“TOM THE ANIMAL LOVER”: AN EXAMPLE OF EDUCATIONAL DIGITAL GAME FOR PRESCHOOL CHILDREN AGED BETWEEN 4-5

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Abstract

Play is the most important occupation that the child spends most of his time with. At the pre-school period, children learn more easily through games. In parallel with the rapid development of technology today, technological tools have also entered to our homes and the lives of children. Children spend their time in closed areas because of the fact that their parents work, and the playgrounds in big cities are scarce. Therefore, children play games with devices such as tablets, computers, and phones. The most important thing is that games that the children play must be educational and appropriate for children's development level. Games that are not suitable for the child's level of development and age, have violence and are non-educational will be harmful for the child. In this age, it is not possible to keep children away from technology so the task of educators and families is to provide the best way to benefit from the technology.

In this study, “Tom the Animal Lover”, an educational game aimed to introduce animals to pre-school children developed in 2016. The game providing information about animals and their voices for children at aged 4-5 aims to teach animals together with their voices and pictures. Unity 3D game engine was used in the design of the game. The game was designed in two dimensions in Unity 3D, and the software language was C#. The preschool period children's most enjoyable activity is play. Technology allows us to move children's play environment into digital world. In this study, we designed an entertaining and educational digital game for children. As a result of observations, we made after pilot application and interviews with teachers; we can say that children enjoy the game, they know the voices of animals that they did not know before and the sorting skills have improved.

Keywords: Educational digital game, pre-school education, 4-5 aged children.

1 INTRODUCTION

Games are activities that start with the birth of a man and continue throughout life, done purposefully or at times purposeless [1]. According to Piaget's Theory of Cognitive Development, game is a tool that helps the child to develop his skills through repetitions, as well as pre-applications by future teachers [2]. All around the world, games are seen as in the center of education for preschool curricula and used as the most important tool for planning and applying the educational process. As in many countries, one of the fundamental principles of preschool education in Turkey is being game based. According to the Ministry of Education Preschool Curricula [3], the child learns through games, recognizes himself/herself and the world s/he lives in through games and expresses himself/herself in the best way during games, acquires critical thinking skills during games. The language of the child is the game. It is especially suggested that the game is to be used as a method and/or an activity when considering learning outcomes and indicators in the curricula [4]. The game influences spheres of psychomotor language development, social development, emotional development, cognitive development for the child.

1.1 Computer Games

Since their invention, computers are used in many fields to make things easier, as well as for fun. As technology advances, mobile phones have acquired the qualification of computers, touch-operated tablet computers have become the main tools of our daily computer and internet access. It is well known that with such involvement of computers in our daily lives, there is an increasing interest in games in devices that are within our arms’ reach or in online multi-user games and they are even used at the level of dependency.
Video game industry is one of the fastest growing industries in the US economy. According to the research company named Gartner, global sales of video games are expected to reach 111.1 billion dollars in 2015. It is reported that in 2013, American computer and video game companies had drastic sale levels in the US and revenues of entertainment software companies exceeded 21 billion dollars. According to Gartner, it is stated that sales in 2013 exceeded 93 billion dollars due to growth the mobile game industry and release of the eight generation game consoles [5]. Game industry also generates employment. In the report, it is presented that while the game industry in the US serves as a source of employment, video game companies, directly or indirectly, provide employment for more than 146.000 people in 36 states. It is not possible to claim that the computer game industry in Turkey is as productive as other developed countries [6]. High-cost game production processes, lack of policies to promote game software, lack of experienced labor force, biases towards games and issues of licensing can be shown as the reason behind this fact [7].

1.2 Computer Games

Educational digital games are defined as electronic games essentially designed to support learning and education by utilizing entertainment, as well as interactive and multimedia technologies. Educational digital games are intriguing and thereby promotes long term interaction. Educational digital games have the characteristic to follow the knowledge of players and correct misunderstandings. This characteristic enables educational digital games to be utilized as a feedback mechanism. In educational digital games, continuous practice of players requires them to respond fast and fluent. This characteristic makes digital educational games work as an expert skill developer [9]. For all these characteristics, educational digital games are considered as the best help tools to be used for learning in education.

It is known that if appropriate learning strategies are not used when educational digital games are developed, there will not be as much meaningful learning as expected. Therefore, it is critical to take into consideration appropriate learning strategies, knowledge creation tools and education theories when designing educational digital games.

2 METHODOLOGY

2.1 The Game: TOM the Animal Lover

The game is developed with the counselling of one professor from the Department of Computer Education and Instructional Technology (CEIT) and one instructor in the field of preschool education. Before and during its development, the game is reviewed by 2 professors in the field of preschool education and 2 professors in the field of CEIT and got experts’ opinion. The game is put into the final form based on the experts’ opinion. The game is developed on the basis of learning outcomes of the Ministry of Education Preschool Curricula [3].

The educational digital game, which provides information for children between ages of 4-5 about animal and their sounds, aims to teach animals with their sounds and pictures. During the design phase, choosing the character, game scenes and design of chapters are done in accordance with the game scenario. Unity 3D, which is one of the game engines, is used in the design of the game. The game is designed as two dimensional in Unity 3D and C# is chosen as the software language. An interface is designed for the first opening scene of the game (Figure 1.).
When designing this game, the required design criteria for preschool age group are taken into consideration and the game is attentive to non-violent content, graphics and sounds appropriate for the age group. The game is designed to be two dimensional and side scrolling. Since the game is designed as side scrolling, the player has the opportunity to discover new places as s/he gets a sense of progress with a continuously scrolling game on the screen. For the design of the game, side scrolling is chosen as the most appropriate platform for the preschool age group and game flow rate is used as slow to be appropriate for this age group. With this design approach, the player is able to move the character forward, backward, upward and downward in the sense of discovering new places.

2.1.1 Level 1: Gathering Animals

The scenario for this chapter of the game is to gather animals that escaped from the farm. The aforementioned animals in this game are cat, crocodile, dog, turtle, rabbit, frog and giraffe. In the beginning of the chapter, the scenario is briefly told, what the player is required to do and pay attention during the game is audibly stated. In the beginning of the game, 5 lives that are symbolized with hearts on the top left corner of the screen are given. The player qualifies to go one level up if s/he is able to gather all animals with the given 5 lives (Figure 2).

2.1.2 Level 2: Gathering Animals with Their Voices in a Given Time

The scenario for this chapter of the game is to gather animals that escaped from the farm in a given time. In this chapter, the sound of respective animal is provided when gathering animals. The aforementioned animals in this game are cat, dog, cow, sheep, frog and bird. In the beginning of the chapter, the scenario is briefly told, what the player is required to do and pay attention during the game is audibly stated. In the beginning of the game, 5 lives that are symbolized with hearts on the top left corner of the screen are given. The player qualifies to go one level up if s/he is able to gather all animals with the given 5 lives and in the given time (Figure 3).
2.1.3 Level 3: Gathering Animals in a Given Order

The scenario for this chapter of the game is to gather animals that escaped from the farm in a given order. In this chapter, when the respective animal is caught, the player is audibly instructed to turn back or forward and to catch the next respective animal. The aforementioned animals in this game are crocodile, turtle, duck, cat, rabbit, giraffe, dog and frog in order. In the beginning of the chapter, the scenario is briefly told, what the player is required to do and pay attention during the game is audibly stated. In the beginning of the game, 5 lives that are symbolized with hearts on the top left corner of the screen are given. The player qualifies to go one level up if s/he is able to gather all animals with the given 5 lives and in the given order (Figure 4).

2.2 Results

Departing from the point that games are the most joyous occupation for the preschool age childhood, this game is developed by utilizing technology during the study in which we aimed to design games that are both entertaining and educational. After the game is developed, a pilot study is conducted for 3 months with 20 children aged between 4-5 attending preschool. For the first pilot study, the children were made to play the game once a week. As a result of observations and interviews with teachers, we can conclude that the children have enjoyed the game, recognized the sounds of animals that they haven’t known before, improved their ordering skills.

3 CONCLUSIONS

Based on this study, our suggestions to families, teachers and game developers are as below:

- Families should be selective of the games that their children play on tools like tablets and computers.
- Teachers should include educational digital games that support development of children, as well as concept learning, in their curricula.
- Digital game developers should seek support from experts in the field of child development when designing games and develop them by taking developmental characteristics of the children into account.
REFERENCES


