Differential Effects on Playing and Watching Videogames on the Problem Solving and Pro Social Behaviour of Middle School Students

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Abstract:

Many researches that have done earlier on violent video games have deleterious effects (Anderson & Bushman, 2001; Anderson et al.). Contrary to conventional beliefs that playing video games is intellectually lazy and sedating, it turns out that playing these games promotes a wide range of cognitive skills. Evidences prove that skills that are important can be built or reinforced by videogames, like; playing games can improve the spatial visualization ability. Decades of research already exists on the effects of violent videogames on children and adolescents and its negative impact on their physical and mental health. More balanced perspective is needed for the negative effects of videogames and should throw more lights on the benefits of playing these games. This research article is aimed on the positive effects of videogames while playing and watching videogames on the problem solving and pro social behaviour. The present experimental study was based on forty five boys and forty five girls from 5th to 7th grade middle school children belonging to the age group 10-13 years. The results show that there is a difference in the problem solving and pro social behaviour while playing the videogame than while watching and boys show more significant difference than girls in problem solving and vice versa for the pro social behaviour.

Keywords: *Videogames, Prosocial Behaviour, Problem Solving*

I. INTRODUCTION

It is apparent that the significant presence of media, such as television and videogames has an effect on the lives of children and adolescence population. Most of the children spend a great deal of time by watching television and playing videogames (Polman, 2008). It was found that children spend an average of twenty five hour in a week and for watching the television and nine hour a week by playing videogames (Gentile et al., 2004). It is evident that the children spend ten times more in such new media than they spend for reading. There are many studies which focussed on the violent nature of videogames and increasing the aggressive behaviour in children.

Now perceiving video gaming only as negative is less common. With the advent of more usage of Smart phones and Tablets, the number of users playing video games also increased on a regular basis. It has been proven that more than 50% of the gamers are now females. As many studies(Prot et al., 2012) proven that video gaming improved the cognitive functioning (problem solving, reasoning and decision making), visuo-spatial skills, eye hand coordination, prosocial behaviour etc.,the society now appreciates video gamers. Off late the trend has been changed and the society perceive video gaming as an effective teacher that affect players in multiple domains. The rising popularity of video games has instigated a debate among parents, researcher, video game designer, and policymakers concerning about the potential harmful or helpful effects of video games on children (Prot et al, 2012). Views expressed in best debate have often been extreme, either idealizing or vilifying video games delighting (Jack,2008;Entertainment software association,2011).

II. METHOD

Experimental Research Design

The research adopted an experimental pre-post test design, in which tools were employed for the pre test assessment on classroom attention, problem solving and pro social behaviour of the selected children as a first stage. In the second stage, there were two experimental groups and one control group in which one child will play (active stage – Experimental Group I) videogames of different concepts and different levels and the other child will watch (passive stage Experimental Group II) when other play the videogames, the control group is not assigned to watch any videogames. In the third stage, post test assessment is taken.

III. PARTICIPANTS SECTION

Population

In the present study the population consisted of all the middle school children belonging to the age group 10-13 years. This was the population, to which the researcher wanted to generalize the results of the present study.

Participants

Participants are a subset of people selected from a larger population for the purpose of analysis and making inferences. The participants selected for the present study were middle school children between the age group 10 to 13 years. The total number of participant selected were forty five boys and forty five girls from different sections of grade 5, 6 and 7. From the selected participants 50 percent of them were from grade five, 36 percent were from grade six and 14 percent

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were from grade seven. Most children were 10 years old (n =45), several 11 year olds (n =28), 12 year olds (n =15) and 13 year olds (n =2).

Procedure

Researcher after fixing the samples to be used in the study, has approached different schools seeking permission to get middle school students who study in grade 5, 6 & 7 between the age group 10-13 years. The researcher approached the principals of seven schools in Krishnagiri district and requested for ninety students for the experimental and control group which belongs to grade 5, 6, & 7. The researcher explained the experimental design and the purpose of the study in depth and also clearly stated that selection of the samples is strictly to the exclusion and inclusion criteria. The researcher mentioned the requirements of school computer lab for the study and seek permission it. The permission seeking were for 21 continuous days in order to see a behavioural change among the sample been selected. Most of the schools denied to give permission for 21 continuous days as it may affect the completion of the syllabus.

After seeking permission from the principal of the school, the researcher was taken to classes of grade 5,6, & 7 and to different sections of it. The researcher explained the study and selected the students based on the exclusion and inclusion criteria. Many students were interested, but most of them got excluded in order to meet the exclusion and inclusion criteria used for the study. Selected students were given appropriate and detailed instruction about the study and clearly mentioned the purpose of the study. There were Ninety participants who have been selected for the study. The participants selected were divided into three groups based on gender, out of which forty five were boys and forty five were girls. After dividing them into gender wise they were further divided into groups of three, of which experimental group I will be playing (active stage) the videogames and experimental group II will be watching (passive stage) the videogames and control group will not be given any videogames. The researcher has taken the pre test from all these three groups given certain specified videogames that has problem solving and pro social behaviour content for experimental group I to actively play and experimental group II to watch the videogames while the other group is playing and no videogames is given to the control group. After the completion of 21 days the post test assessment in taken from all the three groups.

Apparatus

The researcher used twenty five desktop computers with the key boards given in the computer lab to show videogames of different content and different levels of difficulty. Speakers were also used for the purpose of study. Different videogames were used to measure the effects of playing and watching videogames on the classroom attention, problem solving and pro social behaviour.

Materials

The researcher employed three questionnaires for the study which will be used in the pre assessment and post assessment level of the experiment. The questionnaires used were adopted a Likert scale method. The questionnaires used for the study were Classroom Attention Scale, Problem solving Scale and Pro social Behaviour Scale. The researcher has developed the tool.

IV. RESULTS

The hypothesis framed is that there is a significant difference between the Pre test and Post test of Experimental I group (Playing Video games) with regard to Problem Solving. Paired sample t-test is used for the analysis.

Table 1.1. Comparing Means Scores of Problem Solving between Pre test and Post test of Experimental I Group

Table 1

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig(2-tailed)
Pre test	39.27	3.413	53.003	29	.000
Post test	105.77	6.867			

Table 1 shows a significant difference in the mean scores between pre test and post test group of Experimental Group I (Playing Videogames) with regard to the Problem Solving. Results indicated that the mean scores for pre test is 39.27 and for post test is 105.77 and SD for pre test is 3.413 and for post test is 6.867 with t- value 53.003 for df 29 at .000 level of significance. The second hypothesis framed is that there is a significant difference between the Pre test and Post test of Experimental I group (Playing Video games) with regard to Pro social Behavior. Paired sample t-test is used for the analysis.

Table 1.2. Comparing Means Scores of Pro social Behavior between Pre test and Post test of Experimental I Group

Table 2

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig(2-tailed)
Pre test	36.87	4.681	51.092	29	.000
Post test	102.07	6.125			

Table 2 shows a significant difference in the mean scores between pre test and post test group of Experimental Group I (Playing Videogames) with regard to the Prosocial Behavior. Results indicated that the mean scores for pre test is 36.87 and for post test is 102.07 and SD for pre test is 4.681 and for post test is 6.125 with t- value 51.092 for df 29 at .000 level of significance.The third hypothesis framed is that there is a significant difference between the Pre test and Post test of Experimental II group (Watching Video games) with regard to Problem Solving. Paired sample t-test is used for the analysis.

Table 1.3. Comparing Means Scores of Problem Solving between Pre test and Post test of Experimental II Group

Table 3

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig(2-tailed)
Pre test	34.30	3.743	1.040	29	.307
Post test	31.20	16.327			

Table 3 shows no significant difference in the mean scores between pre test and post test group of Experimental Group II (Watching Videogames) with regard to the Problem Solving. Results indicated that the mean scores for pre test is 34.30 and for post test is 31.20 and SD for pre test is 3.743 and for post test is 16.327 with t- value 1.040 for df 29 at .307 level of significance. The fourth hypothesis framed is that there is a significant difference between the Pre test and Post test of Experimental II group (Watching Video games) with regard to Prosocial Behavior. Paired sample t-test is used for the analysis.

Table 1.4. Comparing Means Scores of Pro social Behavior between Pre test and Post test of Experimental II Group

Table 4

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig(2-tailed)
Pre test	37.50	4.183	1.825	29	.078
Post test	31.50	17.514			

Table 4 shows no significant difference in the mean scores between pre test and post test group of Experimental Group II (Watching Videogames) with regard to the Prosocial behavior. Results indicated that the mean scores for pre test is 37.30 and for post test is 31.50 and SD for pre test is 4.183 and for post test is 17.514 with t- value 1.825 for df 29 at .078 level of significance. The fifth hypothesis framed is that there is no significant difference between the Pre test and Post test of Control group (Neither Playing/Watching) with regard to Problem Solving. Paired sample t-test is used for the analysis.

Table 1.5. Comparing Means Scores of Problem Solving between Pre test and Post test of Control Group (Neither Playing/Watching)

Table 5

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig(2-tailed)
Pre test	36.67	9.308	1.340	29	.191
Post test	30.33	23.084			

Table 5 shows no significant difference in the mean scores between pre test and post test group of Control Group (Neither Playing/Watching) with regard to the Problem Solving. Results indicated that the mean scores for pre test is 36.67 and for post test is 30.33 and SD for pre test is 9.308 and for post test is 23.084 with t- value 1.340 for df 29 at .191 level of significance. The sixth hypothesis framed is that there is no significant difference between the Pre test and Post test of Control group (Neither Playing/Watching) with regard to Prosocial Behavior. Paired sample t-test is used for the analysis.

Table 1.6. Comparing Means Scores of Prosocial Behavior between Pre test and Post test of Control Group (Neither Playing/Watching)

Table 6

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig(2-tailed)
Pre test	45.37	21.427	1.321	29	.197
Post test	36.13	27.270			

Table 6 shows no significant difference in the mean scores between pre test and post test group of Control Group (Neither Playing/Watching) with regard to the Prosocial Behavior. Results indicated that the mean scores for pre test is 45.37 and for post test is 36.13 and SD for pre test is 21.427 and for post test is 27.270 with t- value 1.321 for df 29 at .197 level of significance.

V. DISCUSSION

The result shows that there is a significant difference in the experimental group I with regard to problem solving for the participants who played the videogame. Mcgonigal (2015) suggest that certain mainstream games like call of duty and other related videogames can be the powerful tools to improve one's attention, mood, cognitive strengths and relationships. Many of the research findings slowly try to change people's conception of videogames as the findings mentions the positive outcomes of videogames such as improvement in the problem solving skills, cognitive abilities etc. Shute et al., (2014) found that videogames geared toward entertainment can improve attention, spatial orientation and problem solving abilities. The children develop problem solving skills as they play videogames more and more due to the simulation effects of the same which gives a reality effect and thereby gaining mastery over it.

Very few researches have been done to highlight the effects of videogames on the prosocial behaviour, Gentile et al., (2009) compared to participants who had played either the neutral or the violent video games, participants who had played the pro social video game shows significantly lower levels of aversive noise, thereby indicating lower levels of aggressive behaviour. Moreover, these results remained significant even after controlling for levels of trait altruism, aggression, arousal and mood. Whitaker and Bushman (2012) examined the effects of videogames on prosocial behaviour and also on positive mood. The study compared to participants who have played either the neutral or the violent video game, participants who had played the relaxing video game reported greater positive effect and displayed greater helping behaviour and there was a mediation effect of positive mood also. Saleem, Anderson & Gentile (2012) found out that the pattern of increased helping behaviour after playing a pro social video game has been consistently demonstrated. Whitaker and Bushman (2012) study shows that those who had played the pro social video game choose significantly less difficult puzzles for their partner to complete than did those who have played either the neutral or the violent video game.

As they were not actively or physically playing the videogames the skill of problem solving that developed in the playing participants was not seen in the participants who were watching the videogame played by the others. The passive group or watching participants were stressful as they were not allowed to take the moves because they were a passive observant. Inculcating problem solving skills

through games requires analytical, creative and logical thinking that the passive participant is not practiced as they were mere an observers. So the steps while playing a videogame the rule or strategies developed by oneself like evaluating the problem, managing the problem, decision making resolving a problem and the outcome of it is not been practised by the passive observers. As they were not actively or physically playing the videogames the skill of Prosocial Behavior that developed in the playing participants was not seen in the participants who were watching the videogame played by the others. The passive group or watching participants were stressful as they were not allowed to take the moves because they were a passive observant. The current research has found out that prosocial behaviour is developed in the players who were actively playing and not for the passive players this could be due to the time constrain and the involvement that the passive players lack. The researcher is not claiming for the causality that spending more time and if actively played the prosocial skills will develop, it is the result that the study showed.The control groups were given the scales as a pretest and after which they have not been distracted in any ways after a gap of three weeks the post test evaluation is taken which showed no significant difference in the effectiveness of videogames with regard to problem solving and prosocial behavior.

VI. REFERENCES

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