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Address:

Faculty of Education
ul “Vasko karangelevski“ b.b.
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Tel/Fax. ++ 389 47 253 652; 203 385

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IMPROVING THE EDUCATIONAL PROCESS THROUGH THE USE OF VIDEO GAMES¹⁷

Josif Petrovski

“St. Kliment Ohridski” University– Bitola
Faculty of Education – Bitola
josif.petrovski@uklo.edu.mk

Abstract

Today's research confirms that digital video games can become part of the school's teaching. The middle of educational games allows teachers to introduce educational and interesting elements in the learning process. With the help of computer programs, students can help students to socialize, communicate with others on the basis of knowledge, and gain the skills to effectively navigate into interpersonal relationships.

"Learning" does not mean simply memorizing in the mind, but acquiring the skills and thought processes needed for proper response under pressure, in a variety of situations. Forty years of research shows that games are far more effective tools in the learning process than traditional forms of learning.

This paper will present the need and purpose for implementing video games in the educational process.

Keywords: video games, ICT, teaching, modern classroom

Introduction

The demanding and rapid development of information and communication technologies lead to inevitability and diversity in their use, readiness for constant and prompt innovation as well as readiness for timely and adequate reaction and change of societies. Today, more than ever, ICT do not define society only in terms of access to information, but dictate its transformation into a society of knowledge, expertise and skills. Adequate transformation of society is achieved only if education responds with an effective change of educational and process through the introduction and application of new concepts of education known as Teaching of the 21st Century, 21st Century Learning and 21st Century Skills. Within these concepts, ICT is not only a means for the realization of educational goals, but an important factor in completely reorganization of the education system, introduction of new interactive and partial models of teaching, new educational pedagogy and lifelong learning. Edutainment is the peculiar way of presenting learning in an entertaining style. Teaching kids is more challenging than giving education to a college grade student. Their way of interpreting things and understanding should be molded right from the initial classes. And it is highly important to build a taste or interest for learning among kids. More than just normal classroom sessions which they find boring, it would be a good idea to bring in strategies like edutainment. It is

¹⁷ Specialized paper

nothing but blending entertainment with education which not only makes learning pleasurable for them but also helps them to grow up as better individuals.

What is new is that technological advancements have created a whole new category of entertaining tools and programs that can be merged with educational technology to enhance teaching and learning. One of these tools is video gaming. A video game is an electronic game that involves interaction with a user interface to generate visual feedback on a two or three dimensional video display, virtual reality headset or computer monitor. Since the 1980s, video games have become an increasingly important part of the entertainment industry, and whether they are also a form of art is a matter of dispute. The development of digital technology, from which computers and video games are a major part, has completely changed the way people are thinking and processing information. The difficulties now faced by educational institutions are that old methods of motivating students are no longer functioning. With the fact that young pupils of today modern living are using digital technology more than ever, and this includes playing video games, the idea of learning through games seems promising. Learning through games offers a variety of different learning styles and directly affects the cognitive abilities of the participants in the game. Educational games have rules and goals that encourage inspiration and thinking among players. They motivate and challenge their creativity in solving tasks. This kind of games encourages active learning, interaction among multiple participants, teamwork and the development of memory, reflexes, logic, etc. These types of games are called fun and educational because they are gaining a fun way of learning.

Educational system that we have and use today is designed to be in line with the technological development of the past century, but in no way satisfies the needs of today's youth that has grown up in a new digital world. Children and young people today are familiarizing the digital world through video games and the way they communicate with technology can be a change in the way we learn and produce knowledge. Engagement and motivation are interesting and useful benefits from the use of video games, but they are not enough in the overall education process. As books and movies are already used in the educational process, video games can be used in a variety of ways. The concept of a game can produce a simplification of reality, but only if the reference for the age for which the game is intended is respected. In this way, the design of learning environments built on the educational features of the games can be an appropriate way to improve learning. Digital games are user centered, they promote challenges, collaboration, engagement, and development of troubleshooting strategies.

Educational video games

An educational video game is a video game that provides learning or training value to the player. Edutainment describes an intentional merger of video games and educational software into a single. In the narrower sense used here, the term describes educational software which is primarily about entertainment, but tends to educate as well. In most cases, this kind of software is not created regarding the school curricula and usually does not involve educational advisors. Educational video games play a significant role in the school curriculum for teachers who seek to deliver new skills. Gamification of education allows learners to take active roles in learning and develop technological skills that are needed for their academic and professional careers. Several recent studies have shown that video games, whether violent or not can help children in the development of intellectual and emotional skills that support their academic achievement (Chang et al., 2009). These findings have

made teachers all over the world recognize the numerous benefits of gaming and to include educational video game learning in their curricula.

Video games offer structure to problem-solving skills. This allows a player to "fail up", meaning that with the combination of challenging and fun and identity-building, the student will want to continue to persist on that problem until it is solved. It is a productive failure. This may take quite a few times before success is reached, but progress is obtained each time and so is knowledge on how to solve that problem. Iteration and discovery become two major aspects to learning through game playing. Many students have a "sweet spot" for gaming, which allows gaming in education to be successful in terms of grasping concepts, while this can be more difficult through the use of a book. Students may not even realize that they are learning through a game. Games need to include novelty. Unexpected occurrences and challenging choices allow the player to want to keep playing. Having a story or narrative in the game is what can really suck a player into the game. It allows for continuous feedback and challenges at the right level of difficulty, while avoiding frustration. When developing successful learning games for the classroom, it can be a challenging task. In order for the game to show achievement in student learning, the games should hold certain qualities. The development of successful games to promote learning requires attention to opposing factors. Creativity and inventiveness is needed to help the outcome work well and run smoothly. Games should take the opposite approach of drill-and-practice principles, as this simplifies the games and limits the domains of knowledge. The three factors to keep in mind when designing strong and successful games are integration, motivation, and focus. In order for the player to progress in the game, they must master the learning goals and objectives behind the game (Bavelier et al., 2011). The game should be integrated with learning goals. In the content that needs to be taught through the game, it should be made a point that in order to succeed in the game, is to know the information, which creates importance to the player. The game needs to be as motivating as possible and should pose a challenge. The primary activity of the game should be interacting and interesting to the students. Games are about decision making, where you see what the consequences are and what feedback you receive. Games teach students about rewards, but that it takes some work to receive those rewards. The actions within the game need to be relevant to life outside the game, so learning can occur. Focus can most successfully occur when one is learning by exploring, operating, or interacting. Teachers are using games more regularly that focus on a wide variety of objectives, while exposing students to more game genres and devices. There is much more structure, which makes it a lot easier for the teacher, and the students enjoy it. Students have become so fluent with the use of online tools. Learning data can be generated from the use of online games, which allow the teacher to have insight on the knowledge the children have obtained, and what needs improvement; this can then help a teacher with their curriculum and teaching.

A nationwide study of the elementary school teachers in the United State found that over half were using digital games in the classroom weekly. Most classrooms nowadays have replaced the traditional blackboard for the Smart Board, bringing technology into the classroom. As we move forward into the digital age, most schools provide lessons on computer literacy to ensure students are fluent when it comes to technology. Likewise, the use of well-designed educational video games delivers game based learning that can motivate students to participate more enthusiastically in subjects, including those that are often less popular. It is also noted that educational video games offer more interaction, immediate feedback, to both student and teacher, and more student control. Educational video games that involve aspects of reality, provide students with opportunities to be involved in an interactive environment

that they would not ordinarily be allowed to participate in but from the safety of a classroom (Halverson, 2005).

One of the major limitations of educational video games is that they leave little room for spontaneous play. A child may be involved and have some degree of control in a game but ultimately cannot control the direction in which the game will go, hindering the notion of self-directed play as a means for learning. It has been noted that educational video games can help students focus; however, once the game has ended many find it hard to adapt back to the slower pace of receiving information in the classroom (Bavelier et al., 2011). It is also important for students to be able to ask questions on topics they do not fully understand. A supervising teacher may be able to aid the student whereas the computer cannot provide answers to all questions posed. Using educational computer games also relies on the teacher having prior knowledge of how the game works and be somewhat computer literate. Regardless of the enthusiasm surrounding video games and learning, very few studies have come to a conclusive answer as to whether educational video games improve academic achievement and classroom performance (Young, 2012). Although individuals may develop game-specific abilities; these may not transfer into traditional academic skills required for learning. Only additional research could tell whether playing educational video games improves classroom behavior and academic skills (Duff, 2015).

Video game genres

There are different types of genres in video games and there is no standard classification. The industry, the developers and the academy all use a different classification. But most of them agree on this standard classification:

Action games: This category includes action games in the first person or in a third party. This note refers to how the player perceives the game; in the first person the player seems to be part of the game, while in the third person the player sees his avatar (an incarnation in another body, but with the same soul and mind) in the world of the game. Many of the action games allow the player to change the way he plays. Action games require a good hand - eye coordination and quick reflexes. They usually promote resource planning, space-related capabilities (orientation, mental mapping) and, depending on the setup, can be used to insert the player into historical or professional environments. Although action games can improve several types of abilities, their application with educational goals is quite controversial, because of their relationship with violence. However, it is important to note that action does not necessarily imply violence. Action games usually present a conflict that the player must solve; while violence is one of the most natural ways to secure a conflict, good action games are produced leaving the educational part aside. Most of these games are intended for ages of 13+ years so no young people should come across this genre of games.

Role Playing games (RPG): These are the games in which a player plays the role of one or more characters in the middle of a fantasy. As the player usually depends on a group of characters, co-operation and resource management are promoted. Moreover, these games can promote strategic thinking and problem solving skills. Role-playing games usually involve pointer systems. These systems of targeting can be adapted and used in education as tools for evaluating the player's performance in the game or for ensuring social recognition.

Depending on the setting, these evaluations can be made directly accessible to educators, turning the games not only as an aid to teaching, but also to evaluating student results. Lately RPG are most developed online as a multiplayer games, where people help each other in achieving the final goal.

Adventure and puzzle games: In these games, the player must solve a series of problems and puzzles embedded in narrative structure to advance the story. They encourage research and troubleshooting skills, and promote the establishment of links between different concepts. The use of puzzles also helps to establish a challenge and generates a problem-solving problem - a solution that helps for fun, which also provides such games as a learning tool.

Strategy games: Usually placed in historical environments or fantasy environments, these games force the player to plan the use of resources and face the enemy according to an established set of rules. Thus, they encourage short-term and medium-term planning, as well as an understanding of the typically complex set of rules. Depending on their realism and environment, they can be used as educational means in order to reconstruct historical events.

Simulations: These games simulate a real process, event, or environment through the use of a simple model. They allow the player to freely modify the environment and to see the results of his actions in this environment. Typical areas are usually machineries (eg military aircraft), cities, hospitals, universities, etc. This type of game reaches a high educational value in the field of simulations, but by allowing the research and validation of the theory by observing the different interactions and their results. Fighting and Sports: Some people would argue that wrestling and sport games belong to an action type. However, I consider that wrestling and sports games are another type, due to the number of titles that the industry produces every year. But, besides their important commercial success, they have limited educational value.

Sorting games in categories is not always easy because certain games are in more than one category. As an example, most of today's sports games contain the ability to manage the team and combine simulation with a combination of strategy.

Neurological Context

Games encourage active learning, multi-player interaction, team work, and also provide an environment in which players' abilities and skills can be enhanced, such as memory, reflexes, logic, etc. Learning through games offers a variety of different learning styles and directly affects the cognitive abilities of the participants in the game. While learning through games, it can be very effective, but it can also have negative consequences causing great focus to the game, while forgetting about learning. While nobody wants children and teens to disengage from the world in favor of their devices, video games can actually be an effective way to engage students in science, technology, engineering and math (STEM) subjects. The power of video games in this area is twofold. First, gaming is highly engaging, so teachers and parents can harness kids' interest and steer it toward math and science learning. Second, video games require a tremendous amount of STEM knowledge to develop, which makes them a natural hook for teaching coding and other computer skills.

Computer games that are considered "good" (popular and highly appreciated) already provide information in different formats, although most of them prefer to represent their information visually. By presenting information in various formats (visual, textual, audio), players can not only select the style that suits them best, but also must practice their abilities in other areas, and are often unaware of this.

Well-designed video games keep users coming back for more. While there's an ongoing debate about whether they can be addictive or not, there's no doubt that games are highly engaging. There are several reasons that popular games keep players hooked into trying to "beat" them, according to Citrix's Marc Sasinski (Sasinski, 2009):

- They put the player in control. Players get to move around imaginary worlds however they like and be in charge of their own experiences. Compare this to sitting at a desk listening to a lecture, and it's easy to see why kids love games.
- They offer incremental levels of difficulty. "Leveling up" by accomplishing a task provides a rewarding sense of accomplishment. It also keeps the player from getting bored by something too easy or frustrated by something too difficult.
- They provide instant, ongoing feedback. Players can tell right away when they've made a mistake, and they have the opportunity to start over if they fail. Many games also have prominent timers and/or "health" bars that show how players are faring and help them make adjustments to their strategies.
- They create community. Many games allow for multiplayer participation, and even solo players can chat with others about their experiences to compare notes and solve problems collaboratively.

Notice that the most engaging features of video games are ones that great teachers employ in their classrooms. Self-directed exploration and pacing, regular feedback and collaborative problem solving are already part of effective teaching and learning, so why not take advantage of the way video games bring them all together to pique kids' interest?

Conclusion

Video games are most often targeted in the media and are often associated with negative health consequences. However, when games are played moderately and carefully, they are a sustainable source of stress relief, as well as a catalyst for improving mental health and developing social skills. Video games themselves are a relatively modern form of entertainment. They engage excellently at a level other than that of traditional board games and other forms of entertainment. The player actively contributes to the level of satisfaction he achieves from this medium and is thus more invested and ready to engage in the elements of the video game. The amount of time to play is also an important factor in the effects of the games. Although excessive playing can have negative consequences, games in moderation can be healthy, fun and educational.

Why does game based learning work? This is because educational games, in addition to offering fun, winning, collaborating between participants, role playing, etc., allows learning new things in the learning process by making the participant directly involved in the

educational process. In addition, games have the power to keep students motivated enough during the learning process and directly influence the cognitive abilities of the participants in the game. Also, compared to traditional learning, gaming has a great advantage that students can re-submit a precise set of circumstances multiple times, examining the consequences of various actions such as deliberately causing the largest possible virtual explosion to understand the impact the environment itself, etc.

As we mentioned, playing games helps the subjects to develop a variety of skills and abilities such as spatial skills, mental rotation, perception, orientation, ability to read images. Also another skill that develops as a product of playing video games is the so-called "increased visual attention", that is, the ability of the player to keep an eye on and watch more different things in parallel in real time. It is very easy to conclude that gaming helps students develop skills that are both important and useful in real professions like flying with planes and helicopters, driving cars, money management, different social skills etc.

Generally speaking, in our country, game-based learning can be largely applied in education, that is, to implement in curricula and plans for primary and secondary education.

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