Landscape Awareness of Childhood in Computer Games: In the Case of "Minecraft"

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Abstract: Technology usage has been increasing substantially across the globe. It is used not only for changing the way of development but also has important meaning for improving the standard of living. The rate of personal computer ownership has shown a large increase in comparison with previous researches conducted about the same statistics. Nowadays, in addition to resolving health problems, obtaining information and communicating with others, a great majority of people use technology and especially computers for playing video games.

In terms of healthy development of a child's life, 'game' which is one of the basic requirements of the childhood is vital. With the development of modern communication technologies, it seems computer games which are the most effective tools of the electronic world have become the most significant concept of a child's social environment. Studies conducted during the recent years support the idea that computer games develop math and science skills and increase spatial information of children. At the same time, computer games are also impressive in providing children with the skills they will need in a digital world. Minecraft is one of the computer games with worldwide popularity, and its educational value associated with the exterior design via natural elements which the game provides with infinite landscapes is widely accepted.

This paper aims to investigate the results of playing a computer game to support landscape awareness during the childhood in the case of Minecraft computer game and in which way this environmental awareness acquired by a child player is reflected on the game. In the study, visual analysis of outer spaces were created and player dialogues were evaluated in consideration of 45 Minecraft videos ranging in duration between 20 and 70 minutes which were recorded amongst children of male-majority. "In what way the children's environmental awareness is processed" and "in what direction it makes progress from the beginning of the game until 20th episode" were the subjects of investigation. At this stage, landscape elements which children used and their comments about landscape were taken into consideration. As a result of the video review, it was concluded that, after satisfying their basic needs such as food and shelter, majority of players put a significant part of their efforts in landscape design of their houses. At the end of this study, an assessment analysis of evaluating the perceived landscape values and the conceptual bases underlying this approach with Minecraft game has been revealed. Also, suggestions for how the necessary conditions in children's electronic games about outer space design can be provided in order to support the healthy development of landscape architecture were offered. The importance of this study comes in the form of emphasizing the role of computer games in children's healthy development according to the determination of the level of scores in this game played by children.

Keywords: Childhood, computer game, Minecraft, landscape, landscape perception

1   Introduction

With today's technological developments, computer games (or video games) are considered as the most effective media forms of electronic world in children's social environment. While

the negative impacts of virtual world created by computer games in conjunction with a rapidly growing economic sector, particularly on the children of primary school age is widely discussed, positive impacts of the games that possess educational aspects should not be ignored.

OCEL (2002), computer both provides an environment of entertainment and education for children to effectively participate in, and forces them to make independent decisions and perform applications as an individual. Moreover, it has a structure that evaluates their success or failure and gives them the opportunity to practice as much as they desire, and repeat the subjects which they don't understand as many times as they want (ISCIBASI 2011).

According to PRENSKY (2003), computer games teach the players how to obtain information from various sources, how to make quick decisions, how to develop strategies in case of facing with obstacles, and how to understand more complex systems through experiences. During this learning process, mental and perceptual sets of players also evolve in a positive direction (ORNEK 2013).

Good games are models of twenty-first-century learning. Games without violence are good sources of secondary and enhanced cognitive behaviour as they pulsate with many aspects of the world. Games frequently build exposition and explanation into their designs, so that players can gain significant articulated knowledge from gameplay itself. Games engage in constant assessment (GEE 2012).

Perception of physical environment is processed in many ways and at different levels. Perception is not passive but active and it occurs in bi-directional interaction with environment (BERLEANT 1992). In addition to this, perception is not merely a physical fact. Individual's past experiences and social and cultural factors too have impacts upon perception. While perception of environment is processed through the senses we possess (sight, hearing, taste, touch, smell), the most important of these is the sense of sight. More than 80% of sensory inputs in human is derived from the sense of sight (PORTEUS 1996). For this reason, environmental perception majorly emerges as visual perception (CAKCI & CELEM 2009).

Perception constitutes the basis for learning with the very basic learning process that learning puts demand on perceptional and motivational resources (SOMEREN & REINMANN 1996) Monitoring is keeping track of perception and is an important part of perceptional processing. PRESSLEY et al. (1985) said that the results of a series of studies among them are memory strategy use, specific strategy knowledge, and memory strategy monitoring have elucidated their relationship (PRESSLEY et al. 1985).

In this study, by what means visual landscape awareness in children of primary school age is processed through computer games which they play and how this process of environmental awareness is reflected on the game were scrutinized by taking into consideration the contributions of perception to learning. In line with purpose, common applications of Minecraft video game, objective of the game, its content and features were reviewed in general terms and the videos of children users of primary school age who play this game were analyzed.

Definitions

Computer game

Played by all age groups and mainly used for entertainment purposes, computer games are also used for various purposes such as education, advertisement, publicity and simulation. Furthermore, computer games are of particular importance to users from different cultures and countries to communicate with each other.

Landscape awareness

Separate definitions of landscape and perception are necessary to describe the concept of landscape awareness (CAKCI & CELEM 2009).

Studies concerning the landscape awareness are constitutive parts of landscape assessment (PARSONS & DANIEL 2002, PALMER 2003).

Perception

Perception is one of the broad range theories of learning and it covers motivation (ORMROD 2012). Perception can be described as the process of selection, arrangement and interpretation of information (PORTEOUS 1996, BELL 1999).

Landscape

In the European Landscape Convention which was also ratified by Turkey, landscape is described as: "as how they are perceived by people; areas which are formed as a result of their own aspects, nature and/or human interactions and activities (ANONYMOUS 2000).

According to WHERRETT (1996), landscape is defined as visually describable, natural and artifactitious elements and biological sources (ERDONMEZ & KAPTANOGLU 2008).

2   Method

Base material of the study is constituted by Minecraft, one of the video games whose educational value has been emphasized worldwide. Reason behind the selection of this game is that it is related to outdoor design with natural elements as the game provides infinite landscape and geographical variety.

Rest of the study material is constituted by game videos of 30 min. in average which were recorded by 9-12 year-old children of primary school age. The videos are composed solely of the computer screen and comments made by children during gameplay. In evaluating, the videos were restricted to the particular landscape parameters such as vegetation, water elements, topography, urban furniture, etc.

2.1   Model

Minecraft

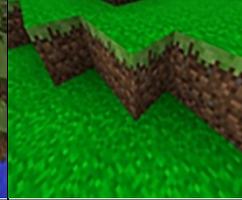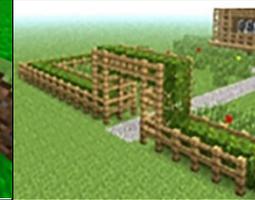**Fig. 1:**   Images of the Minecraft game screenshot (url-5)

Nowadays, it is observed that a new genre of video game has been emerging, in which the game itself is about player reproducing the game and its world. The most popular example of these is the video game Minecraft whose creation dates back to 2009 (url-1).

Minecraft is a game about breaking and placing blocks. At first, people build structures to protect themselves against nocturnal monsters, but as the game grew, players work together to create wonderful and imaginative things (url-2).

While players completely do construction activities in the game's creative mode, they are allowed to engage in activities such as developing tools, agriculture and stockbreeding, agribusiness, hunting and scouting in case the survival mode is selected (url-3). Players are also allowed to do landscape designs containing natural elements of geographical variety provided by the game. A part of the landscape elements found in game material are shown in the table (Table 1).

This game helps children to create social environment in real life apart from the life that children create in virtual world. One of the prominent positive aspects of this game coming to the fore is its contribution to children's social life thanks to the activities such as playing the game together with friends, establishing friendships as they meet with other children and discussing the ideas which they produce.

Table 1:   Landscape elements of the Minecraft game screenshot

Trees	Flowers	Grass	Fence
Structural element	Water element	Pergola	Lighting element

2.2   Sample

In this study, gameplay videos recorded in the recent year and belonging to 45 different children mostly of male sex and at the age of primary school were included in line with the study's purpose of evaluating children's landscape awareness in Minecraft video game. Player dialogues in the videos were also taken into consideration. Each of the videos ranging in duration between 20 and 70 minutes is composed of a single section.

By what means the children's environment perception is processed and in what way it makes progress from the beginning of the game until the 20th episode were the topics investigated by taking into consideration the landscape elements they use and their comments on landscape. The reason why the reviews terminate in 20th episode is that the game becomes much more of a violent content and the concept of landscape and its elements are not dominant after this episode.

2.3   Data Collection Process

All videos of one player were watched and rest of the player videos were watched in mixed episodes, then the videos were reviewed. Data from this sample group were listed in a table (Table 2).

Table 2: Data obtained from the sample group

Level	Most significant objects observed	Most significant activities observed	Learning outcomes about landscape
1	Tree, house, wood	Building house	–
2	Well Pig Tree	Building well to be safe from zombies Eating one's fill Planting and growing trees	How to plant and grow trees
3	Plants (red and white poppy, daisy, red and white rose, dandelion, grass) Flowerpot, sheep, carpet, wheat, bread	Building greenhouse Cultivation Making bread Dyeing carpet	The plant names and when hesitating over dandelion, checking it from the game system
4	Fishing rod, trousers, oven, iron sword, armour	Finding iron Finding caves and wandering Making various tools	–
5	Puddle	Making the monster explode in water Exploring in caves	Making the monster explode in water, not on grass in order not to probably damage the nature
6	Cow, sheep, coat rack	Establishing a farm Making some tools to use at home	–
7	Diamond, zombie, mushroom, some ores, wood	Exploring Going into caves House improvement Killing zombies	–
8	Roses, poppies Squid, Axe Trees (birch, spruce etc.)	Making informative banners Cutting down trees and planting again Building a mountain house	Learning that the birch trunks are white
9	Coal Zombie Horse Wood Spruce tree	Finding coal Using horse Taming a donkey and using it Continuation of building the mountain hut with spruce wood	Learning the general characteristics of spruce tree
10	Chicken Dark oaks Caves	Improving the inside of the house Exploring villages Gathering dark oaks Taking away the sapling from village	Learning the characteristics of oaks

Table 2 (continued)

Level	Most significant objects observed	Most significant activities observed	Learning outcomes about landscape
11	Carrot, potato, wood, shovel	Creating a warehouse in the house Finishing mountain house Cooking	–
12	Wood, oak leaves, game, sugar cane	Farming wheat Picking up potato and carrot Picking up coal and wood	–
13	Forest fire Domestic furniture Crags	Scouting in the field Filling the deficiencies of the mountain house	It expressed the sorrow for the salient forest fires in the game
14	Pool Boundary elements	Landscape design	Reviewing the structural elements being used for the landscape design
15	Trees Clutching plants Ground cover plants	Vegetation design Lighting design	Trying to learn about vegetation design and lighting design
16	Spruce saplings, leaves, Zombie and creature, Cave	Hacking zombies and creatures Planting spruce sapling Picking up leaves Cutting down trees	Learning that he can use the spruce trees for industrial purposes
17	Bushes Pergola, Wooden sitting group Fence, flower pot, tulip, tree	Building pergola over the lake Landscape design around the pergola	The gamer repeats that the short plants are bushes Repeating the landscape elements Learning the plants and vegetates
18	Water, waterfall, tree Stepping stone	Creating waterfall Planting trees Creating stepping stone and floor	When working on landscape design, trying to make it harmonious Calculating the tree shadows and creates
19	Stepping stone, paving stone, fence	Creating floor	–
20	Pool Mine Zombie	Building pool Exploration of mine Fighting with harmful creatures increasing in number	–

3   Results

3.1   Analysis and Interpretation of Data

Survival is the main goal in Minecraft video game. With this purpose, the player should build a house to take refuge in case of a danger or in the night. Also, the player should eat the meat

of boars they see periodically, in order to eat their fill. Rest of the activities are upon the player's request.

We see that in fact the game is closely related to Maslow's hierarchy of needs (Figure 2). The player fulfills two base steps when their physical and safety needs are satisfied. Since there is a single person in the game, plants step in for that matter as players can pot various plants inside their house. At later stages, the players seek for solution to their self-actualization needs in landscaping.

Based on these observations, we can consider that in this game which is a reflection of life circle, landscape meets the vital needs.

Fig. 2:
Maslow's Hierarchy of Needs (url-4)

Although the players are allowed to build their houses with wood and stone, in watched videos, many of the players built their houses with wood. In other words, they started building their houses with wood. Thus, we observe that the children find wood more favorable than stone.

As the game progresses towards the episode 15, the player engaged landscaping practices: he used water elements such as lake and pool in the landscaping of their houses, he did planting and even he tried to design lighting elements and pergola. He created areas with different functions such as the sitting areas near the lake which he located around his house, the cultivated areas and forestlands he arranged for his food needs. Moreover, the player acknowledged plants in accordance with the plants he used. During the gameplay, he involuntarily counted the number of plants and named those plants. Also by checking the game system, he recalled the plant names that he had forgotten.

It was observed that, after he fulfilled his basic needs such as food and shelter, a significant part of the efforts he made were at the landscaping of his house.

In our world where urban structuring is growing and green keeps turning into concrete with each passing day, Minecraft video game enables children to create their own spaces in the virtual world built in computer environment as parts of nature since they use natural elements such as trees, flowers and water along with inanimate elements such as sitting benches and lightings. It was observed that, by contrast with residential areas in modern cities, the residential areas they created were unalienated and in touch with nature as how it should be.

It can be asserted that the game affects the environmental consciousness of children positively since they create landscaping areas in their own world by making observations in their environment, using their imaginations and discussing their ideas with their friends.

4   Conclusions and Recommendations

Being one of the principal tools of entertainment for people and more particularly for children of school age in today's world, computer games have supportive effects on cognitive education in primary school age children as PRENSKY (2001) also suggested. Accordingly, Minecraft video game has emerged on the sample determined to be pretty effective on kids' being acquainted with landscape concept, and their perception, learning and interest of it. Using landscaping items used in landscaping, the game supports steps to create a landscape of consciousness with a subconscious learning method. It enables children to examine landscape elements in a wider framework as well as arousing their interest in landscaping.

Fig. 3:   Screenshot from an advanced episode of Minecraft video (url-6)

Landscape responds the vital needs in the game. The individual realizes that in the real life too, necessities are satisfied by means of landscape just like in the game. In the game, creating green areas enables to realize the environment in which they live and offers to analyze them as well to create their environmental perception. The game also helps children respect nature more and grow awareness of nature protection. Green consciousness and showing respect to nature lead showing respect to society and consciousness of being human as well.

In the game as a whole, players get points for killing monsters that they encounter in the game. Because of the fact that game becomes more violent after around 20th episode, violent content should be reduced in order to render the game more beneficial for children. Extra points and gifts should be rewarded for landscaping practices in order to encourage and promote the landscape awareness. Animate/inanimate landscape elements found in the game

material should be increased in number for the advanced episodes. Studies for increasing landscape awareness and learning in other games should be performed as well.

Consequently, it can be asserted that computer games might support the learning process in children if they are used with the aim to enable children to learn cognitively and to make easy for them to find their own learning opportunities. Despite the view that it is harmful for primary school aged children to become acquainted with computer technology, it is important for these children to be interested in digital technology and to utilize this technology for their own benefits. A great responsibility falls to families and instructors in terms of guiding children in the selection of video games, both in their social life and in their educational process.

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