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EFFECTIVENESS OF COMPUTER ASSISTED INSTRUCTION ON ACADEMIC PERFORMANCE OF THE CHILDREN WITH MILD MENTAL RETARDATION AT PRIMARY LEVEL

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Abstract:

There have been a lot of changes in the educational pattern for the last two decades. Special Education conveys that there is a need to use innovative methods in teaching children with disabilities. In this scientific era computer has a vital role in the teaching learning process. The present study titled "Effectiveness of Computer Assisted Instruction (CAI) on the Academic Performance of Children with Mild Mental Retardation at Primary Level" investigated the effects of computer assisted instruction on the academic performance of the children with mental retardation. Sample size consisted of 5 students (N=5) with mild mental retardation placed in primary level at Save the Children Special Education Centre, Bandra-Kurla Complex, Mumbai. Quasi experimental research approach with one group time series design was used. Functional Assessment checklist for programming (FACP) was used for the selection of the Samples. Computer Assisted Instruction (CAI) package developed by researcher was used for intervention.

Intervention was given namely –Naming of animals (dog, cat, cow), Naming of colours (red, blue, yellow), Meaningful counting of Numbers (1 to 5). The intervention was given for 20 sessions of half an hour each session. T test was administered. The findings revealed that the group performed better in post test as compared to pre test. In addition the researcher observed the improvements in attention, concentration, Communication and motivation, among the group during the intervention.

KEYWORDS:

Computer Assisted Instruction, Academic performance, Children with Mild Mentally Retardation.

INTRODUCTION:

The application of computers is growing rapidly in each and every sector of life and expectations of this technology are growing at the same rate. One of the newest branches of computer application is computer assisted instruction or CAI.

Among all other media, Computer has been accepted as an important tool to amplify the learning capacity. The large amount of information stored in computers is made available to the learner more rapidly. The dynamic interaction between the student and instructional program is possible through computer than any other media. Computer technology has a great potential for assisting teachers in the delivery of quality instructional program, Particularly for students with special needs.

Splitegerber (1979) defined CAI as "A teaching Process involving, directly the computer in the presentation of instructional materials in an interactive mode to provide and control the individualized

learning environment for each individualized students .”

Computer based instruction is defined by Okolo et al (1993) as the use of a computer or other associated technology with the intention of improving students skills ,knowledge ,or academic performance .”

CAI brings with it several potential benefits as a teaching /learning medium .This includes self paced learning ,self directed leaning ,the involving of various senses and the viewers scope to represent content in a variety of media .

Humans are multi-sensory beings ,engaging more senses for receiving information ,more the easier it becomes to remember .According to Fletcher(1990) people remember 20% of what they hear ,40% of what they see and 75% of what they see, hear and do . The fact the computer can exercise various senses and present information in a variety of media can enhance the learning Process.

Although students with special needs have benefited significantly from technology –based interventions in the regular classroom ,the added utilization of specialized technology based devices ,described as augmentative and alternative devices have had a profound impact on the participation capabilities of students with disabilities on their academic outcomes .Most schools are now able to offer technology based interventions to all their a students including those with Special needs .In addition ,many are now able to make available dedicated augmentative and alternative devices for students with disabilities.

OBJECTIVES OF THE STUDY

To study whether CAI is applicable for children with Mental Retardation.

To study the effects of CAI package on the academic performance of children with mild Mental Retardation at primary level.

To compare the pre and post test scores attained on tool for assessing literacy skills (TALS) as a result of using of CAI.

To study effect of intervention tool was been designed specifically for the purpose of assessment before ,during and after the intervention .

VARIABLES IN THE STUDY

Independent variable-

CAI package

This study aimed at exploring the effects of CAI .Hence CAI package can be defined as

the independent variable

Dependent variable-

Academic performance of the children with Mental Retardation

HYPOTHESES

Hypothesis CAI will have significant effect on academic performance (Domain 1- naming animals ,Domain 2- Naming of colours ,Domain -3 meaningful counting of numbers) among children with mental retardation.

Null Hypothesis CAI will not have any effect on academic performance(Domain 1- naming animals ,Domain 2- Naming of colours ,Domain -3 meaningful counting of numbers) among children with mental retardation.

METHODOLOGY:

The study is conducted to find out the effectiveness of computer assisted instruction on the academic achievement of children with mild mental retardation at primary level. To carry out the study effectively the following methods were steps were adopted .

RESEARCH DESIGN-

An inferential research design using quasi experimental research approach with one group time series design was used to examine the effect of computer assisted instruction (CAI) on the academic performance of children with mild mental retardation at primary level .

SAMPLE-

In this study purposive sampling Method was used . All the children of the primary level were assessed with Functional Assessment Checklist for programming (FACP) . Among these, five students who scored below 50% on FACP and did not have any additional impairment have selected as sample.

The target populations selected were children with mild mental retardation between preadolescent age group (7 to 11 yrs).The samples were selected from Save The Children a Special Education Centre, Bandra-Kurla Complex, Mumbai.

Tools-

An inventory tool for assessing literacy skills (TALS) was developed by the researcher for the collection of data throughout the process of intervention. The checklist was prepared to check the current level of the students in three concepts

Naming of animals (dog, cat ,cow) which consist of 18 items

Naming of colours (red blue ,yellow) which consist of 18 items

Meaningful counting of numbers (1 to 5) which consist of 20 items .

Same items were included in Computer Assisted Instruction (CAI) package which is developed by the researcher for treatment. The reliability of the tool was established by administering the checklist on three students (other than the selected sample) taken from the primary level class.

Procedure-

These five students were pre tested on Tool for assessing literacy skills (TALS-developed by the researcher).The pre test scores were recorded .Intervention in three concepts (naming animals ,naming colours and meaningful counting of numbers) thorough computer assisted instruction was given for 20 sessions. Daily performance record was maintained during the intervention .After 20 sessions of intervention post test was done.

The collected data has been analyzed and results and discussions are given in the proceeding chapters.

DATA ANALYSIS AND INTERPRETATION

A series of 't- test' were conducted on the mean achievement scores between pre and post test to find out the overall performance of the group and all the domains as per the objectives.

t- test results for Pre and Post test on overall Performance

Area	N	Pre Test		Post Test		Difference of Means	t-value	Significance
		Mean	SD	Mean	SD			
Total	5	67.00	0.000	203.20	5.891	136.2	51.701	0.000

P value< than 0.05,hence 't' is highly significant

Table 4.2.1

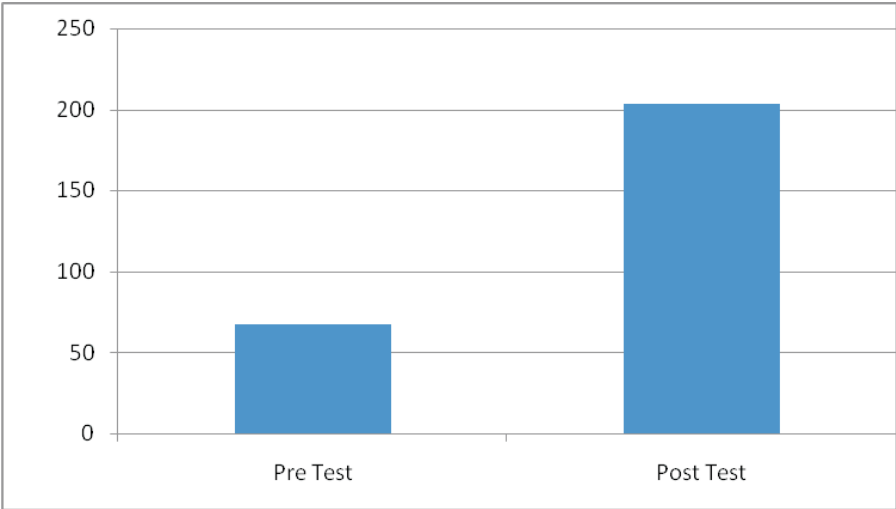


Figure 4.2.1

For the overall performance of the group ,mean , standard deviation and t-value were ascertained .Table 4.2.1 ,Shows mean score is 67 at pre test ,while post test mean score is 203.2 showing a gain of 136.2 .Thus comparative difference of mean scores clearly proves that intervention has improved academic performance .SD reveals that the sample baselines for learning characteristics at pre test were same amongst the sample group reflecting homogeneous academic status .After intervention ,Change in SD shows increase from 0.00 to 5.891 .On administering 't' test to compare means scores of pre and post test ,the P-value was found to be 0.001, which is highly significant endorsing that CAI method of instruction has significant influence on learning levels of the given sample size .

t-test results for pre and post test on Domain –meaningful counting of numbers

Domain	N	Pre Test		Post Test		Difference of Means	t-value	Significance
		Mean	SD	Mean	SD			
Meaningful counting	5	25.00	0.000	76.20	2.775	51.200	41.258	0.000

Table 4.2.2

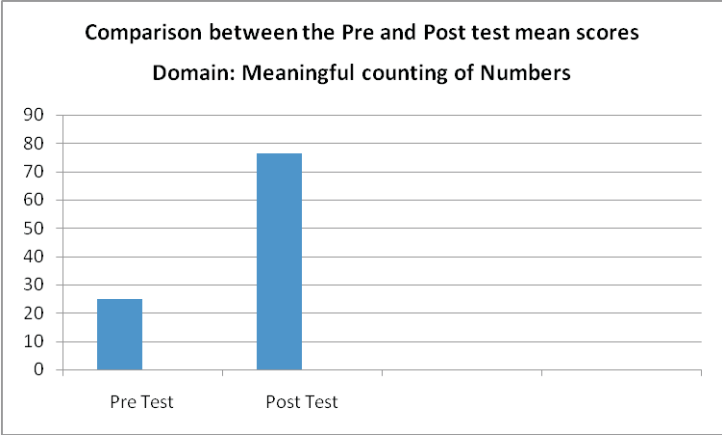


Figure 4.2.2

For the performance of the group in domain –meaningful counting of numbers , mean , standard deviation and t-value were ascertained .Table 4.2.2 shows mean score is 25 at pre test while post test mean score is 76.20 ,showing a gain of 51.20 .thus a comparative difference of mean scores clearly proves that intervention has improved academic

performance .SD reveals that the sample baselines for learning characteristics at pre test

were same amongst the sample group reflecting homogeneous academic status .After intervention ,change in SD shows increase from 0.00 to 2775 .On administering t test to compare means scores of pre and post test ,the P-value was found to be 0.001,which is highly significant endorsing that CAI method of instruction has significant influence

on learning levels of the given sample size

t-test results for pre and post test on Domain-Naming of colours

Domain	N	Pre Test		Post Test		Difference of Means	t-value	Significance
		Mean	SD	Mean	SD			
Naming colours RED	5	7.00	0.000	22.00	0.837	15.200	40.624	0.000
Naming Colours Blue	5	7.00	0.000	21.20	1.304	14.200	24.353	0.000
Naming Colours Yellow	5	7.00	0.000	20.00	1.414	13.000	20.555	0.000

Table 4.2.3

p-value < than 0.005 ,hence ‘t’ is highly significant

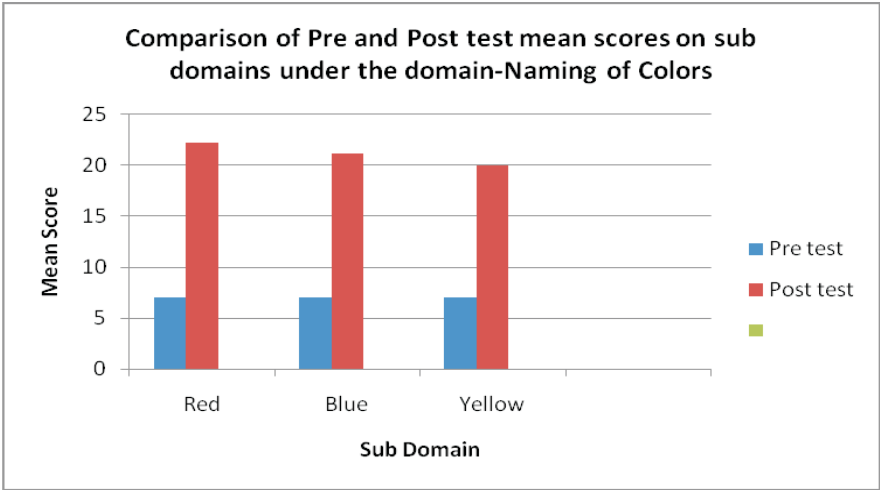


Figure 4.2.3

Table 4.2.3 shows mean score is 7 at pre-test in all the three sub domains while post test mean score is 22.20,21.20 and 20.00 respectively,showing gain in all the three subdomains. Thus comparative difference of mean scores clearly proves improvement in academic performance. A t-test result shows ,p –value found to be 0.001,which is highly significant endorsing CAI has significant influence on learning of the sample.

t-test results for pre and post test on domain –naming of Animals

Domain	N	Pre Test		Post Test		Difference of Means	t-value	Significance
		Mean	SD	Mean	SD			
Naming of Animals: DOG	5	7.00	0.000	22.00	0.000	-	-	-
Naming of Animals: CAT	5	7.00	0.000	21.40	0.894	14.400	36.000	0.000
Naming of Animals: COW	5	7.00	0.000	20.40	0.548	13.40	54.705	0.000

Table 4.2.4

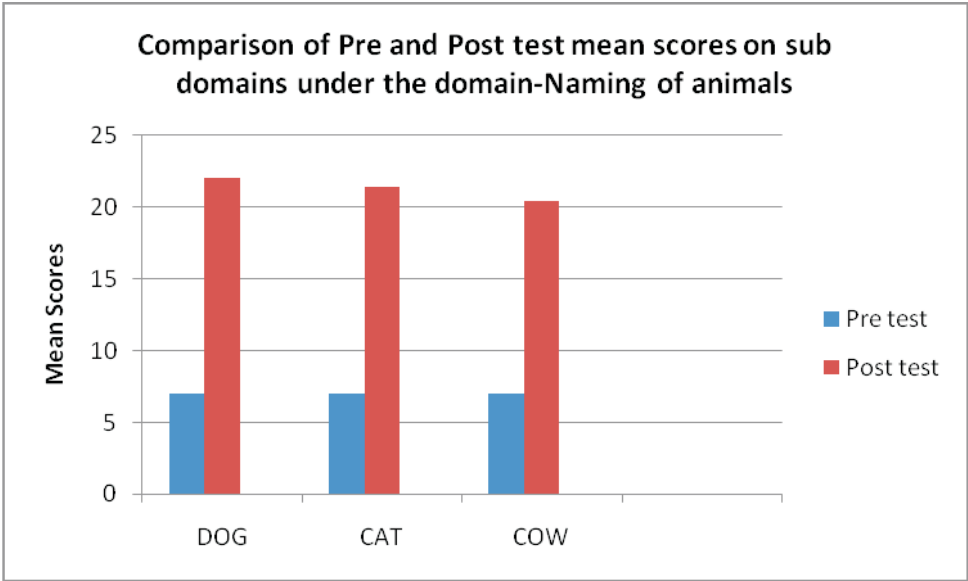


Figure 4.2.4

Table 4.2.4 shows mean score is 7 at pre-test in all the three sub domains while post test mean score is 22,21.40 and 20.40 respectively,showing gain in all the three subdomains. Thus comparative difference of mean scores clearly proves that interventation improved academic performance. A t-test result shows ,p –value found to be 0.001,which is highly significant endorsing CAI has significant influence on learning of the sample.

From all the above analysis and result it is proved that CAI has significant effect on academic performance of the children with mild mental retardation. Hence,

1. Research hypothesis -CAI will have significant effect on academic performance (Domain 1-Naming of animals ,Domain 2-Naming of colours ,Domain 3 – Meaningful counting of numbers) amongst children with mental retardation is accepted.
2. Null hypothesis - CAI will not have any effect on academic performance (Domain 1-Naming of animals ,Domain 2-Naming of colours ,Domain 3 – Meaningful counting of numbers) amongst children with mental retardation is rejected.

Major findings

- CAI increased students learnings outcomes .
- CAI has an impact on learning literacy and numeracy skills.
- Students showed increase in their attention span.
- Students were highly motivated .
- CAI increased communication and cooperation among the students.
- More exposure is required to operate the system independently.

Recommendations:

The results of the present study indicated that CAI is effective for the children with mental retardation . Further research may be conducted

- With a large group of samples for generalization
- With a different age groups of children
- With a children associated with other conditions such as autism or cerebral palsy
- With a longer duration of time o generalize the results
- To develop appropriate software through research .
- To incorporate CAI in an inclusive educational setting .

Conclusion

Let us strive for creating high technology classrooms to make our children have global outlook . There are various strategies that educators use to teach in a typical classroom setting .However ,these strategies are not always the same in special education classrooms ,especially in terms of teaching students with significant cognitive disabilities. Until recently most people with developmental disabilities have used computers almost entirely for learning academic and basic life skills .But computers can also help in developing social and interpersonal skills.

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