Journal of Computer and Education Research
(ISSN:2148-2896)
December 2016 Volume 4 Issue 8
www.joucer.com http:dergipark.ulakbim.gov.tr/jcer

Research Article

Game Preferences of 3 Generations From The Eye of Students'

Nazime TUNCAY[1]

[1] Cyprus Science University, Faculty of Educational Sciences, nazime.tuncay@bun.edu.tr

Article Info

Received: *January 22, 2016*
Accepted: *August 10, 2016*
Online: *December 29, 2016*

Keywords: Generations, Game Genres, Video Games, Preferences, Students

Abstract

Technology has provoked the concept of game to be viewed from different perspectives by generations. The most careful observers of these are the most adapted ones, which are students. This research study aims to find the similarities and differences of video game playing preferences of 3 Generations from the students' eye. The study sample consists of 50 students from whom data was collected. Univariate one-way Anova is used to compare group means of Game Genre groups ("Building", "Cars", "Cards", "Cartoon", "Educational", "Simulation", "Spor", "Strategy" and "War"), which are formed by metaphorical analysis of students' narratives. Independent sample t-test is used to find if there is a significant difference between girls and boys game genre playing preferences. This paper is orientated towards anyone interested in video games; especially game designers, teachers, instructors, students and educational organizations, such as primary.

To cite this article: Tuncay, N. (2016). Game preferences of 3 generations from the eye of students'. *Journal of Computer and Education Research*, 4 (8), 154-178.
DOI: https://doi.org/10.18009/jcer.14430

Introduction

The history of computer games are actually a part of technology development (Juul, 1999) and in the 21st century it become so popular that we can name this age as the "Age of the Game", in terms of education and entertainment (Leonard, 2003). Games are the most powerful tool which results in lots of success or failure in human beings lives. Video games primarily target the youth market, which, in this context, refers to everyone under the age of 35, as the first generation of video gamers have not given up their hobby even though they have matured (Aguilera & Mendiz, 2003). Therefore, these days it is quite often to see grandparents playing video games with their grand children.

There are lots of positive effects of computer games, the skills of imagination, establishing cause and effect relationship, hand-eye coordination, transition to abstract thinking and playing games together with others; as well as the negative effects like visual

impairment, headache, violence tendency, personality change, asocial behaviors, academic failure and addiction (Hauge & Gentile, 2003; Chiu, Lee & Huang, 2004; Wan & Chiou 2006; Lateh, Muniandy, 2011). Parents, who are aware of these positive effects of games are provoking their children to play their own favorite video games, mostly teaching them how to play themselves. Students are attracted to video games and they are learning about collaboration, risk taking, strategy formulation and execution, complex moral, ethical decisions and lots. Mainly children start playing by the help of their parents, brothers, sisters or friends. As soon as students learn reading and writing, at primary school, they write into Google, "girls' games", "car games", "race games", "and war games" or just the name of the game, like "Need for Speed" and find the game. The second commonly used platform is Facebook. Not only students but also parents and grandparents are keen on using Facebook and playing free games that Facebook offers.

There are lots of different games genres that people choose to play; some come with educational purposes, some with enjoyment purposes and some only for free time activity. When the children get into social groups, they begin to play the games that their parents or friends are keen on and sometimes if both of them have the necessary technological equipment they play together. Video gaming researchers have identified three main game genres: imagination, traditional, and physical (Greenberg et al., 2010; Lucas & Sherry, 2004). Today Facebook categorizes its games in lots of different genres like Casual, Strategy, Builder, Action Adventure, Simulation, Puzzle, Exciting, Addictive, Colorful, Challenging, War, HiddenObject, Runner, Sports, Match, Card, Fantasy, Board, Casino, Slots, Animal, Arcade, Multiplayer, Shooter, Football, Table,… so on. In this research study, students define other game genres.

There are several research studies about video game playing among different age groups and gender types (Bilgihan, etc. 2013); some studies analyze type of games played by adolescent boys and their participation in physical activity (Thorne, etc., 2014); several studies deal with and have shown that video game play can improve cognitive functions such as visual attention, cognitive control, visual short-term memory, and general processing speed (Dobrowolski, etc., 2015); some research has found that individual (e.g., personality) differences influence gaming Playing Preferences (Zammitto, 2001). Other findings of Zammitto are: women own more gaming devices than men; the younger generation play more than the older generation, the older generation focusing more on strategic gaming

offerings while the younger generation tended to side more with action games; in which all of these results contradict with this study. However, there could not be found any other study considering game preferences of 3 Generations from the eye of students.

This research study aims to find the similarities and differences between 3 related Generations (Generation 1=grandparents, Generation 2=parents, Generation 3=students) in means of Students Game Genres and also it searches answer to the following questions:

1. Which technological device is most commonly used to play games by 3 Generations?
2. Does students prefer playing with parents or grandparents? Is this choice differ according to the students' sex?
3. What are the mostly preferred Game Genres by 3 Generations?
4. Do girls Game Genre Preferences differ from the boys Game Genre Preferences?
5. Does Building Game preference differ according to students, parents and grandparents?
6. Does Card Game preference differ according to students, parents and grandparents?
7. Does Car Game preference differ according to students, parents and grandparents?
8. Does Cartoon Game preference differ according to students, parents and grandparents?
9. Does Educational Game preference differ according to students, parents and grandparents?
10. Does Simulation Game preference differ according to students, parents and grandparents?
11. Does Sport Game preference differ according to students, parents and grandparents?
12. Does Strategy Game preference differ according to students, parents and grandparents?
13. Does War Game preference differ according to students, parents and grandparents?

Method

The Game preferences of students, their parents and their grandparents are analyzed by the help of a questionnaire. This questionnaire is distributed to 63, 3rd form (Age 9) students in a primary school in North Cyprus. 4 of these students were special education students and fail to answer the questions and 9 students stated that they do not have a computer or a mobile phone in their house. These students' questionnaires are also omitted

during the data analysis and interpretation process. So, 50 students which are capable of answering the questionnaires and whom have the necessary game playing technologies like computer and a smart mobile phone in their home are taken as the sample of this study. Students are expected to answer some demographical questions about their parents and grandparents, and they are expected to know which games their grandparents and parents play. Since the children are 9 years old and do not used to answering 5 point Likert Scale questionnaires, 3 point Likert Scale is used { (a)Yes he does (b) I do not know (c) No, he does not.}Some of the questions related to parents and grandparents that are included in the Questionnaire and distributed to Students are the following:

1. *Does your mum play video games? a)Yes, she does b) I do not know c) No, she does not.*
1.1 If she does, please do answer the following question: Which games does she play? Can you write the names of these games?
1.2 Which device does she use to play games?
1.3 Do you play together with her?
1.4 Can you describe the games that she plays? What are they about?

2. *Does your dad like video games? a)Yes, he does b) I do not know c) No, he does not.*
2.1 If he does please do answer the following question: Which games does he play? Can you write the names of these games?
2.2 Which device does he use to play games?
2.4 Do you play together with him?
2.5 Can you describe the games that he plays? What are they about?

3. *Does your mothers mum like video games? a)Yes she does b) I do not know c) No she does not.*
3.1 If she does please do answer the following question: Which games does she play? Can you write the names of these games?
3.2 Which device does she use to play games?
3.3 Do you play together with her?
3.4. Can you describe the games that she plays? What are they about?

4. *Does your mothers' dad like video games? a)Yes she does b) I do not know c) No she does not.*
4.1 If he does please do answer the following question: Which games does he play? Can you write the names of these games?
4.2 Which device does he use to play games?
4.3 Do you play together with him?
4.4. Can you describe the games that he plays? What are they about?

5. *Does your fathers mum like video games? a)Yes she does b) I do not know c) No she does not.*
5.1 If she does please do answer the following question: Which games does she play? Can you write the names of these games?
5.2 Which device does she use to play games?
5.3 Do you play together with her?
5.4 Can you describe the games that she plays? What are they about?

6. *Does your fathers' dad like video games? a)Yes she does b) I do not know c) No she does not.*
6.1 If he does please do answer the following question: Which games does he play? Can you write the names of these games?

6.2 Which device does he use to play games?
6.3 Do you play together with him?
6.4. Can you describe the games that he plays? What are they about?

The validity of the questionnaire was reviewed by a panel of 5 game technology experts and selected items were revised based on the experts' comments and recommendations. After analyzing the data in several meetings with 5 game experts; the game genres that are preferred by the sample group are categorized in 9 different groups. To maintain internal consistency as well as validity and reliability several tests are conducted. The Cronbach's Alpha value is used to determine the level of reliability through the internal consistency for each factor. The Cronbach's Alpha internal consistency coefficients are given in Table 1. The Cronbach's Alpha internal consistency coefficient for Building Games was calculated for the scale as 0.84; for Car Games and Carton Games as 0.83; for Educational Games calculated as 0.86; for Sport Games as 0.75; for Simulation Games as 0.87; for Strategy Games as 0.84 and for War Games as 0.84.

Table 1. Cronbach's Alpha values

GENRES	Cronbach's Alpha internal consistency coefficient
Building	*0.84*
Card	*0.83*
Car	*0.83*
Cartoon	*0.83*
Educational	*0.86*
Simulation	*0.87*
Sport	*0.75*
Strategy	*0.84*
War	*0.84*

Independent sample t-test is used to find if there is a significant difference between the girls and the boys' game genre playing preferences and One-way ANOVA was conducted to compare the game Playing Preferences of three different groups (grandparents, parents and students). Descriptive statistics are calculated to compare the game playing frequencies. Generation 1 states for Grandparents, Generation 2 is Parents and Generation 3 is Students. In the statistical calculations, M stands for mean; f stands for frequency and p stands for percentage.

Table 2 shows the Game Genres of our sample which are categorized according to the students narratives. The games in which students narrate as "I build homes, farms, villages…" are categorized as Building Games. The games in which students narrate as, "I

choose cards and play with 3 other people" are named as Card Games. Students narrate some games as "I took a car and drove it very fast", and these are grouped as Car Games. The games in which have same characters like the ones in the cartoons; for example Ben 10 Games and Tom& Jerry Games are named as Cartoon Games; games which students report that they "Calculate numbers, find words..." and which have educational purpose are named as Educational Games. Some games students report that they find on Facebook under the Simulation Games topic, so we used the same title for these group of games. There are some games that students explained that they are very useful for their gaining skills at sports, such as Fifa and these are named as Sport Games. Some students, especially boys, write that they like strategy games like Minecraft and Soldiers, Therefore these games are grouped as Sport Games, as they have already defined. The last group was the easiest to name; the games which have war or battle in its name are categorized as War Games.

Table 2. Game Genres Table according to Students Narratives.

GENRES	GAMES
Building	Candy Crush Saga, Clash of Clans, Megapolis, Eco Farm, Farm Villie, Restaurant Empire, Farm Heroes Saga, My Free Zoo, Pet Rescue Saga
Card	Snake Game, Solitarie Castle, Spider Solitarie, Solitarie Harmony, Magic Tower Solitarie
Car	Need for Speed, American Race, Grand Theft Auto San Andreas, Crazy Cabbie, Parking Mania, City Racing
Cartoon	Tom and Jerry, SpongeBob, Keloğlan, Hannah Montana, Barbie, Ben 10, Smurfs' Village, Dragon City, Spiderman, Water and Fire
Educational	World Search, Mathematic Puzzles, Fraction Games, Counting Games, Addition Subtraction Games, Who Knows
Simulation	SuperMario64, The Sims, Stardoll, Animal Crossing Wild World, Family Form, Cafeland
Sport	Chess, Fifa, Madden NFL, UFC, NBA Live, Skate
Strategy	Defender, Sleeping Dogs, Max Pyne, Tomb Raider, Dishonored, Pinball, Minecraft, Lord of Ages, Soldiers
War	Game of War, Call of Duty, World of Warcraft, War Thunder, Battlefield, Star War, Space War, World of War Planes, Battle Zone

In total, 66 Games are reported by students that they, their parents or grandparents play. 10 of them are Cartoon Games, 9 of them are Building Games, 9 of them are Strategy Games, 9 of them are War Games, 6 of them are Sport Games, 6 of them are Car Games, 6 of them are Simulation Games, 6 of them are Educational Games and 5 of them are Car Games.

Results and Discussion

The data obtained from the questionnaire and the students' 9 Game Genres (Building Games, Car Games, Card Games, Cartoon Games, Educational Games, Simulation Games, Sport Games, Strategy Games, and War Games) are analyzed carefully. Research problem and sub problems are tried to be answered from these data obtained from the questionnaire in this section.

Game Playing Device Preference

To find a solution to the sub-problem number 1 "which technological device is most commonly used to play games by 3 Generations?" students are asked; which technological device they use to play games, which technological device their parents use to play games and which technological device their grandparents use to play games. The results of these questions are summarized in Table 3. Grandparents (we will refer as Generation1), mostly played with Mobile phones; however students (we will refer as Generation3) generally play with Computers.

Table 3 Game Device

		Computer	Mobile Phone	Total
Generation	Student	33	17	50
	Parent	26	24	50
	Grandparent	11	39	50
Total		70	80	150

It is seen that 33 students prefer playing with Computer, 17 students mostly play with Mobile Phone; 26 parents prefer to play with Computer, and 24 parents prefer to play with Mobile Phone. On the other hand, 39 Grandparents preferred to play with Mobile phone, and only 11 of them preferred to play with Computer.

Play together with a Parent of a Grandparent

This part tries to find a solution to the sub-problem number 2, "Does students prefer playing with parents or grandparents? Is this choice differ according to the students' sex? Figure 1 illustrates frequencies of elders and students playing together. It can be easily seen that there are more Grandparents playing together with their students than the Parents. Here comes such a question; which generation is affecting which one? Does grandparents play the games that their grandchildren wants or do they play games that themselves prefer? On the other hand, there are more girls playing with their elders than boys. Do girls teach their

grandparents how to play? Or do grandparents teach girls how to play? Is game a bridge between Generations? These are all research questions that should be asked to the Grandparents and students in other researches.

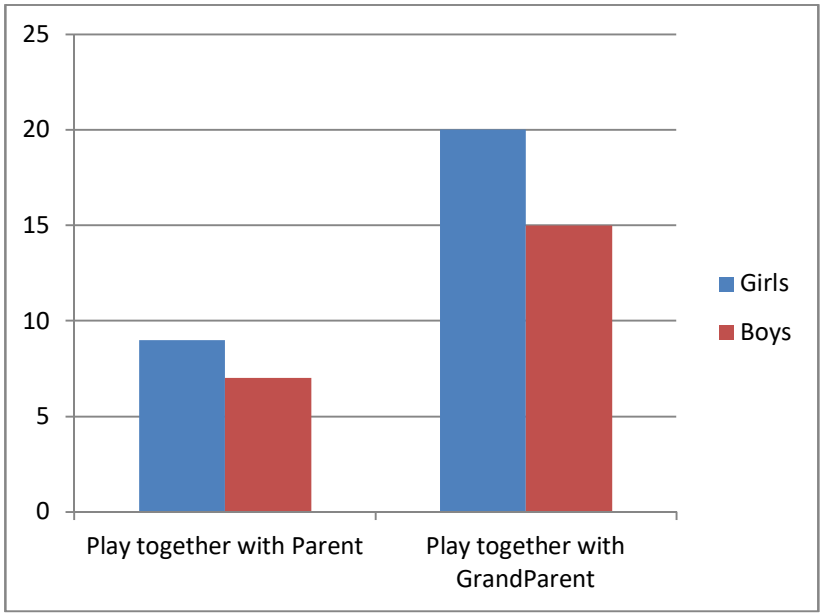

Figure 1. Students Playing together with Elders

"Mostly Preferred Game Genres" of 3 Generations

This part tries to find a solution to the sub-problem number 3 "What are the mostly preferred Game Genres by 3 Generations?" Table 4 shows the Top 10 mostly played games. Candy Crush Saga (f=131; p=87.33) is the most played game by 3 generations. Keloğlan (f=111; p=74) is the second most played game by 3 generations. Smurfs' Village (f=110; p=73.33) is the third most played game by 3 generations. Dragon City (f=102; p=68) is the fourth most played game by 3 generations. World of Warcraft (f=99; p=66) is the fifth most played game by 3 generations. Farm Heroes Saga (f=97; p=64.67) is the sixth most played game by 3 generations. My Free Zoo (f=92; p=61.33) is the seventh most played game by 3 generations. Spiderman (f=191; p=60.67) is the third most played game by 3 generations and Water and Fire is the 10th most played game by 3 Generations.

Table 4. Top 10 Most Played Games

	Games	Genre	f	p
Top 1	Candy Crush Saga	Building	131	87.33
Top 2	Keloğlan	Cartoon	111	74
Top 3	Smurfs' Village	Cartoon	110	73.33
Top 4	Dragon City	Cartoon	102	68
Top 5	World of Warcraft	War	99	66
Top 6	Farm Heroes Saga	Building	97	64.67
Top 7	My Free Zoo	Building	92	61.33
Top 8	Game of War	War	91	60.67
Top 8	Spiderman	Cartoon	91	60.67
Top 10	Water and Fire	Cartoon	89	59.33

Thus Building and Cartoon Games are the most preferred games among all generations. Also War Games are in the Top 10 list. Figure 2 shows the bar-chart of the most preferred Game Genres by all Generations.

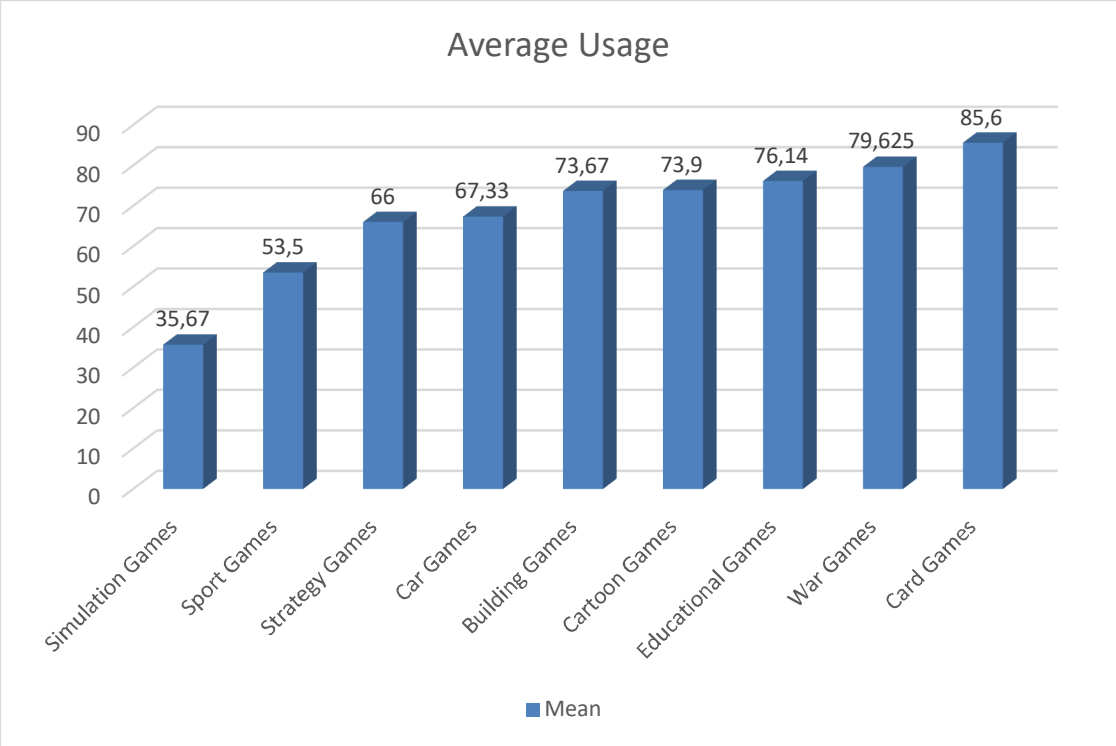

Figure 2. Average Usage of Games

The most preferred game by three generations (students, parents and grandparents are Card Games and the least preferred games are the Simulation Games. If a game is to be designed by game programmers for all 3 generations than according to these results they should prefer the following genres in order: Card Games, War Games, Educational Games,

Cartoon Games, Building Games, Car Games, and Strategy Games, Sport Games, Simulation Games.

Girls and Boys Video Game Genre Preferences

This part tries to find a solution to the sub-problem number 4 "Do girls Game Genre Preferences differ from the boys Game Genre Preferences? During the data collection process students report that; sometimes they play together with their parents the game that their children choose. Hence, the games that the parents play may be the games that their girl or boy prefer to play, and not their own choice. Therefore, gender differences are analyzed only for students and not for parents or grandparents. An independent sample t-test is conducted to compare game playing preferences of girls and boys. There was not a significant difference between girls and boys Building Game and Educational Game Playing Preferences. Table 5 shows the independent sample t-test for 9 Genres and the grouping variable gender. There is a significant difference in the girls' Cartoon Game Playing Preferences (M = 7.92; SD=1.26) and boys Cartoon Game Playing Preferences (M = 4.24; SD=1.45) conditions, t (48) = 9.59, p=0.00. These results indicate that Girls prefer playing Cartoon Games more than boys. There is a significant difference in the girls' Simulation Game Playing Preferences (M = 3.8; SD=2.57) and boys Simulation Game Playing Preferences (M = 1.52; SD=2.24) conditions, t (48) = 3.35, p=0.02. These results indicate that Girls prefer playing Simulation Games more than boys.

Table 5 Independent Sample t-test

Game Genres		F	Sig.	T	Df	Sig. (2-tailed)
Building Game	Equal variances assumed	0.422	0.519	.051	48	.959
	Equal variances not assumed			.051	47.706	.959
Card Game	Equal variances assumed	0.092	0.763	2.791	48	.008
	Equal variances not assumed			2.791	47.912	.008
Car Game	Equal variances assumed	0.062	0.805	-4.634	48	.000
	Equal variances not assumed			-4.634	47.698	.000
Cartoon Game	Equal variances assumed	0.496	0.485	9.587	48	.000
	Equal variances not assumed			9.587	47.026	.000
Educational Game	Equal variances assumed	1.304	0.259	.406	48	.687
	Equal variances not assumed			.406	47.495	.687
Simulation Game	Equal variances assumed	3.856	.055	3.348	48	.002
	Equal variances not assumed			3.348	47.132	.002
Sport Game	Equal variances assumed	0.337	0.564	-3.446	48	.001
	Equal variances not assumed			-3.446	46.661	.001
Strategy Game	Equal variances assumed	0.021	0.884	-5.095	48	.000
	Equal variances not assumed			-5.095	44.665	.000
War Games	Equal variances assumed	0.244	0.623	-3.605	48	.001
	Equal variances not assumed			-3.605	47.884	.001

There is a significant difference in the girls' Car Game Playing Preferences (M = 1.36; SD=2.20) and boys Car Game Playing Preferences (M = 4.36; SD=2.38) conditions, t (48) = -4.63, p=0.00. These results indicate that Boys prefer playing Car Games more than girls. There is a significant difference in the girls' Sport Game Playing Preferences (M = 1.48;

SD=1.08) and boys Sport Game Playing Preferences (M = 2.64; SD=1.29) conditions, t (48) = -3.45, p=0.01; similarly there is a significant difference on girls Card game preferences and boys Card Game preferences where p=0.08. These results indicate that Boys prefer playing Card and Sport Games more than girls. There is a significant difference in the girls' Strategy Game Playing Preferences (M = 2.24; SD=1.96) and boys Strategy Game Playing Preferences (M = 5.56; SD=2.60) conditions, t (48) = -5.10, p=0.00. These results indicate that Boys prefer playing Strategy Games more than girls; and there is a significant difference in the girls' War Game Playing Preferences (M = 2.12; SD=2.33) and boys War Game Playing Preferences (M = 4.56; SD=2.45) conditions, t (48) = -3.60, p=0.01. These results indicate that Boys prefer playing War Games more than girls.

The most commonly played games are Card Games (M=85. 6) the second most commonly played games are War Games (M=85.6) the third most commonly used game is Educational Game. The list commonly played games are the Simulation Games (M=35.67). There are lots of games which fall in 2 or 3 categories; for example a War Game; may be a Strategy and also a Simulation Game. Note that in this research study; the name Simulation Games are given to the following group of games: "SuperMario64. The Sims, Stardoll, Animal Crossing Wild World, Family Form, Cafeland"; so Generation1. Generation 2 and Generation 3 (N=150) play these games less than the other ones.

Building Games

Building games are the games in which players act as the planner, leader of a city, farm or a community or an organization. This part tries to find a solution to the sub-problem "Does Building Game preference differ according to students, parents and grandparents?" Here the players are responsible for its growth and management. The games like Candy Crush Saga, Clash of Clans, Megapolis, Eco Farm, Farm Villie, Restaurant Empire, Farm Heroes Saga, My Free Zoo, Pet Rescue Saga are the games that our sample play and report that they build things in this games. Table 6 shows one-way Anova results for Building Games. According to these results, there is not a significant difference of generation at the level $p < 0.05$ on Building Game Playing Preferences [F (2,147) =1. 88, p=0.156].

Table 6 One-Way Anova Results for Building Games

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	28.360	2	14.180	1.88	0.156
Within Groups	1108.180	147	7.539		
Total	1136.540	149			

Figure 3 illustrates bar chart of Building Games can easily be observed from the chart. The most commonly played Building Game is Candy Crash Saga; what is more number of Grandparents playing Candy Crash Saga is higher than number of parents playing Candy Crash Saga, which is higher than number of students playing Candy Crash Saga.

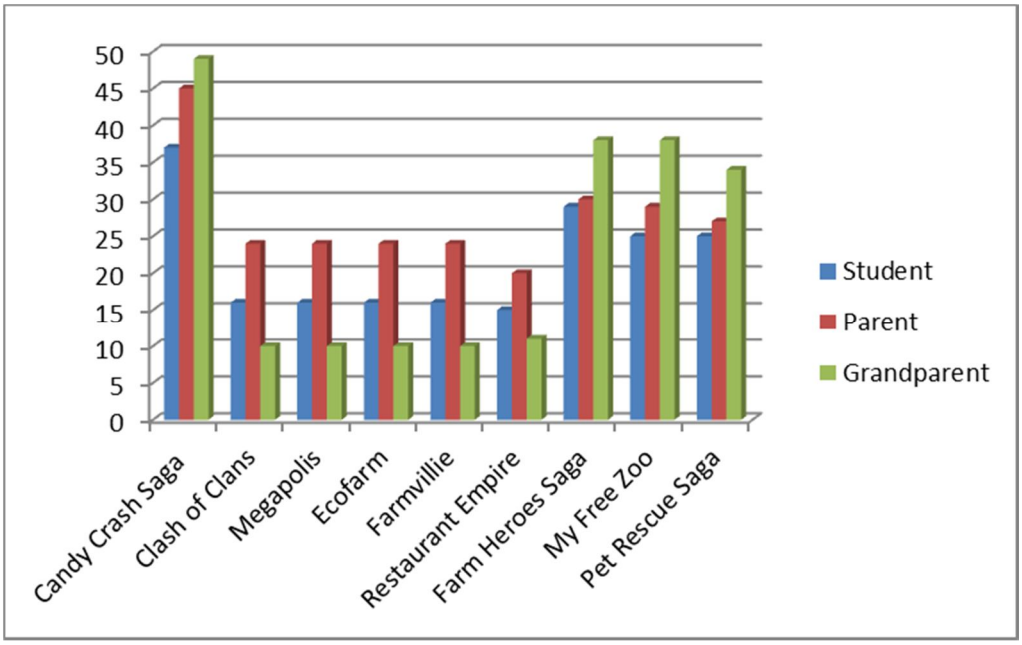

Figure 3. Bar Chart of Building Games

Card Games

This part tries to find a solution to the sub-problem number 6 "*Does Card Game preference differ according to students, parents and grandparents?*" The games like Snake Game, Solitaire Castle, Spider Solitaire, Solitaire Harmony and Magic Tower Solitaire are the games that our group plays.

A one-way ANOVA was conducted to compare the game Playing Preferences of three different groups (grandparents, parents and students). As it is tabled in Table 7; there is a significant effect of generation at the level $p < 0.05$ on Card Game Playing Preferences [$F(2,147) = 8.94$, $p = 0.00$]. Post hoc comparisons using the Tukey HSD test indicated that. Generation 1 Card Game playing mean ($M = 3.62$, $SD = 1.63$) is higher than Generation 3 Card

Game playing mean (M = 2.86, SD = 1.78), which is higher than Generation 2 Card Game playing (M = 2.08, SD = 2.03). These results show that Grandparents play Card Games more than Students which play more than their parents.

Table 7 One-Way Anova Results for Card Game

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	59.29	2	29.45	8.94	.000
Within Groups	487.48	147	3.32		
Total	546,77				

Figure 4 shows that students and grandparents are keener on playing Card Games; however parents play not as much as students and grandparents play. In all of the Card Games grandparents were the ones with highest frequency: number of grandparents playing Snake Game. Solitaire Castle. Spider Solitaire and Magic Tower Solitaire were higher than the number of parents or students. Other interesting distinction between 3 generations is that, parents play card games less than students and grandparents. Is it because of that they do not like Card Games as much as students and Grandparents? Or is there any other reason for this distinction? To answer this question, another research study should be delivered to find parents attitude to card games.

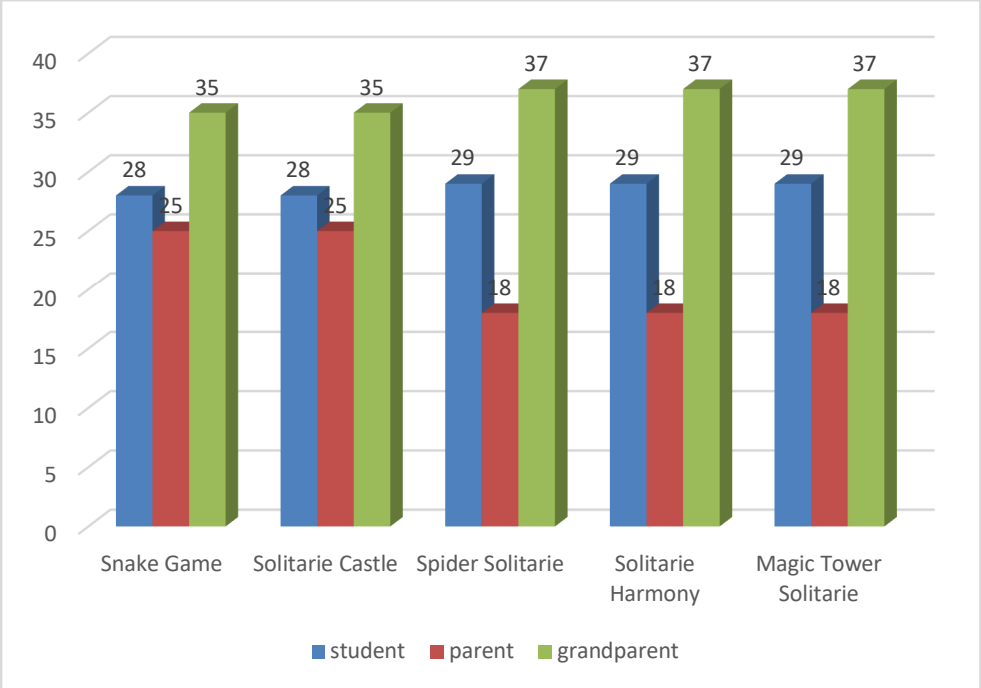

Figure 4. Bar Chart of Card Games

Car Games

This part tries to find a solution to the sub-problem number 7 "Does Car Game preference differ according to students, parents and grandparents?" The car games that students play are Need for Speed. American Race. Grand Theft Auto San Andreas, Crazy Cabbie, Parking Mania and City Racing.

Table 8 One-Way Anova Results for Car Game

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.173	2	1.087	0.139	0.870
Within Groups	1145.720	147	7.794		
Total	1147.893	149			

As it is tabled in Table 8; there is not a significant effect of generation at the level p <0.01 on Car Game Playing Preferences [F (2,147) =0.139, p =0.87]. Post hoc comparisons using the Tukey HSD test indicated that. Generation 1 Car Game playing mean (M =2.86, SD = 2.73). Generation 2 Car Game playing mean (M = 2.64, SD = 2.79), and Generation 3 Car Game playing (M = 2.58, SD= 2.86) are not much different. These results show that there is not a significant difference between Students. Parents and Grandparents Car Game Playing Preferences.

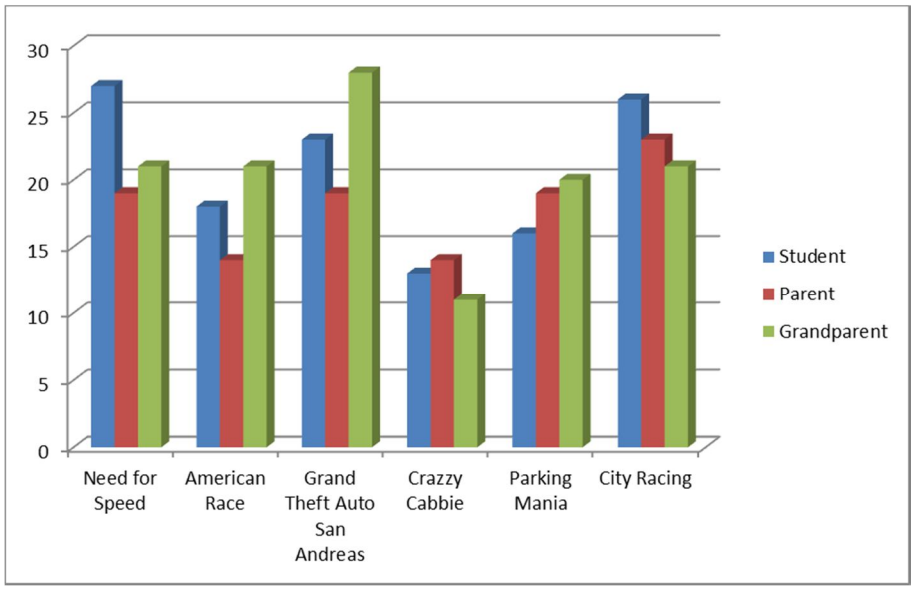

Figure 5. Bar Chart of Car Games

Figure 5 illustrates the frequency bars of students, parents and grandparents playing Car Games. More students prefer playing Need for Speed and City Racing than parents and grandparents. On the other hand it was very interesting that grandparents like playing Grand Theft Auto more than parents and students. Between the car games group of plays the least preferred game by all generations is Crazzy Cabbie.

Cartoon Games

This part tries to find a solution to the sub-problem number 8 "Does Cartoon Game preference differ according to students, parents and grandparents?" The games like Tom and Jerry, SpongeBob, Keloğlan, Hannah Montana, Barbie, Ben 10, Smurfs' Village, Dragon City, Spiderman, Water and Fire are the games that our group plays.

A one-way ANOVA was conducted to compare the game Playing Preferences of three different groups (grandparents. parents and students). As it is tabled in Table 9; there is a significant difference between generations at the level $p < 0.05$ on Cartoon Game Playing Preferences [F (2,147) =21. 98, p=0. 00]. Post hoc comparisons using the Tukey HSD test indicated that. Generation 3 Cartoon Game playing mean (M =6.08, SD = 2.29) is higher than Generation 1 Cartoon Game playing mean (M = 5.22, SD = 1.93) which is higher than Generation 2 Cartoon Game playing (M = 3.48, SD = 1.73). These results show that Generation 3 (Students) play Cartoon Games more than Generation 1 (Grandparents) which play more than Generation 2 (Parents).

Table 9 One-Way Anova Results for Cartoon Game

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	175.453	2	87.73	21.98	.000
Within Groups	586.740	147	3.99		
Total	762.193	149			

Figure 6 illustrates bars of frequencies of number of people playing Cartoon Games. According to statistical analysis of Cartoon Games, it is found that the least preferred Cartoon games by all generations are Barbie (M=14.33) and Ben 10 (M=14.33); where parents and grandparents do not prefer to play much.

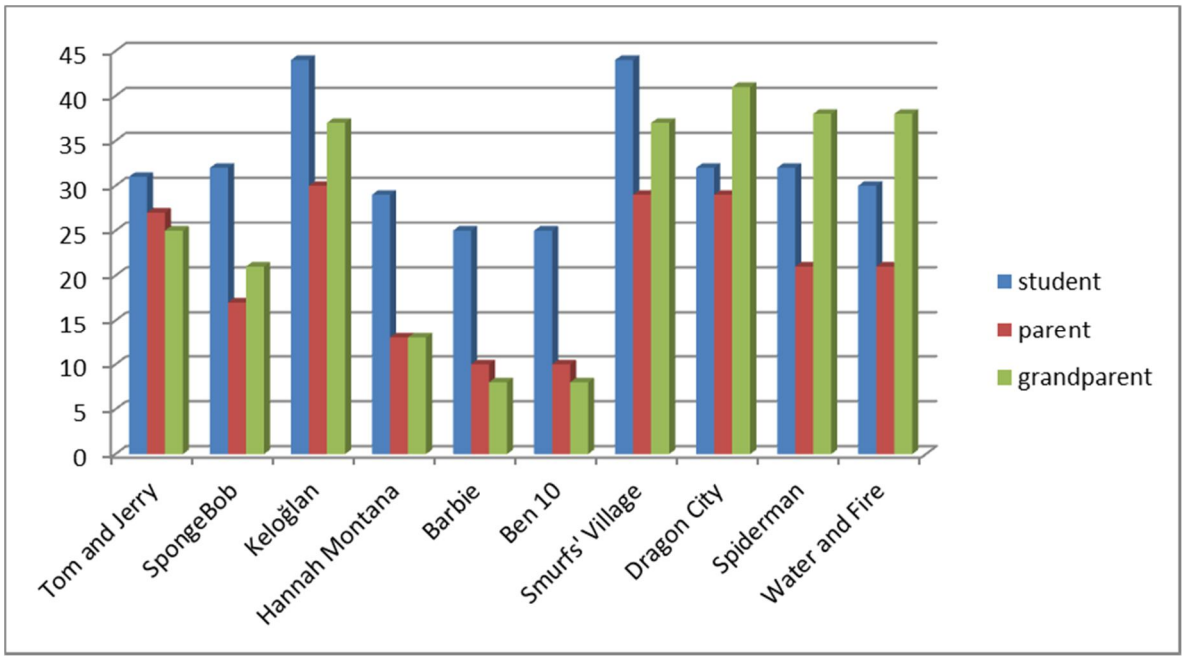

Figure 6. Bar Chart of Cartoon Games

The other distinction result of this analysis is the students preferring Keloğlan (M=44) and Smurf's Village (M=44) Games more than their parents and grandparents.

Educational Game

This part tries to find a solution to the sub-problem number 9, "Does Educational Game preference differ according to students, parents and grandparents?" The games like World Search, Mathematic Puzzles, Fraction Games, Counting Games, Addition Subtraction Games, and Who Knows are the games that our sample plays.

Table 10 One-Way Anova Results for Educational Game

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.25	2	1.63	0.17	.85
Within Groups	1447.82	147	9.85		
Total	1451.07	149			

There is not a significant difference between generations at the level $p < 0.05$ on Educational Game Playing Preferences [F (2,147) =0. 17, p=0. 85] (Shown in Table 10). Post hoc comparisons using the Tukey HSD test indicated that. Generation 1 Educational Game playing (M =3.54, SD = 2.42). Generation 2 Educational Game (M = 3.74, SD = 3.44) and Generation 3 Education Game playing (M = 3.55, SD = 3.12) are similar. This means that there is not significant difference between students, parents or grandparents educational game

play statistics. Figure 7 shows the bar chart of Educational Games. The chart illustrates those students', parents' and grandparents' Educational Game preferences are close to each other; only students being slightly more interested to English Games. Fraction Games. Addition Subtraction Games and Who Knows games than their parents and grandparents.

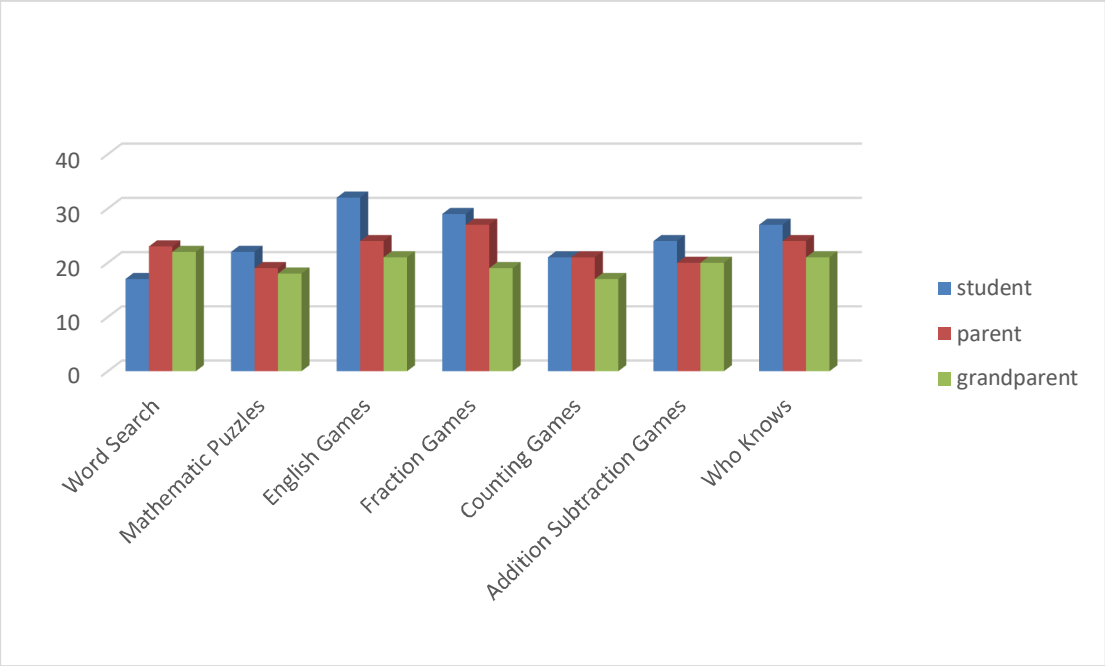

Figure 7. Bar Chart of Educational Games

Sport Game

This part tries to find a solution to the sub-problem number 10 "Does Sport Game preference differ according to students, parents and grandparents?" The games like Chess, Fifa, Madden NFL, UFC, NBA Live and Skate are the games that our sample. Reliability statistics. Frequencies and one-way Anova is used to interpret data gained from the students about 3 generations.

Table 11 One-Way Anova Results for Sport Game

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	118.58	2	59.27	0.17	0.52
Within Groups	974.96	147	3.32		
Total	1093.54	149			

There is a not significant effect of generation at the level $p < 0.05$ on Sport Game Playing Preferences [F (2,147) =0.17; p=0. 52]. These results are shown in Table 11. This means that there is not significant difference between students, parents or grandparents Sport Game playing statistics. Post hoc comparisons using the Tukey HSD test indicated that

Generation3 Sport Game playing mean (M =2.06, SD = 1.32). Generation 2 Sport Game playing mean (M = 2.36, SD = 1.65) and Generation 3 Sport Game playing (M = 2.00, SD = 2.01) is close to each other. Figure 8 illustrates the bar chart of Sport Games. The most preferred Sport game by 3 generations is Skate (M=36.33), the second most preferred Sport game by 3 generations is NBA Live (M=35), and the third most preferred Sport game is UFC (M=31.67) See Figure 8.

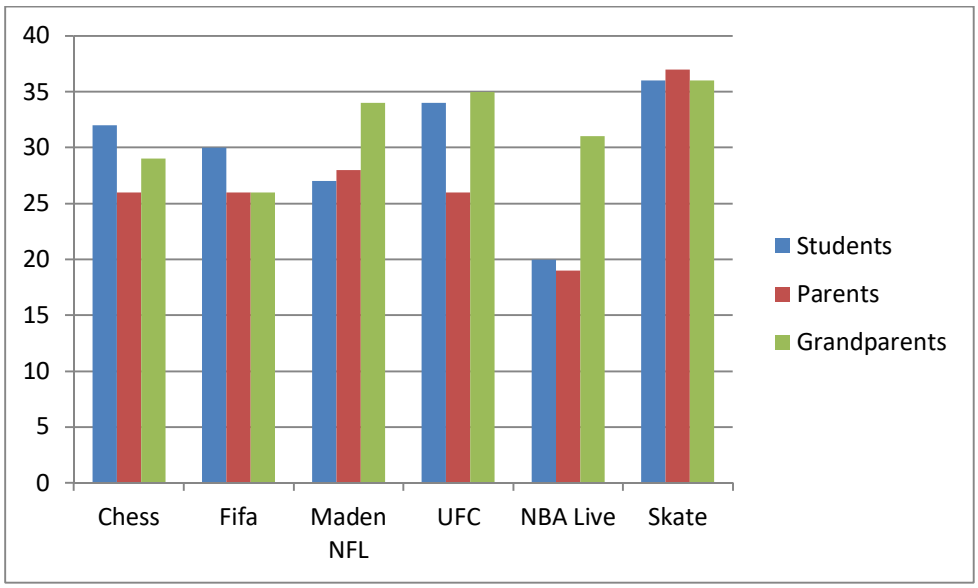

Figure 8. Sport Game Playing Preference

Simulation Games

This part tries to find a solution to the sub-problem number 11 "Does Simulation Game preference differ according to students, parents and grandparents?" The games like SuperMario64, The Sims, Star doll, Animal Crossing Wild World, Family Form, Cafe land are the games that our group plays.

Table 12 One-Way Anova Results for Simulation Game

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	114.17	2	57.09	12.71	0.00
Within Groups	660.52	147	4.49		
Total	774.69	149			

There is a significant effect of generation at the level $p < 0.05$ on Simulation Game Playing Preferences [$F(2,147) = 12.71$, $p = 0.00$]. These results are shown in Table 12. Post hoc comparisons using the Tukey HSD test indicated that. Generation 3 Simulation Game

playing preference mean (M =2.66, SD = 2.64) is higher than Generation2 Simulation Game playing preference mean (M = 0.84, SD = 1.80) and Generation 1 Simulation Game playing preference (M = 0.78, SD = 1.80). These results show that Students play Simulation Games more than their Parents and Grandparents.

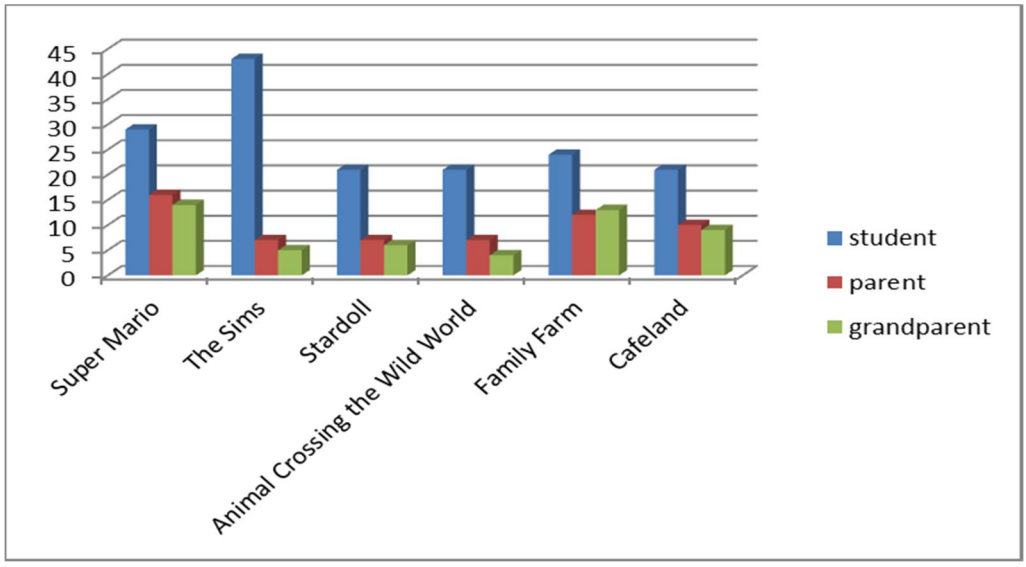

Figure 9. Simulation Game Playing Preference

What Figure 9 illustrates is very interesting, since more students prefer the simulation games Super Mario. The Sims, the Star doll, the Animal Crossing Wild World, the Family Farm and the Cafe land than parents and grandparents.

Strategy Game

This part tries to find a solution to the sub-problem number 12 "Does Strategy Game preference differ according to students, parents and grandparents?" Our sample plays Defender, Sleeping Dogs, Max Pyne, Tomb Raider, Dishonored, Pinball, Minecraft, Lord of Ages, Soldiers, and Reliability Analytics. Frequencies and one way Anova is used to interpret and to report the results.

Table 13 One-Way Anova Results for Strategy Game

		Sum of Squares	df	Mean Square	F	Sig.
Strategy Game	Between Groups	0.760	2	0.380	0.042	0.959
	Within Groups	1327.000	147	9.027		
	Total	1327.760	149			

There is a not significant effect of generation at the level p <0.05 on Strategy Game Playing Preferences [F (2,147) =0. 42, p=0. 96]. These results are shown in Table 13. Post hoc comparisons using the Tukey HSD test indicated that. Generation 2 Strategy Game playing (M =4.06, SD = 3.00) is different than Generation 1 Strategy Game (M = 3.90, SD = 2.83) and Generation 3 Strategy Game playing (M = 3.92, SD = 3.17) are similar. These results show that there is not any significant difference between Grandparents, parents and students play statistics.

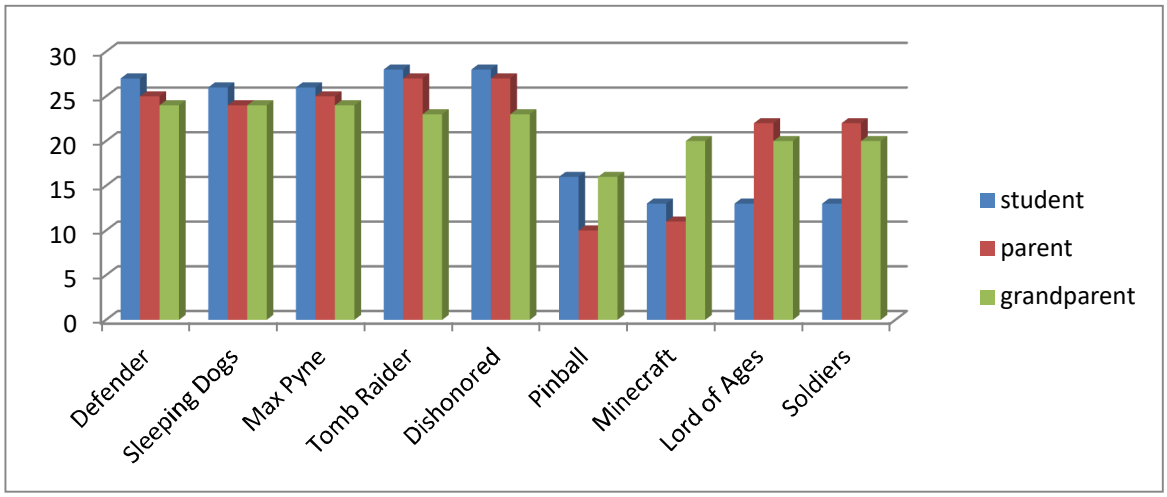

Figure 10. Strategy Game Playing Preference

Figure 10 illustrates the bar chart of Strategy Games. The most preferred Strategy games by 3 generations are Tomb Raider (M=26) and Dishonored (M=26), the third most preferred Strategy game by 3 generations is Defender (M=25.33), and the Pinball (M=14) and the Minecraft (M=14.67) are the least preferred ones.

War Games

This part tries to find a solution to the sub-problem number 12 "Does War Game preference differ according to students, parents and grandparents?" Game of War, Call of Duty, World of Warcraft, War Thunder. Battlefield, Star War, Space War, World of War Planes, and Battle Zone are the war games that our sample plays.

Table 14 One-Way Anova Results for War Game

		Sum of Squares	df	Mean Square	F	Sig.
War Games	Between Groups	157.693	2	78.85	9.593	0.000
	Within Groups	1208.180	147	8.22		
	Total		1365.873	149		

There is a significant effect of generation at the level p <0.05 on War Game Playing Preferences [F (2,147) = 9. 59, p =0.00]. These results are shown in Table 14. Post hoc comparisons using the Tukey HSD test indicated that. War Game Playing for Generation 1 (M = 5.68, SD = 2.85) is different than mean score of Generation 2 (War Game M = 3.72, SD = 3.06) and mean score of Generation 1 War Game playing mean (M =3.34, SD = 2.67). However, there is not any significant difference between Generation 1 War Game playing mean and Generation 2 war game playing mean. These results show that Grandparents play more War Games than Parents or Students. However, there is not much difference on the War game playing means of parents and students.

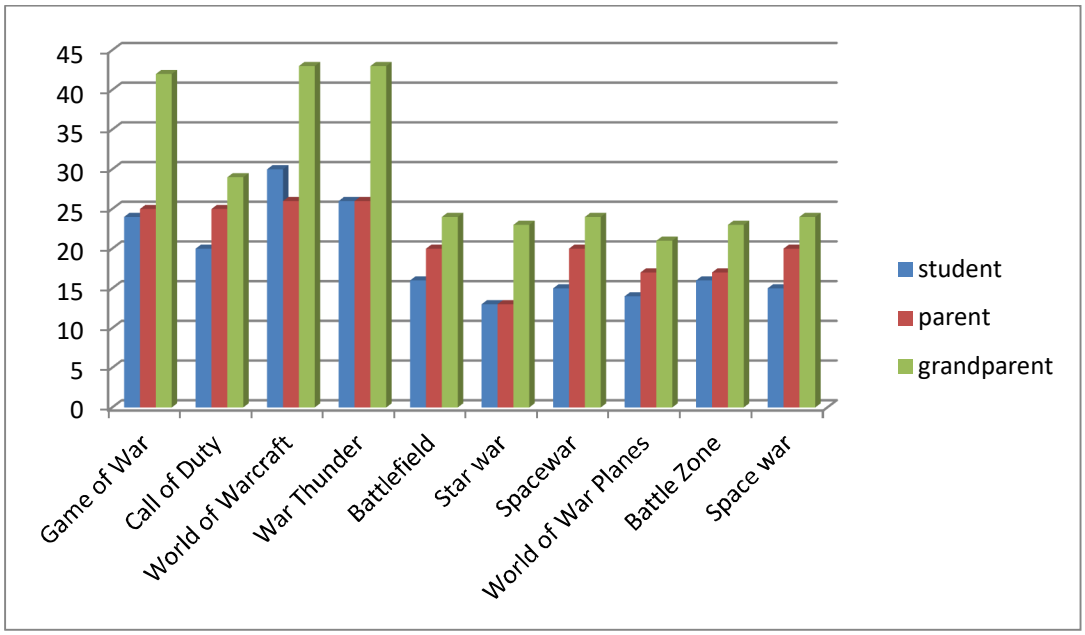

Figure 11. Bar Chart of War Games

Figure 11 illustrates the bar chart of War Games. The most preferred War game by 3 generations is War Thunder (M=31.67), the second most preferred War game by 3 generations is Game of War (M=30.33), and the third most preferred War game is Call of Duty (M=24.66).

Grandparents being so keen on gaming were an unexpected result of this study. Were they really interested in games or were they role-playing that they were interested to their grandchildren games to keep them motivated in games? There may be several other reasons of grandparents playing more than their grandchildren. May be they are keen on the new technological devices and the games which did not exist in their childhood. On the

other hand, several studies have shown that use of video games is associated with a host of different problems (Griffiths. Kuss & King, 2012; Brunborg. Mentzoni & Frøyland, 2014). Perhaps this results are related with their having problems and their wanting to get away from this by the help of the video games. There are some studies which show that amount of time spent on video games is associated more alcohol consumption (Ream. Elliott & Dunlap, 2011) and conduct problems (Holtz & Appel, 2011). There are some studies which enforce the positive outcomes of the video gaming for adult players such as adult players may experience three different types of identity development: achievement-oriented development, control-oriented development, and relational development (Doh. Whang, 2014). May be the grandparents are aware of these one, that is why they are playing video games together with their children. On the other hand, the reason may be none of these. May be they are just loving to play video games and nothing else. Nonetheless, this is an important subject which needs further investigation and this is a good research area (to find out why elderly people are keen on video games) for the future researches.

Conclusion

This research study provides a different perspective to the gaming world by exploring 3 Generations (students, parents and grandparents) from the eye of students. Study shows that students prefer playing games with mobile phones in contradicting to grandparents, who prefers playing games with computers. There was not a significant difference between girls and boys Building Game, Card Game, Educational Game Playing Preferences. However, it is found that Girls prefer playing Card Games, Cartoon Games and Simulation Games more than boys. On the other hand; boys prefer playing Car Games, Sport Games, Strategy Games and War Games more than girls.

The most commonly played games by 3 Generations are Card Games and the least commonly played games are the Simulation Games. Parents play Building Games more than Grand Parents which play more than students. In addition to this; Grandparents play Card Games and War Games more than Students. Generation 3 (Students) plays Cartoon Games and Simulation Games more than their Parents and Grandparents. On the other hand, there is not a significant difference between Students, Parents and Grandparents Car Game, Educational Game, Sport Game and Strategy Game Playing Preferences.

Like many other studies there are some acceptances and limitations of this study as the following:

- The games that students, parents or grandparents play are accepted to be the games that they prefer to play.
- Students are expected to narrate the games that they play and the Game Genres are grouped according to these descriptions. Thus, this study is also limited with the students narrating skills.
- This study assumes that 9 year old students are curious and they know their parents and grandparents games. However, the students may not be aware some of the games that their parents and grandparents play alone, of sight. In other words, this study assumes that all parents play in front of their children or all of the parents tell them what they play. Similarly, study assumes that all grandparents play in front of their children or all of the grandparents tell their grandchildren what they play.

These results are may help game designers to view the game players from different perspectives. Since there is an important Generation 1(Grandparents) players, video game creators should consider those when designing their new games to attract more players. Besides this, more educational video games would be welcomed by the teachers and many organizations like schools, and these will increase the number of student and parent video game players. However, these results may be due to cultural effects of the country that the study took place; it is probable to have other results in another culture population. Since this study is delivered from the eye of the students, it is recommended to the researchers to deliver a comparative study to this one from the eye of parents and from the eye of grandparents.

References

Aguilera, M. & Mendiz, A. (2003). Video games and education, (Education in the face of a "parallel school"), *Computers in Entertainment*, 1 (1).

Bilgihan, A. Cobanoglu, C. Nusair, Okumus, F. & Bujisic. M. (2013). A quantitative study exploring the difference between gaming genre Playing Preferences, *The Computer Games Journal*, 2(1).

Brunborg. G.S., Mentzoni, R., A., Frøyland, L., R. (2014). Is video gaming or video game addiction associated with depression academic achievement heavy episodic drinking or conduct problems? *Journal of Behavioral Addictions*, 3(1), 27–32.

Chiu. S., Lee. J., & Huang, D. (2004). Video game addiction in children and teenagers in Taiwan, *Cyber Psychology & Behavior*, 7, 571-581.

Dobrowolski, P., Hanusz, K., Sobczyk. B., Skorko. M. & Wiatrow. A. (2015). Cognitive enhancement in video game players, The role of video game genre, *Computers in Human Behavior*, (44), 59-63.

Doh. Y.Y. & Whang, S-M., L. (2014). From Separation to Integration Identity Development of Korean Adult Players in Online Game World, Games and Culture, 9 (1), 130-157.

Greenberg. B. S., Sherry. J., Lachlan. K., Lucas. K., & Holmstrom. A. (2010). Orientations to video games among gender and age groups, *Stimulation & Gaming*, 41(2), 238-259.

Griffiths M. D., Kuss D. J. & King D. L. (2012). Video game addiction, Past, present, future, *Current Psychiatry Reviews*, 8,308–318.

Hauge, M. R., & Gentile, D. A. (2003). Video game addiction among adolescents, Associations with academic performance and aggression. Paper presented at Society for Research in Child Development Conference, Tampa. FL.

Holtz P. & Appel M. (2011). Internet use and video gaming predict problem behavior in early adolescence, *Journal of Adolescence*, 34, 49–58.

Leonard, D. (2003). Live in your world, play in ours: Race, video games, and consuming the other. *Studies in Media & Information Literacy Education*, 3(4).

Lucas. K., & Sherry. J. (2004). Sex difference in video game play, A communication-based explanation, *Communication Research*, 31, 499-523.

Juul, J., (1999). A Clash between Game and Narrative - A thesis on computer games and interactive fiction, University of Copenhagen, Institute of Nordic Language and Literature. Retrieved April 1. 2015 from, http,//www.jesperjuul.net/text/clash_between_game_and_narrative.html

Lateh. H. & Muniandy. V. (2011). Technology integrated teaching in Malaysian schools, GIS. a SWOT analysis, *World Journal on Educational Technology*, 3(2), 64-74.

Ream G. L., Elliott L. C. & Dunlap E. (2011). Playing video games while using or feeling the effects of substances, Associations with substance use problems, *International Journal of Environmental Research and Public Health*, 8, 3979–3998.

Thorne, H. T., Smith, J. J., Morgan. P. J., Babic, M. J., & Lubans, D. R. (2014). Video game genre playing, physical activity and screen-time in adolescent boys from low-income communities. *Journal of Adolescence*, 37 (8), 1345–1352.

Wan, C. S., & Chiou, W. B. (2006). Psychological motives and online games addiction, A test of flow theory and humanistic needs theory for Taiwanese adolescents, *Cyber Psychology & Behavior* 9, 317- 324.

Zammitto, V. L. (2001). Gamers' personality and their gaming Playing Preferences (Master's thesis), Simon Fraser University, Vancouver, Canada.