Research Article

Gifted and Non-Identified as Gifted Students' Preferred PC Game Types and PC Game Perceptions: A Descriptive Study

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Abstract

Computer games have gained a significance role in students' daily life. Games also play an important role in PC technologies development and progress. In addition to the entertainment aspects of PC games, they are now being used in educational environments. The aim of the research is to determine gifted students' and that giftedness diagnostics not defined before, PC game types preference. With this aim, literature review on the subject has been conducted. 47 gifted students from Istanbul Science and Art Center have formed the sample group. 818 students from 16 different state schools attended by the gifted students have been included in the study. Aim of this study is to compare the difference in the perceptions of the gifted and the other students. The data were collected through a questionnaire. They were analyzed using descriptive statistics and the study reveals that the gifted students and non-identified students differentiate in preferences of PC games types.

Keywords

PC game types, educational game, gifted education, human computer interaction

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Introduction

In our era, scientific and technological developments on the one hand have been generating new educational requirements; on the other hand they have been presenting new opportunities. Information technologies are the leading of these opportunities. These developments pave the way for flourishing of content, graphic and types of PC games. PC Games are one of entertainment platforms that attract youngsters as a result of fast transformation of information technologies. PC games, one of an important stage of human-PC attraction, are activities that children, youngster sand even older play and watch passionately today. PC games have been increasingly accepted among people day by day (Rosas et al., 2003) and this acceptance happens due to features that they have with regard to roles that these games put on virtual environments, features of sound and display, and players.

From past to present, gifted students have drawn attention of our society like other nations around the World. States want to benefit from talented and gifted students in sports, art and science in order to form their leaders and managers that maintain governance of states (Tortop, 2015; Donmez, 2004).Therefore, it has been requirement to improve designed environments with regard to interests and talents of student due to increase productivity in education of talented students.

Educational programs should be prepared by taking into consideration levels and specialties of students. Normal educational programs are based on according to levels of standard students accordingly; these programs are not suitable for low or high level students. They need special education programs. PC games that are prepared with educational content presenting alternative educational medium can include increased features of motivation and raising concerns of students. Activating more than one sense organs simultaneously during education can rise up productivity and efficiency of education.

PC Games: They are restricted entertainment mediums with rules that are independent from real World (Kirriemuir, 2002).Prensky (2001) stated that computer and video games are visual mediums that include challenge, rules, targets, feedback, interaction and story.

It is possible to classify PC games in different forms according to their types. In Table1, it is shown of Prensky's (2001) classification. In this study, researchers prefer this classification.

Table 1. Definition of Game Types

Game Types	Content
Action	They are fast developing and rapid games.
Adventure	They are games that include solving puzzle, collecting objects and finding way in a unknown world.
Fight	They are games including fast and athletic motion.
Puzzle	They contain puzzles to be solved..
Role-Playing	They are games that a specified character is played.
Simulation	They are games related to construction of a structure, driving a car or flying.
Sport	They are games that sport is important as a content.
Strategy	They are games that are difficult to manage and related to developing important events.

Electronic games and simulations are confusable terms. Simulations are copies of real life. Environmental themes reflect real life. But, PC games do not reflect real life and its elements. Besides, simulations have important usage field of in military due to the fact that they are cheap and users feel safer according to cost alternatives (Pellegrino & Scott, 2004; Zyda, 2005). Prensky (2001) states that simulations cannot be assessed alone as a game and they are required to add elements of rule, entertainment, contest and win to its structure.

Games can be evaluated in multiple classes with regard to its holding elements and reflection of these elements into game. Prensky (2001) stated that the difference between game and simulation was that games were competitive exercises that targets of games were to be ahead by winning. But, in simulations participants take charge in roles that require responsibility and completion.

Variety in games has been reflected in content and subject of them, computer games have been designed for multiple purposes in almost every field and they have been presented to users. Computer games with multiple users have been developed for educational purposes in fields like military, history, business, social and health, and these games are transmitted to wide mass users (Durkin & Barber, 2002).

Online Games
In 1990's in addition to academic environment, PC game users society claim to internet after connecting internet become possible (Buchman & Funk, 1996). Online games which have been an important part of entertainment culture via development and proliferation of internet, present liberty of playing games to people at any time and place they want. The number of people playing online games has been increasing day by day. People in different geography can

meet in virtual platform, and playing online games make cultural interaction possible among them. Almost every electronic platform that people interact mutually has been a game platform (Consalvo, 2005). A well designed game can be played for a long time all over the world by a population as much as a small country. Players encounter games in different platforms including swatches.

Remote education programs pursue parallel development line like computer technologies. Besides, basic elements for performing collaborative internet-based education efficiently are also valid for online PC games. Internet cannot increase quality of education itself. A successful web-based education requires a strategy which integrates technology with an organizational culture that is ready and wishful to use it.

PC Game Design

Teachers who take into consideration potential that computer games have, use computer games in classes in order to improve learning abilities of their students and to present more efficient educational platforms. One of methods that can be used for providing learning manners of students is game-based learning

PC games are platforms that players reveal robust emotional behaviors like fear, power, greed, curiosity and joy. PC games designers should design elements like reward, obstacle opponent etc. with balance that reveal these kind of manners of manners (Can & Cagiltay, 2006). Educational game design steps are shown as in following figure (figure 1). Teachers head to commercial games that have higher standards like graphic, voice and animation owing to negative factors like being monotone and having low production standards that games have prepared for educational purpose (Fujimoto, 2005).
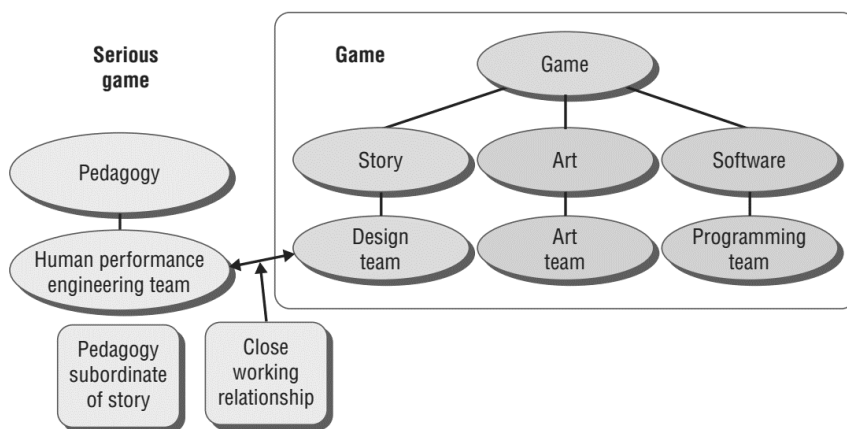

Figure 1. Game design with educational content (Zyda, 2005)

Most of the designed games include only entertainment elements because of commercial concerns. Designing games collaborate with for educational

purposes during design stages, will both load a new mission to commercial games and will add entertainment elements to educational games. In literature, there are studies on research subjects with questions like developing games with educational content and their effects on students (Tokmak & Ozgelen, 2013), simulation-based games (Leemkuil & Jong, 2012), traditional education practices and different usage of PC games as an educational material (Sung, 2009), assessment of mobile game platforms (Beyer & Möller, 2014), determination of PC games preferences by using data mining algorithms (Ustunel et al., 2012), and comparison of relations of PC games and internet usage (Naomi & Frances, 2010).

Effects of PC Games on Users

Benefits of using games are mainly aligned as keeping students' motivations up, drawing their attentions, providing easy adaptation in teamwork, forcing them into critical thinking, and forming cause and effect relation efficiently (Kirriemuir, 2002). One of the most significant benefits of educational games is that they enable to gain technology culture and to make students intimate mutually (Squire & Jenkins, 2003).

Educational games enable students to gain information and abilities related to participating in activities, decision making in critical situations, and perception of events and facts. Practice learning is more efficient than theoretical learning. Students learn efficiently by catching opportunities of seeing results and practice what they learn in virtual platform provided by computer games (Anderson & Bushman, 2001). It will be difficult to form a new model for improving learning manners of students. PC games are widespread accepted activities among students' today. By adding new targets to current situation, designing and using PC games for educational purposes in respect to content and type can be obtained.

Moreover in literature, there are important results from studies that show positive and negative effects on students' manners like problem solving abilities, psychomotor motions, being game addicts, computer using abilities, self confidence level, presenting aggressive behaviors, motivations, socialization, academic achievements. It is seen that these results are related to independent variables as gender, age and PC usage duration.

The identification of gifted students PC usage habits is important for development stage of educational content involving applications and games. Therefore more studies needed which was the basis of this research.

This study is performed for determining whether PC game perceptions of the gifted students and non-identified students (NIS) differentiate or not. Research questions for two groups are formed below. In line with this problem the answers of the following two questions were searched.

➢ Do the preferences of PC game types of the gifted students differentiate according to non-identified students (NIS)?
➢ Do PC game perceptions of the gifted students differentiate according to non-identified students (NIS)?

Methodology

In this study that is aimed to designate preferences of PC game types of the gifted students and non-identified students, data and studies by examining literature (traditional and electronic environments) for establishing theoretical base are benefitted from. The study is performed according to relational survey model.

In the evaluation of the data obtained from this study descriptive statistical methods were used.

Research Sampling

Research sampling was formed from 47 secondary school students who were randomly chosen, and attended to Istanbul Science and Art Center. 818 students who were not identified as gifted students and were chosen from Kadıkoy, Uskudar, Maltepe, Kartal and Tuzla County that attended to 16 different secondary school, were included to research sampling. In Table2, it is seen the distribution of participant gifted and normal students in survey according to gender parameter.

Table 2. Distribution of participant students in survey according to gender parameter

Groups		Male	Female	Total
NIS	N	394	424	818
	%	48,2	51,8	100
Gifted Students	N	39	8	47
	%	83	17	100
Total	N	433	432	865
	%	50,1	49,9	100

The point of gifted students that participate survey is above 130 points WISC-R (*Wechsler Intelligence Scale for Children-Revised*).

Data Collecting Instrument

Data collecting instrument has been developed by Can (2003) and it was adapted from Squire and Jenkins (2003). That has been used in order to determine usage perceptions of PC games with educational content in education environment.

As seen in table 3, measurement instrument comprises of two main sections. In section 1,sampling's demographic characteristic, game habits apart from PC

games, internet usage habits and previous electronic game experiences have been measured; in section 2, sampling's entertainment times apart from PC games, perceptions of playing PC games and preferences of PC game types have been measured.

Table 3. Distribution of measurement questions according to their content

Sections	Question Content	Question	Question
Section 1	Demographic characteristic	1-11	11
	Game habits apart from PC games	12-16	5
	Internet usage habits	17-21	5
	Previous electronic game experiences	22-29	8
Section 2	Entertainment times apart from PC games	1-6	6
	Perceptions of playing PC games	7-18	12
	Preferences of PC game types	19-20	2
	Student and teacher's perceptions related to playing PC games in educational platforms	21	1
Total			50

From 1th to 19th questions in section 2 are study measurements of data collection instrument. Alfa value has been calculated by Can (2003) who has adopted measurement (*a=0, 64*).

Process

Necessary permits for adopting measurement instrument have been taken from related offices. Study data have been collected from sampling in 3 week period. Before using measurement instrument, sampling groups have been informed about importance of study and how measurement instrument would be used. Practicing measurement instrument lasted 30 minutes averagely.

Several dependent and independent have been responded more than once in data collecting instrument. In order to assess these parameter, cross percentage frequency tables that shows relation between dependent and independent parameters, have been prepared.

Data Analysis

Obtained data have been analyzed and interpreted via SPSS package program. Data which is gathered from sampling groups have not shown normal distribution (p<.05). Hence, nonparametric tests have implemented to this

group. Mann-Whitney U test has been performed to independent parameters with two choices in order to test the difference between frequency, percentage, average and standard deviation for analyzing data, and Kruskal-Wallis Test has been performed for independent parameter with more than two choices.

Several dependent and independent have been responded more than once in data collecting instrument. In order to assess these parameter, cross percentage frequency tables that shows relation between dependent and independent parameters, have been prepared.

Results

In this chapter, findings obtained from performed measurement instrument and comments related to these findings have been explained so as to determine whether PC games perceptions differentiate between gifted students and non-identified students or not.

Finding is show two titles: "*PC games perceptions of students that participated in survey*" and "*PC game type preferences of participant students*".

PC Games Perceptions of Students that participated in Survey: Mann Whitney-U Test has been used to determine whether PC games perceptions differentiate between gifted students and non-identified students or not. Tables related to results are shown via combining.

Table4. Mann Whitney-U Test results that was used for determining perceptions of participant gifted students and non-identified students

Factors	Groups	N	$\bar{X}$	U	Z	p
Average PC usage duration apart from homework/research	NIS	817	423,59	11922	-4,618	0,000
	Gifted Students	47	587,34			
Playing PC Game duration	NIS	817	425,84	13759	-3,414	0,001
	Gifted Students	47	548,24			
Watching TV duration	NIS	815	426,25	14876	-2,695	0,007
	Gifted Students	47	522,48			
Reading books duration apart from school books	NIS	815	427,2	15650	-2,194	0,028
	Gifted Students	47	506,02			
"Playing PC games are an	NIS	816	425,98	14262	-3,102	0,002

important spare time habit"	Gifted Students	47	536,55			
"Playing PC games is waste of time"	NIS	814	438,17	13293	-3,692	0,000
	Gifted Students	47	306,83			
"Playing PC games is a time-consuming habit	NIS	814	435,8	15218	-2,465	0,014
	Gifted Students	47	347,8			
"Playing PC games is suitable for every age group"	NIS	813	423,13	13112	-3,529	0,000
	Gifted Students	47	551,45			

There is meaningful difference between school type parameter and weekly average computer usage duration of participant students apart from homework and research activities outside of school (U= 11922; z= -4,618; p<.01). It is determined that gifted students ($\bar{X}$=587,34) use computer for a longer time than non-identified students ($\bar{X}$=423,59).%34 of gifted students and %11.2 of non-identified students use computer more than 10 hours a week except for lesson and research aims.

There is meaningful difference between school type parameter and computer usage durations of participant students (U= 13759, 5; z= -3,414; p<.01). It is determined that gifted students ($\bar{X}$=548, 24) play PC games for a longer time non-identified students ($\bar{X}$=425, 84).

There is meaningful difference between school type parameter and watching TV durations of participant students (U= 14876, 5; z= -2,695; p<.01). It is determined that gifted students ($\bar{X}$=522,48) watch TV for a longer time in a week than non-identified students ($\bar{X}$=426,25) .%31.9 of gifted students and %21,2 of non-identified students watch TV more than 10 hours a week .

There is meaningful difference between school type parameter and reading books durations apart from school books of participant students (U= 15650; = -2,695; p<.05). It is determined that gifted students ($\bar{X}$==506, 02) read books apart from school books for a longer time than non-identified students ($\bar{X}$=427, 20). %51, 7of gifted students and %34, 4 of non-identified students' state they read books apart from school books book more than 5 hours a week.

There is a meaningful difference between school type parameter and answers of participant students to *"Playing PC games are an important spare time habit." Question* (U=14262; z=-3,102; p<.05). It is determined that gifted students ($\bar{X}$=536, 55) agree with the statement in the question more than non-identified students ($\bar{X}$=425, 98). %53, 2of gifted students and %35, 3 of non-identified students' state that they agree with this statement in the question.

There is a meaningful difference between school type parameter and answers of participant students to *"Playing PC games are waste of time"* question (U=13293; z=-3,692; p<.01). It is determined that non-identified students ($\bar{X}$=438, 17) agree with the statement in the question more than gifted students ($\bar{X}$=306, 83). %17 of gifted students and %32, 6 of non-identified students state that they agree with this statement in the question.

There is a meaningful difference between school type parameter and answers of participant students to "*Playing PC games are a time-consuming habit"* question (U=15218, 5; z=-2,465; p<.05). It is determined that normal students ($\bar{X}$=435, 80) agree with the statement in the question more than gifted students ($\bar{X}$=347, 80). %6, 4 of gifted students and %20 of normal students state that they agree with this statement in the question.

There is a meaningful difference between school type parameter and answers of participant students to *"Playing PC games are suitable for every age group"* question (U=13112, 500; z=-3,529; p<.05). It is determined that gifted students ($\bar{X}$=551, 45) agree with the statement in the question more than non-identified students ($\bar{X}$=423, 13). %50 of gifted students and %25, 8 of non-identified students state that they agree with this statement in the question.

PC Game Type Preferences of Participant Students

Obtained data from measurement instrument that used in sampling groups, are shown in Table 5 in order to determine PC game type preferences between gifted students and non-identified students (NIS).

Table 5. PC Game Type Preferences of gifted students and non-identified students (NIS)

	Groups			
	NIS		**Gifted Students**	
	N	**%**	**N**	**%**
Action	335	40,95	23	48,94
Adventure	381	46,58	26	55,32
Fight	125	15,28	4	8,51
Puzzle	197	24,08	10	21,28
Role Playing	154	18,83	12	25,53
Simulation	245	29,95	18	38,30
Sports	310	37,90	17	36,17
Strategy	246	30,07	22	46,81
I don't play game	53	6,48	2	4,26
Total	818	100	47	100

PC game type preferences of gifted students and non-identified students are shown in Table 5. While gifted students prefer to play adventure (%55,32),

action (%48,94) and strategy (%46,81) games more than other types, non-identified students (NIS) prefer to play adventure (%46,58), action (%40,95) and sports (%37,9) games more than other types.

Conclusion and Discussion

This research results in general shows that the gifted students' attitudes toward PC usage and games is affirmative like non-identified students. These results support the conclusions reached in the literature (Tortop, 2015; Donmez, 2004). But the answers to some questions are differentiated according to student groups. There are meaningful differences between school type parameter and average computer usage, reading book and watching TV as mentioned in the previous section. Different education and entertainment platforms can be prepared for students out of the school. The most important one of them is electronic platforms that include social life and relations. In service training can be arranged for teachers to make them use PC games that are prepared with educational content. Lectures on designing games with educational content can be provided by preparing joint work platforms with computer programming experts in faculties that train teachers.

Workshops can be arranged with participation of education program experts, game producers and suppliers in sector, expert teacher on gifted students and ministry officers in order to determine learning habits of gifted students and to design PC games contents in accordance with learning habits of gifted students. Seminars that present PC games contents devoted to raise awareness of families especially gifted students 'parents in the first place, can be arranged. Increased number of PC games that designed with educational themes which draw female students 'attentions, will effect perceptions related to PC games positively.

When it is thought that online games in internet have ample social contents and provide group interactions, it can be stated that well designed online games can fulfill gifted students' needs. By designing PC games in accordance with lesson contents, it can be provided that students can play games for longer time than before; they can generate perennial and efficient learning habits in a lesser time than sum of duration left for games and lessons. PC games can contribute psychological developments of gifted student by filling their social interaction needs. Studies subjected to social life of gifted students can be made; the results can be related to this study.

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