REVIEW OF RESEARCH

EFFECT OF COMPUTER ASSISTED INSTRUCTION ON ENHANCING MATHEMATICAL PERFORMANCE AMONG CHILDREN WITH MILD INTELLECTUAL DISABILITY AT PRIMARY LEVEL

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S. Arul Mary [1] and Dr. K.S. Premila[2]

[1]Research Scholar, School of Education, Tamil Nadu Open University, Chennai, Tamil Nadu
[2] Associate Professor, School of Education, Tamil Nadu Open University, Chennai, Tamil Nadu.

ABSTRACT:

The paper aims to evaluate the comparative effect of Computer Assisted Instruction and Teacher-Directed instruction of children with mild intellectual disability. Experimental study was conducted at Tiruchirappalli. CAI programme prepared based on interactive tutorial mode presentation was developed and used for this study. Study was conducted using two groups. Randomized Matched respondents. Post test only design. Two matched groups were formed on the basis of mild intellectually disabled. Student's cognitive ability and medium of instruction, each group consisted of 15 students and randomly assigned as experimental and control group. Experimental group taught through CAI and control group taught through Teacher-directed instruction method for the same mathematical concepts. After completion of instruction achievement test was given to both groups. The null hypothesis was tested using t-test. The results of the study revealed that there was significant difference in effect of CAI and Teacher-directed instruction method. There was a greater effect of CAI than Teacher-directed instruction method on enhancing mathematical performance among children with mild intellectual disability at Primary level.

KEYWORDS: *Computer-Assisted Instruction, Mathematical Performance, Mild Intellectual Disability.*

INTRODUCTION

Students with mild intellectual disability stand significantly behind in developing academic skills when compared with their peer group students. They are tend to be considerably slow improvement in learn to read, write and basic mathematic skills. (Taylor Richards & Brady2005) Due to the result of delayed development in basic skills of reading, writing and mathematics skills it leads to slow development in other academic skills that involved use of these skills. When compared with their same age group students with intellectually impaired stand behind in their academic accomplishment right through their school years. Generally most of the students with mild intellectually impairments build up basic literacy skills and functional arithmetic skills. The majority of the students with mild intellectual impairment are able to learn basic computational and functional arithmetic skills related to money, time and measurement but they have difficulty in doing more complex skills such as mathematical reasoning and solving problems by applying concepts.

In recent trend, using technology is the powerful option in teaching and learning process. It provides opportunity to engage in academic activities for all learners including children with special needs. Computer programs are interactive and can illustrate a concept through attractive animation, sound, and demonstration. They allow students to progress at their own

pace and work individually or solve problems in a group. Ghaywan and Arakh (2012) report that Computer assisted instruction can increase learning literacy and numeracy skills among children with mild intellectual disability.

In the present study enhancing mathematics refers to the achievement score (dependent variable) obtained in classified and structured instruction of Mathematical concepts/units of Shapes. Measurements, Numbers, addition and subtraction in standard one mathematics Text Book followed in the state schools of Tamil Nadu.

Studies revealed that students can get effective and higher level of performance in learning through computer assisted instruction than teacher directed method of instruction. Students with intellectual impairment prefer visible colourful, attractive and movable learning materials than static materials. It increases student's attention and concentration and makes them to spend more time in learning and avoids repeated mistakes.

There are a very few Indian studies that teach mathematics through computer assisted instruction to students with intellectual disability. In addition there is a lack of experiential data on the effects of using computer assisted instruction and its impact on student learning, it is vital to determine the comparative effect of computer assisted instruction and Teacher directed method. Based on this it was determined to carry out the present study

RATIONALE OF THE STUDY

The results of the study may provide inspiration to the teachers to teach through computer assisted instruction for children with intellectually disabled. This study can support the curriculum developers and educators to plan mathematical instructional programme through CAI.

OBJECTIVES

- To develop a computer-assisted instructional programme on instructing mathematics for students with mild intellectual disability at primary level.
- To study the effect of computer assisted instruction in terms of mean achievement score obtained by the subjects.
- To study the comparative effect of computer-assisted instruction and teacher-directed method in teaching mathematics.

HYPOTHESIS

1. There is no significant difference between the post test mean scores of mathematical concepts learn through computer Assisted instruction and teacher directed method among students with mild intellectual disability.

METHODOLOGY

Randomized Matched Subjects, Post-Test only Design was used in the present study. The sample of the study, students with mild intellectual disability studying first Standard was selected from an inclusive school of Tiruchirappalli of Tamil Nadu State. Purposive sampling was employed for the present study. The respondents of the study comprised of 30 students with mild intellectual disability. Two matched groups were formed on the basis of pre-intervention assessment of student's cognitive ability, reading and writing abilities (using Behavioural Assessment Scale for Indian Children with Mental Retardation (BASIC-MR) Part-A for skill behaviour). No prompt and corrective feedback was given. Each group comprised of 15 subjects and randomly allocated as experimental and control group. The groups were formed after controlling the intervening variables i.e. cognitive ability and medium of instruction. Training was given for two months.

TOOLS

The investigator employed the following tools for data collection in the present study.

- BASIC-MR (Part A)

- Computer-Assisted Instructional Package (on the content for instruction)
- Achievement Test in Mathematics (criterion-referenced) developed and content validity was established for the tool.

CAI PACKAGE

Computer assisted instruction package for teaching mathematics to children with intellectual disability prepared based on drill and practice method. It includes the concepts of shapes, numbers, Measurement and addition and subtraction. Validity and Reliability was established for this package.

TRAINING SCHEDULE

Training was given for both control and experimental group. The control group was trained with teacher directed instruction and the experimental was trained with Computer program. Training was given for two months totally the training was given for 50 sessions each session consisted of 20 minutes. After the 50 sessions of training completed achievement test was administered and the data was collected for further analysis.

DATA ANALYSIS

Table 1: Analysis of Achievement Mean Scores of the Control and Experimental Group

GROUP	N	Mean	SD	t-value	Sig
SHAPES CONCEPT					
Conventional	15	88.46	5.41	2.48	P 0.05
CAI	15	93.85	6.46		
NUMBER CONCEPT					
Conventional	15	77.69	5.28	4.58	P 0.01
CAI	15	86.62	5.65		
MEASUREMENT					
Conventional	15	79.69	5.39	3.53	P 0.01
CAI	15	87.38	6.51		
ADDITION SUBTRACTION					
Conventional	15	86.15	5.55	0.72	NS
CAI	15	87.69	6.14		

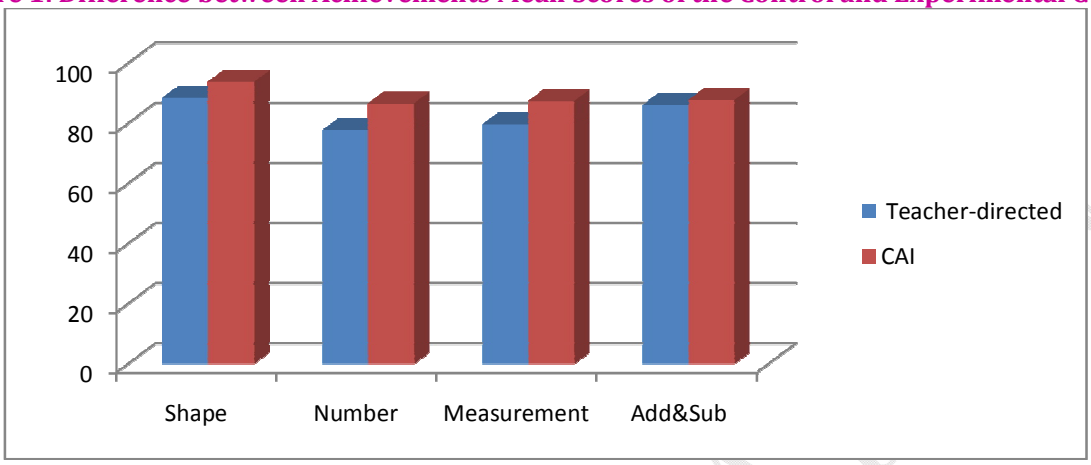
RESULTS AND DISCUSSION

Achievement scores were obtained by conducting an achievement test after providing computer-assisted instruction to experimental group and Teacher directed method to control group. The following table and graph furnishes the data of the Post-test (achievement test) performance of control and experimental groups, it also furnishes the significance of difference between the achievement scores of subjects in two groups

For testing the hypothesis t-test was used. It is inferred that there is significant difference in the Mean Scores of students with mild intellectual disability using teacher-directed instruction method and computer assisted instruction on performing mathematical concepts. Namely number and measurement at 0.01 level and there is significant difference in the Mean Scores of shape concept at 0.05 level. And it is also inferred that there is no significant difference in the Mean Scores of students with Mild intellectual disability in the concept of addition and subtraction at any level. Hence the null hypothesis is not tenable in report of the concepts namely shapes, numbers, and measurement and is rejected. Whereas the null hypothesis related to the addition and subtraction concepts is tenable and is accepted. This implies that the difference in the achievement of the control group and experimental is significant in three out of four mathematical concepts. It may therefore be concluded that Computer-

Assisted Instruction helps in enhancing the achievement of students with mild intellectual disability on performing mathematics in comparison to the Teacher-directed instruction method.

Figure 1: Difference between Achievements Mean Scores of the Control and Experimental Group



CONCLUSIONS

- Students showed active involvement in learning through computer assisted instruction.
- It is the suitability of learning method with the ability and interest of the learner
- There is difference in learning and achievement according to the nature of mathematical content.
- Subjects who trained through computer enjoyed the learning experience.
- Innovative learning through computer helps the learners to be self-motivated.

It concluded that, computer assisted instruction provides greater opportunities for the intellectually disabled learner to learn by serving individual differences. Computer assisted instruction proved to be better than the teacher-directed method on learning mathematics among students with intellectual disability at Primary level. It brings an effect and enhancement in achievement and provides innovative learning experiences and has much scope in mathematical performance.

REFERENCES

1. Ghaywan, Vaishali Arakh, Raju Govind. (2012). Effectiveness of computer assisted instruction on academic performance of the children with mild mental retardation at primary level. Indian Streams Research Journal, 2(10).
2. McManis, L. D., & Gunnewig, S. B. (2012). Finding the Education in Educational Technology with Early Learners. Technology and Young Children, 14-22.
3. Saida Qaftan Abdel-Aziz Al Edwan. (2013). Developing the Mathematical Skills among Sample of Downsyndrome by Education Technology Journal of Education and Practice, 4(16).
4. Taylor, Richards & Brady. (2005). Youth with Mild Intellectual Disabilities to Read and Learning Basic Maths Skills.
5. Yash Pal Singh & Anju Agarwal. (2013). Teaching Mathematics to Children with Mental Retardation using Computer Games. MJP Rohilkhand University, Bareilly, Uttar Pradesh, Vol. 2, No. 1.