



The use of Video Games in the Learning Process

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Abstract

The given article is devoted to the study of video games as a relevant method of teaching some subjects` themes, e.g. from history, biology, English, etc. Games that are played by learners differ in the form as well as function. As far as video games are concerned, they might exercise both mental and physical features, train special required skills for a number of jobs, educate players about events and phenomena in the world, research and understand natural human processes, and they could be used for a number of other purposes, doubtless. Here we come closer to the fact that especially videogames could be a solution and way-out if all the work on lesson is well organized. All that results in fact that teachers and instructors should know how opportunities in order to take advantages from students` passion for playing could be used on lessons. In this paper also advantages and disadvantages of the relevant method of teaching and learning through games are revealed. According to the conducted analysis on several the most popular educational video games we drew conclusions on its effectiveness as a modern method of teaching. The paper suggests ways in which video games can be used as research and measurement tools, as prevention and treatment strategies, and as a way to facilitate education.

Key words: education, student, learning, teacher, assessment, video games, classroom.



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1. INTRODUCTION

Videogames could definitely catch the attention of adolescents. Just by watching students and listening to their talks it becomes very clear that they prefer this type of approach to learning, modern and as they say cool. However, it appears that very few games on the commercial market that are being sold have educational value, they are just for killing time and getting fun, so we should be careful while choosing the games we would like to be used on lessons as a powerful source and tool for studying. Some evidence suggests that important skills may be built or reinforced by videogames. For example, spatial visualization ability (i.e., mentally, rotating and manipulating two- and three-dimensional objects) improve with video game playing. It has also been claimed that videogames may be useful in equalizing individual differences in spatial skill performance. Videogames attract participation by individuals across many demographic boundaries (e.g., age, gender, ethnicity, educational status, etc.) (Griffiths,2002).

In the given paper we are focused on examining the issue of introducing some video games to lessons as a supplementary source of knowledge in more detail. This gives us the opportunity to analyze their contents and how the video games (Civilization IV, Valve Portal 2, Minecraft) in general could help both teachers and students in training required skills that future specialists have to show at work. A multimedia communicative training support, what is necessary to add, is important: these are video fragments, photos, pictures, animations, interactive exercises, which are often used for a home self-study of students (Alekseeva,2016).

As we live in the world of IT technologies learners spend their spare time playing at home, exchanging games and gathering collections of them. All that results in fact that teachers could not prohibit learners to play but they have opportunities to take advantages from students` passion for playing. This is, as we should note, the relevance of the research.

2. METHODS

The methodological framework of the study is based on the comparative method and also the survey containing learners` answers covering numerous aspects of video games that allow to investigate whether the games that are so deeply beloved by learners could be useful and effective way of teaching and learning process in classrooms. It would be



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wise to mention that 40 students of Kazan Federal University/KFU (from the freshmen to graduates), the Institute of Physics were surveyed.

Also the analytical technique is used in assessing the video games (Civilization IV, Valve Portal 2, Minecraft) according to surveys that led to further statistics.

The following works laid fundamentals of our study:

Griffiths, M.D. (2002). 'The educational benefits of videogames'. Journal of Education and Health. Vol. 20, №3, pp. 47-51.

Griffiths, M.D. (1996). 'Computer game playing in children and adolescents: A review of the literature. In T. Gill (Ed.), Electronic Children: How Children Are Responding To The Information Revolution'. London: National Children's Bureau, pp.41-58.

Porter, D.B. (1995). 'Computer games: Paradigms of opportunity'. Behavior research methods, instruments, & computers. Vol. 27, pp. 229-234.

3. RESULTS

In 60-ies in the universities of the USA, the game Spacewar! had an incredible success, heralding an era of video games. The first educational computer game Oregon Trail was introduced to the American school pursuing the aim to teach children the basics of the history of the country's independence in a relaxed form close to suggestopedia method (by Georgi Lozanov, a Bulgarian psychotherapist) paying attention at the young age of the audience (pupils) and their peculiarities, for example fatigue. This event was accompanied by an official computerization of schools with the Apple II computer. The developers of the game were students of senior classes, whose purpose was to facilitate the students of 8th class to study the subject of history. Subsequently, this game has become an icon of video game, it was released many times and was continued in virtue of its cognitive content and a high level of efficiency (Koleso,2015).

Nowadays, the market of computer and video games has become much wider, as the demand for educational games has grown significantly. On the shelves there is a huge range of games, specializing in certain disciplines (e.g., English, chemistry, physics, biology, history, etc.). Companies that provide games take into account the age factor, there are some limitations that are spelled out on the front side of a game and that should be read carefully. Following the most popular of useful educational games that promote effective learning in a particular subject are studied further.

Civilization IV



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Jeremia McCall has set himself the following goal: the lessons of history of the Ancient world must be provided by the coherent picture of how the factor of agriculture contributed to the development of human civilization in general. The idea of the researcher was embodied in the game Civilization IV, which should be considered in more detail as a tool that motivates learners to study history. In the inventive game, each player creates and rules his or her own civilization, selects locations for the construction of cities, gaining the required number of workers, creates and supports infrastructure, cultivating land, building strongholds, extracting minerals, etc. As the cities are growing and gaining more strength, the players assign them different roles. So, the largest cities become fortification centers that accumulate all the power, providing protection to other settlements. Road construction, in turn, becomes a support for the distribution of recoverable resources, and reserves. Players, as we could see, face strategic approach to be used in economic life in their civilization, and then learners should expand the social policy most effectively.

The game under consideration is a model of the ancient historical civilization with characteristic features that are unique. Thus, students in the course of the game get acquainted with the concepts of agrarian society, the division of labor, strict social hierarchy, the army as an important factor of a strong state, highly educated strata, commercial exchange between countries, religious and ideological foundation role, etc. This side, undoubtedly, is the positive of the game Civilization IV, as it set the students' at ease, develop logical thinking skills, reinforces the knowledge gained in the lesson (mainly, theoretical material) and that is to be paid special attention, and provides motivation for studying the subject of history (Inina,2015). It should be noted that without theoretical training in the form of notes, lectures that are taken down and studied by learners, neglecting the role of an instructor or teacher, this method of both teaching and learning by means of games will not bring positive results, so it has to be based on already acquired knowledge. As a result, video games should be used as a supplement to the lesson.

During the lesson the teacher identifying the goals, objectives, and allocating time to complete, can divide the students into several groups, each of which should begin to create the same civilization, for example, of the Neolithic period. If each team will take different decisions, in the end, it will be possible to compare the development of



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civilization and to arrange a scientific discussion in a relaxed form that is an important part of any future conference (J. Aart,2016). Students are to express their ideas about the world, to reflect on the fact how it would work if our ancestors chose a completely different path of development, supporting all examples. This gameplay, of course, contributes to the development of the necessary multidisciplinary skills of learners, in particular leadership qualities, strategic planning, quick response when making decisions is time-limited.

Another educational game that we need to analyze is Minecraft. Simple laboratory work on the DNA extraction has become a challenge to the use of computer games in the classroom to Dan Bloom, a teacher of biology in one of the high schools in New York. He was willing to share with his students a real research experience, but first he needed to make sure that learners understand the process and are familiar with the basic concepts. Knowing about the passion of students and the cult of Minecraft, he recreated it in the virtual world of enormous biological cells. First of all, the learners had the task to choose the necessary tools, set equipment. As they perform the correct choice players had the opportunity to get the pathway to the necessary cell structures for further access to DNA. If a student used the wrong tool (e.g., selected salt as a means of penetrating the cell membrane), he was forced to find another way of solving problems to overcome obstacles, as the gameplay for it came to a standstill (Dignan,2011).

According to Bloom, this little experiment turned to fruitful work of students and, consequently, positive results in assessments, that is a great feedback, frequent and continuous. He watched with delight how during the lesson children enthusiastically discussed what to do, discussed and argued and, as a final step, confidently operated the necessary concepts. A huge advantage of using Minecraft in a classroom is that students develop skills of teamwork, have no fear to defend their point of view and ask their questions to both teacher and classmates. Remember that almost for all learners it is an extremely difficult task to ask and respond during the lesson because of the fear to be mocked by classmates severely.

Equally useful for students and effective in the learning process is also the game Portal 2. Don LaBonte, a teacher of STEM disciplines wanted to show students how to conduct scientific experiments, how a scientific hypothesis can be formed. He decided to try out on his lesson the cult game Valve Corporation Portal 2, popular and



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interesting among young people. The decision of the researcher to use the game on the basis of the lesson explained the peculiarity of this game that lied in the fact that it was a great opportunity for learners to test their scientific projects through the Puzzle Maker. Thus, a single user or group of users could create a small game camera with the basic elements of the physical world of Portal 2 in the standard game editor (Raitman,2015). During the assignments the students had to create their own levels, to predict the time for each of levels that other players performed and discuss possible outcomes. Thus, students had the opportunity through this game to become researchers and to make decisions in the world of scientific discoveries by gathering important information about the behavior of players that could address a range of characteristics, such as age or IQ, etc.

Having considered the advantages of the relevant method (consisting in the application of computer games in the learning process), particularly developing and training necessary multidisciplinary skills, as leadership qualities, strategic planning, quick response when time is limited, etc. it is necessary to identify some disadvantages aroused during the lessons. Unlimited time spent on playing video games undoubtedly affects the physical condition, in particular vision of leaners. For students sometimes almost impossible to draw the line between time for training, education and games just for fun which in turn could not lead to feedback. Some players even “run” to the gaming universe that replaces the present virtual. All that proves the fact that the role of the teacher, instructor clearly remains the main. The discussed method of teaching and learning through games is only a supplement to the lesson (Lawrence,1986).

4. DISCUSSION

ASKED PEOPLE (THE STUDENTS OF KAZAN FEDERAL UNIVERSITY, PHYSICS FACULTY)	TIME SPENT ON PLAYING A DAY (IN HOURS)	POSSIBILITY TO PLAY ON LESSONS AIMING AT GETTING THE USE OF VIDEO GAMES	LANGUAGE CHOSEN IN VIDEOGAMES
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A (1 th year/freshmen)/10 p.	1,5-2	Definitely, not	Russian
B (2 nd year)/10 p.	2,5-3	Unlikely	English
1 C (3 rd year)/10 p.	3-3,5	Maybe	English
D (4 th year)/10 p.	More than 3,5	If all the classrooms are equipped, why not?	English

The scheme above depicts the answers of the survey (40 students took part), centered around the relevant question whether video games could help learners in studying some subjects (e. G. English, chemistry, biology, history, etc.). Students were asked to answer honestly how much time they spent each day in front of the laptop, their predictions on possibility of introducing some of the most popular educational games to everyday lessons and also the special attention was paid to the language students prefer choosing in video games. According to the responds of students we could draw the conclusion that the style of life they lead is obviously linked to the virtual universe that games suggest us. Unfortunately, teachers and instructors do not have privilege to eliminate the video games with useless contents at all and choose only the ones that are aimed at exercising mental and physical features, training especial required skills for a number of jobs, educating players in general. The most adequate here is to work with the passion for paying the right way, both motivating and educating, respectively (Malone,1981). What should definitely motivate a teacher is the great desire of students to learn for instance a foreign language, as they admit English in video games is chosen by them deliberately and the common chatroom is full of incoming messages from friends players, fans of computer games living abroad.

5. SUMMARY

Having considered both the advantages and disadvantages of the given method, which consists in applying games to the classes we have seen in practice that this modern approach is effective, of course, with the proper organization of work (schedule and necessary equipment). As far as video games are concerned, they might exercise both mental and physical features, train special required skills for a number of jobs, educate



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players about events and phenomena in the world, research and understand natural human processes, and they could be used for a number of other purposes, doubtless. Despite the weak sides identified as harm to health (vision in most cases), video games addiction, the limited number of classrooms with necessary equipment that seem to be barriers, the potential of using game-based technology, doubtless, supplementary at lessons and time-limited under teacher's guidance, in learning is still close. It is important to add that teaching through video games could find application in many schools, colleges, universities across the country. Motivated students, future specialists, are likely to introduce such modern methods of teaching to their own practice that may eliminate gender imbalance in its use (as males tend to be more avid users) (Griffiths,1996; Griffiths,1998).

6. CONCLUSIONS

As the modern world is linked to its technologies, a lot of young people spend more and more of their spare time playing at home on the internet, gathering collections of videogames and showing them to friends, discussing almost everything about what they saw, did trying a special new game, etc. Some of students suffer from boring lessons during which they always do the same tasks and because of that the motivation of learners is gradually being lost and needs to be found by means of something that expresses their interests, preferences. The given paper is of great interest to instructors, teachers aiming at getting frequent and continuous feedback from learners that is an essential part of effective teaching and learning process. To boost students' feedback engagement by means of different useful video games is one of the relevant and attractive methods of teaching the topics of lessons. Thus, the inferences we made in the paper also could be helpful in order to improve your own teaching skills, make them more advanced and closer to learners' interests, respectively.

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