still using traditional educational systems. In addition, the syllabus of Estonia has severe problems as Liiber found that “the textbooks of geography are too overloaded with factual data and terms that induce rate learning and superficial knowledge. The presentation of learning material in geography text books is very traditional and unilateral. The texts are mostly academic, often with scientific classifications, only loosely related to everyday life and the interests of teenagers” (295). Therefore, there are severe concerns about education in Estonia and these provided services can be utilized in education. Rather than trying to keep them away from games, game elements can be implemented into education or serious games can be designed and used in education. Modernisation in geography education will make students in Estonia more motivated and knowledgeable.

Investigating the benefits of having knowledge about different cultures and nationalities revealed several surveys conducted with geography teachers in Israel. According to these surveys, Bar-Gal infers acclimating to the neighbour’s way of life may improve approval and higher tolerance for people of other religions, nations, and countries (405). Because brain drain, labour migration, and wars have risen each year, people from different races, cultures, and countries have been living together in developed or developing countries anymore. At first, we need to develop our acceptance and tolerance towards other cultures and nations by becoming familiar with them. By acknowledging their culture and life, we can live in great harmony and prevent some problems such as racism or being tied to conservative people's apron strings. However, geography courses are not adequate to gain knowledge of the world to students according to studies in Estonia mentioned in the first paragraph. Rather than traditional education, the interest of students can be raised by educational games. This paper examines how to gain knowledge of the world and geography in a simple and enjoyable way for students, and as a consequence of this investigation, designs a serious game called *Citizen of the World*. (Design and development of the game is a product of our CS 102 project group and within their knowledge)

To begin with, it is essential to compare and clarify what game-based learning, serious games, and educational gamification are because these terms can be used mistakenly. Deterding et al. describe gamification as:

a unique domain, distinct from serious games, playful design, gamefulness, and gameful interaction. Gamification does not mean turning assignments into games; rather, gamification seeks to distil from games the principles of how and why they motivate, and then apply those principles as a layer of interaction to non-game environments. Its intent is to influence motivation, ability, attitudes, and performance (qtd. in Chapman et al. p.316).

Aim of gamification is to implement game elements into education. Namely, by using game mechanics and dynamics, education is presented as a form of a game. Game dynamics are described as "incentives triggering desires and motivations, which can be added to the gaming process to stimulate user willingness and emotions to pursue enhanced performance" (Ya-Ling Wu 472). He also describes game mechanics as “the mechanism of rules and rewards of the game that ‘gamify’ learning activities” (472). Ingredients of education such as information and cognitive skills have been implemented by adding reward a system and several rules which raise the energy, concentration and flow during process thanks to gamification.

Motivation is a significant part of education and as mentioned in game dynamics definition, it is promoted through game elements. According to a survey done by Chapman et al., "how participating in a gamified course motivated students overall and examined the individual effect of specific game elements" (315) was investigated and the results of this survey are actually satisfactory to support usage of gamification in education. Among 124 students from six undergraduate courses, the survey was executed as face-to-face. Results reveal that “67.7% of participants reported that the gamification course was more or much more motivating than a traditional course, and 25.8% felt that the gamified courses were neither less nor more motivating, while only 6.5% of students reported that they felt less or much less motivated.” (318). This result obviously demonstrates the effectiveness of gamification and acceptance of gamification in schools.

However, in game-based learning, existing games are used to teach something and the learning process has been proceeding on game-based. These games present us the experience of flying airplanes, driving fast cars, and being fighters, civilization builders and veterinarians. Through these games; players improve their fast decision ability, create new strategies for handling hardships, and figure out complex systems through experimentation (Prensky 2). Although the games used in game-based learning are considered normal games, they are regarded as useless or even harmful by adults. This evaluation of games can result in the restriction of games even though they might be beneficial. The reason behind that restriction is the fear of diminishing academic achievement among the students who spend a lot of time at playing. Therefore, the prejudice against these games is a non-negligible obstacle to implement games into education.

In serious games, also known as applied games, games are designed for a fundamental goal rather than pure absolute entertainment (qtd. in Djaouti et al. par.5). Serious games can be considered a mixture of game-based learning and gamification. Because game-based learning faces prejudice from adults, it might be unsustainable in the long-term. Out of school, students might not deal with completing “gamified” missions if they can play video games with their friends. Educative gamification has a mission and responsibility to be effective in specific areas such as training soldiers in an army or educating students about world knowledge and geography. However, children do not want to be forced to complete gamified assignments because educative gamification is more suitable for education in school, and children would get bored by these assignments out of school hours. If we designed a normal game, we would expect players to improve their skills which can be gained by playing a game such as decision making or developing new strategies and it would not educative and informative for students. Furthermore, if we designed a gamified educative project, it would be used in schools for education but learners especially young ones, would not see it as a completely entertaining project and abandon it. Therefore, through these analyses, we decided to design a serious game which keeps the efficiency higher and aims to gain knowledge of the world by not only being made use of during courses but also be played out of lessons enjoyable.

Our serious game will help students to get in a flow state and keep themselves concentrated and eager to gain knowledge of the world while playing. If we analyse why games have an ability to keep us concentrated too much time, it can be inferred that the characteristic of flow in games is not found in traditional education. Therefore, the role of flow in game-based learning is quite significant if maximum benefit is expected by education. According to Hou and Li, game-based learning encouraged gaining motivation using game-based educational materials, through boosting learners to willingly engage in the activity at hand and reach flow experience, along with improving their learning accomplishment by contributing to enjoyable experiences and challenging aims (48). Thus, “maintaining the flow state can be considered an effective way of promoting game-based learning achievement” (qtd. in Sun et al. p.48). By designing *Citizen of the World*, we combined flow experience in games with educational elements. Thanks to this combination, the learners will be able to stay in a flow state and gain more profit and knowledge than from a traditional system.

*Citizen of the World* has a simple design and game structure with a colourful and attractive interface such as usage of contrast and vivid colours to attract the attention of the learners. In this way, we aim to make them feel happy and retain in the game. It contains chance, strategy, and challenge as well as education. Images used in the game are real photos of countries and help us to have an idea about each country, e.g., touristic places, cities or natural beauties. Additionally, motivating background music is added to render the game more enjoyable and keep the players concentrated. The music is an instrumental piece without lyrics and it starts with the opening of the game.

The scenario is quite simple: each player starts in a country with determined money after selecting a starting country and avatar, then starts to travel other countries on the route of the world according to dice results before each travel. Chance is a significant factor because if the result of dice is high, that means travel will last long and so travel expense will be high. After arriving in a country, the player will encounter with two options. The strategic part starts here. The first option is just paying the accommodation fee and wait for his next turn by passing. If the player trusts himself about the current country, he can choose the second option which is getting citizenship. The citizenship fee is normally higher than the accommodation fee. However, if the player gains citizenship from that country, he will earn money to survive in the game from that country for each turn. By gaining a citizenship, the player automatically makes an investment with question fees paid to that country, which then becomes a source of revenue for each turn. In order to have a citizenship, the player has to answer three random questions about that country correctly. If he cannot answer one of them correctly, he will lose both chance of the getting citizenship and question fee in this turn. Therefore, acting carefully during the game has a vital importance and this condition keeps the players concentrated while playing. Questions are composed of knowledge of that country such as traditional food, population, flag, social and cultural activities, sport, politics. Each question has three options and it should be answered in fifteen seconds. The game will continue until the last player finishes his money as a survival game. A leadership board is provided to activate challenging among players.

In this game, having more citizenship is more important than having more money. Hence, we lead the players to answer as much as possible questions to gain citizenship and become the leader. Thanks to this system, we provide them with more information about countries by facing them with questions and impose them the idea of being wise is more important than being rich. In line with the result of the survey in Israel, we aim to show each citizen is also a world citizen and races, religions or nations do not matter. By knowing other cultures and being familiar with them, we need to raise our tolerance and restrict racist thoughts all around the world with education. Therefore, the biggest reward in the game is knowledge gained by players because it will break the prejudices and improve the coalescence of different cultures.

In this part, techniques used on *Citizen of the World* will be analysed in terms of understandability, graphics, colours, and scenario. The game presents the players a support to succeed in the game within gaining strategic thinking, exploration, and challenge. Westera states "Games are valued for their motivational power. Players of a game are challenged to actively engage in e.g., problem-solving, exploration, goal formation, critical analysis, strategic thinking and enhanced creativity." (62). As I supported with ingredients of the game above, *Citizen of the World* provides the players with enough motivation. According to Westera, intrinsic motivation is composed of three fundamental elements which are competence, autonomy, and relatedness (62). Because the players will play the game with the same friendship group, each player is aware of his self-confidence and believes to beat others and this situation contributes to intrinsic motivation. When I tested the game with my two cousins, who are 10 and 15 years old, it took half an hour to understand the game by playing twice. Because understandability is high in our game, competence and autonomy factors have purely encouraged players to believe to do it by themselves.

As (I) expressed above, the graphics of the game are enough colourful, interesting and realistic. These graphics are in accordance with the thought of Westera as stated in *Style Elements*: “Games displaying rich, realistic or dynamic visualisation styles may stimulate extrinsic motivation, at the expense of unfavourable distractions and cognitive overloads. A justified balance is needed.” (62). The scenario of our game relies on a challenge between the players and the exploration of new countries depending on chance. In order to beat the other players, each player feels that he needs to answer all questions correctly and gain maximum citizenship numbers. In addition, the time limit used within questions tests the crisis management of the player and improves his crisis management skill in the long term. The scenario of our game meets the requirements of Westera mentioned as scenarios that reinforce the competence and autonomy of people could make serious games for more efficient. (63).

Finally, background music playing during game helps to stay the players in flow state because Demetriou, Larson, and Liem mention that “a listener in flow state is enjoying the feeling of being absorbed in their task to such a degree that the passing of time is not noticed, and is therefore able to push past obstacles to carry out activities and achieve goals.” In line with this fact, the players will feel being absorbed and more focused. Therefore, information learned by the game will be permanent because the players concentrate on the questions to survive in the game.

The game designed by our CS project team aims to gain knowledge of the world and support traditional geography lessons by turning these courses into enjoyable activities. Additionally in this way, it will raise awareness about the environment in which individuals have lived with other people. We are presenting an artificial environment to people who cannot afford to travel around the world in real and teaching them without traveling. This game is quite effective to gain knowledge of the world and increase the interest in (the) geography because it meets both technical and logical academic requirements of a serious game as analysed above. With implementation into the curricula of some countries such as Estonia, this game would change the bias against geography and other courses in schools, as well as bridging differences of races, religions, and cultures.

**Works Cited**

Bar-Gal, Bruria. Citizenship and Environmental Education in Geography Lessons.” *Horizons in Geography* / אופקים בגאוגרפיה, no. 60/61, 2004, pp. 403–409. JSTOR, [www.jstor.org/stable/23712717](http://www.jstor.org/stable/23712717).

Demetriou, et al. “Go with the Flow: When Listeners Use Music as Technology.” *Go with the Flow: When Listeners Use Music as Technology,* International Society for Music Information Retrieval, 1 Jan. 1970, hdl.handle.net/2066/161892.

Djaouti, Damien; Alvarez, Julian; Jessel, Jean-Pierre. "Classifying Serious Games: the G/P/S model" (PDF). Retrieved 26 June 2015.

“Estonya Hakkında Temel Bilgiler” *Gezimanya,*4 June 2018, gezimanya.com/avrupa/estonya-hakkinda-temel-bilgiler.

Jared R. Chapman & Peter J. Rich (2018) Does educational gamification improve students’ motivation? If so, which game elements work best?, *Journal of Education for Business*, 93:7, 315-322, DOI: 10.1080/08832323.2018.1490687

Jerry Chih-Yuan Sun, et al. “Exploring Learners’ Sequential Behavioral Patterns, Flow Experience, and Learning Performance in an Anti-Phishing Educational Game.” *Journal of Educational Technology & Society*, vol. 20, no. 1, 2017, pp. 45–60. JSTOR, [www.jstor.org/stable/jeductechsoci.20.1.45](http://www.jstor.org/stable/jeductechsoci.20.1.45).

Liiber, Ülle. “Geography Education in Estonia.” *Internationale Schulbuchforschung*, vol. 28, no. 3, 2006, pp. 293–301. JSTOR, [www.jstor.org/stable/43056743](http://www.jstor.org/stable/43056743).

Prensky, Marc. “Digital Game-Based Learning.” *Computers in Entertainment*, vol. 1, no. 1, 2003, p. 21., doi:10.1145/950566.950596.

Westera, Wim. “Why and How Serious Games Can Become Far More Effective: Accommodating Productive Learning Experiences, Learner Motivation and the Monitoring of Learning Gains.” *Journal of Educational Technology & Society*, vol. 22, no. 1, 2019, pp. 59–69. JSTOR, [www.jstor.org/stable/26558828](http://www.jstor.org/stable/26558828).

Ya-Ling Wu (2018) Gamification design: A comparison of four m-learning courses, *Innovations in Education and Teaching International*, 55:4, 470-478, DOI: 10.1080/14703297.2016.1250662