



## A Study of Computer Game for Concentration and Cognition Improvement in Autistic Children

Natthapat Noisawad

### Abstract

The research aims to study autistic children toward the ability of concentration and cognitive expression by using computer game. The sample group consists of primary school's autistic students who, at the time, were in semester 2 of the academic year of 2009 at the Khonkaen Demonstration Primary School. These students are in a multi-level class, aged between 3 to 6 years old. They are a learning-capable group with no other kinds of disability. Five of them were selected by using direct case study method. All are in High functioning autism group. The experiment takes 5 times during 5 weeks, 30 minutes each. The tool in this research are computer games, evaluation forms, ability of concentration and cognitive expression test using computer game. This study is an experiment research that follows the one group pretest-posttest design method. The data analysis used was statistical tools such as Mean, Standard Deviation, Hypothesis Testing, and Non-Parametric Statistic.

The results of this research show that :

1. The ability of recognition of the autistic students are statistically significantly increased at the level of 0.50.
2. The ability of emotional expression of the autistic students are statistically significantly increased at the level of 0.50.

**Keywords:** Computer Game Activity, Autistic Children

### Introduction

Autistic child, in medical term called "Autism" is a child with disorder of neural development, resulted in retarded perception, retarded speaking, and social withdrawal. The mental retardation obstructs the improvement and leads to the malfunctions in visual data processing, impaired hearing and sensations, all these have had greatly adverse impact on speech and communication development in children.

The number of the autistic children worldwide is not limited to social background. In Thailand, 4-5 of 10,000 newborns are autistic, and found 4 times greater in boys than girl. In other countries like the Great Britain, Denmark,

the United States of America, approximately 50-60 autistic and autistic-like children were found. The study was conducted with 8-10-year children, and found that half of these children had significantly abnormal behaviors, especially the restricted and repetitive ones, unimagined in playing, impaired social interaction and more retarded development than actual age and separation while some showed a certain kind of abnormality and slight disorder.

Case Study: Oak, a 7-year-old boy, shows no eye contact, indifferent facial expression, lack of emotion, plays with no others, and no others want to play with him because he often scratches on them or harms them without reasons.

The role on teaching and learning media is helpful to children and youth of all groups because they pay more attention to the animation than oral speech or reading. As animation is a visual-audio media presenting fun and interesting story, it naturally encourages the learning progress without forced compulsion.

This research proposal is to examine the benefits of the games for concentration improvement in the autistic children. Whether it will be beneficial to stimulate learning and perception of the autistic children depends on the results of the study. If the result is successful, the use of the computer game as learning media will provide great benefit and will be conducive to computer game production for further learning improvement on other topics or other areas of learning and teaching.

### The Objectives of the Research

This study includes the following aims;

1. To examine the concentration improvement ability in the autistic children by using the computer games.
2. To explore the cognitive ability in the autistic children by using the computer games.

### The Importance of the Research

1. Art therapy will be provided with more effective innovative tool for handling the children with short concentration.
2. Autistic children will be improved on concentration and be able to live with other normal children in the society.
3. Autistic children's parents apply the tool to deal with their child for better concentration improvement.

### Scope of the Research

#### 1. Population and Sample

In this study, the population included the primary autistic children, aged 3-6 years old, who

studied in the second semester of 2009 in Khonkaen Demonstration Primary School. Their academic performance is normal without disability.

The sample included primary autistic children, aged 3-6 years old, who studied in the second semester 2009 in Khonkaen Demonstration Primary School. Their academic performance is normal without disability. Five selected students were categorized in high functioning autism; being able to read, write, and response, and able to use the computer. The class teacher assisted cooperatively to select the samples whose qualifications met the requirement set by researchers.

### 2. Variables

2.1 Independent variable was computer game activity

2.2 Dependent variables included;

2.2.1 Concentration

2.2.2 Cognition

### 3. Length of Study

The computer game activity was held 5 times during 5 weeks. Each game was held on weekly basis and took 30 minutes each.

Instruments

1. Computer game activity
2. Concentration Evaluation Inventory
3. Cognitive Evaluation Inventory

### Methodology

#### Method

1. First field data collection is conducted by means of interviewing those concerned persons who are able to describe and give basic information for further analysis of data

2. Second field data collection is conducted to analyze the children's behavior to identify the common points and differences in fabricating the testing tool

3. Creating the 5 following games;

1.1 line

1.2 shape

1.3 color

1.4 surface

1.5 weight and mass

4. First activity for autistic children was held to test the tool and correct it.

5. Second activity for autistic children was held to test the accuracy and performance.

6. Design the measurement tool and evaluation criteria

7. Summarize the evaluation and further conduct the report

### **Assumption**

Autistic child who is provided with appropriate learning and teaching media shows improved concentration and cognitive ability.

### **Experiment**

1. Pre-experimental stage, the researcher interviewed the class teacher about the sample children's ability. The researcher built relationship with the class teacher to generate the familiarity. The class teacher was asked to show the sample previous work done by the autistic samples.

2. During experimental stage, this study was characterized of the one group pretest-posttest design through computer game activity. The researcher served as an observer while the class teacher operated the activities totaled 5 times

for 5 weeks. Each game was held on weekly basis and took 30 minutes each.

3. Post-experimental stage, when the experiment ended, the researcher checked the responses and recorded the length of activities done and then had them further analyzed.

### **Conclusion and Suggestion**

This study is characterized as a comparative study on concentration and cognitive ability improvement in autistic children before and after using the computer game. The results show that the concentration and cognitive ability in autistic children has been improved significantly at statistic level of .05. The game activities involve observing, forecasting, imagining, and doing the activities with happiness. The autistic children are amused, independent on thinking, and relaxed in friendly atmosphere. The score comparison is excluded so that the autistic children will develop the cheerfulness and encouragement, being proud doing the activities.

The results also demonstrated that computer game activity is an integral part to improve the concentration and carefulness in observing the surrounding environment, leading to an improved cognitive development in autistic children, including an improved ability to recognize the things as whole.

### **References**

- Autism Society of American. (2003). Autism Retrieved March 28,2003 from <http://www.autism-society>.  
 Hardy,C;et al . (2002).Autism and ICT:A Guide for Teachers& Parents.London: David Fulton Publishers.  
 Rom wongprasert. (2545).The source for Treatment Methodologies in Autism. Bangkok:Sathaporn Publishers.

Example :

