

CHAPTER-IV

ANALYSIS AND INTERPRETATION

The present chapter deals with the analysis and results of the data. The analysis and interpretation of data forms a major part of any research study. It forms the basis for conclusions to be drawn and enlightens us with the facts that curbing the doubts in that area of investigation. The present research enlighten the impact of CAI on the development of motor academic and communication skills in children with mental retardation. In this study, Computer Assisted Instruction (CAI) constituted the independent variable, whereas motor functioning level, academic level and communication skill constituted the dependent variables.

The present study was an attempt to assess the impact of CAI on the development of motor, academic and communications skills in mentally challenged children. For this purpose, two groups were formed namely experimental and control group on the basis pre-test. Further experimental group was subjected to treatment through CAI. The results and discussion are presented under the following sections:

Section – I = Comparison of the Pre-test between Experimental and Control Group on Motor, Academic and Communication skills.

Section – II = Comparison between the Post-test of Experimental and Control Group on Motor, Academic and Communication skills to see the effect of training programme.

Section – III = Comparison of post-test I and post-test II of Experimental Group on Motor, Academic and Communication skills after one month of completion of the training to see the impact on motor, academic and communication skills.

SECTION – I

4.1 Comparison of the Pre-Test Results of Experimental and Control Groups on Motor, Academic and Communication Skills

In a two group pre-test post-test control group design, it is essential to ascertain that both the groups selected for the study are equal. For this purpose, the researcher administered the ‘BASIC-MR’ to the students of both experimental and control group and the result of the same has been interpreted as below:

Objective No. 1: To compare the motor functioning level of experimental and control groups before training.

Hypothesis No. 1: There exists no significant difference between experimental and control group in motor functioning level before training.

Table - 4.1 Significance of Mean Difference between Experimental Group and Control Group on Motor Functioning in Pre-test Phase

Group	N	Mean	SD	S _{Ed}	T
Experimental	19	115.74	31.305	10.130	.057 ^{NS}
Control	19	116.32	31.140		

df= 36 Table Value at .05 level = 2.03 NS= Not Significant

It is evident from table 4.1 that mean of the motor skill scores of the experimental and control group in pre-test phase are 115.74 and 116.32 which means that both the two groups are homogeneous. However the calculated value of ‘t’ is .057 which is less than the table value for the degree of freedom 36 at .05 level of significance which means that the value is not significant. Therefore, the hypothesis stating that the ‘motor functioning level of experimental group is likely to be same as control group before training’ is accepted. It indicates that experimental and control group do not differ significantly in pre-test phase so far as motor functioning of the children with mental retardation is concerned.

Objective No. 2: To compare the academic level of experimental and control groups before training.

Hypothesis No. 2: There exists no significant difference between experimental and control group in academic level before training.

Table - 4.2: Significance of Mean Difference between Experimental Group and Control Group on Academic Level in Pre-test Phase

Group	N	Mean	SD	S _{Ed}	T
Experimental	19	145.68	52.717	16.277	.010 ^{NS}
Control	19	145.84	47.482		

df= 36 Table Value at .05 level = 2.03 NS= Not Significant

It is evident from table 4.2 that mean of the motor skill scores of the experimental and control group in pre-test phase are 145.68 and 145.84 which means that both the two groups are homogeneous. However the calculated value of ‘t’ is .010 which is less than the table value for the degree of freedom 36 at .05 level of significance which means that the value is not significant. Hence, the hypothesis stating that ‘there exists no significant difference between experimental and control group in academic level before training’ is accepted. It indicates that experimental and control group do not differ significantly in pre-test phase so far as motor functioning of the children with mental retardation is concerned.

Objective No. 3: To compare the communication level of experimental and control groups before training.

Hypothesis No. 3: There exists no significant difference between experimental and control group in communication level before training.

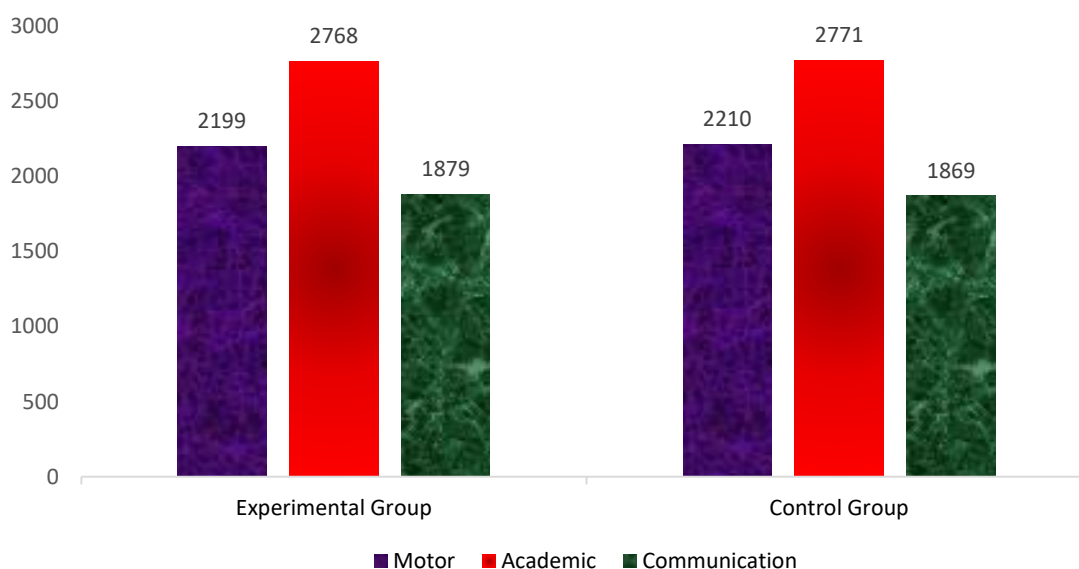
Table - 4.3 Significance of Mean Difference between Experimental Group and Control Group on Communication in Pre-test Phase

Group	N	Mean	SD	S _{Ed}	T
Experimental	19	98.89	32.369	9.727	.054 ^{NS}
Control	19	98.37	27.385		

df= 36 Table Value at .05 level = 2.03 NS= Not Significant

It is evident from table 4.3 that mean of the motor skill scores of the experimental and control group in pre-test phase are 98.89 and 98.37 which means that both the two groups are homogeneous. However the calculated value of 't' is .054 which is less than the required table value for the degree of freedom 36 at .05 level of significance which means that the value is not significant. Hence, the hypothesis stating that 'there exists no significant difference between experimental and control group in communication level before training' stands accepted. It indicates that experimental and control group do not differ significantly in pre-test phase so far as motor functioning of the children with mental retardation is concerned.

Figure - 4.1: Gain Score of Experimental Group and Control Group in Pre-test



It is evident from figure 4.1 that gain score in the motor functioning of the experimental and control group in pre-test phase are 2199 and 2210 which means that both the two groups are homogeneous. It indicates that experimental and control group do not differ significantly in pre-test phase so far as motor functioning of the children with mental retardation is concerned. The gain score in the academic skill of the

experimental and control group in pre-test phase are 2768 and 2771 which means that both the two groups are homogeneous. It indicates that experimental and control group do not differ significantly in pre-test phase so far as motor functioning of the children with mental retardation is concerned. The gain score in the academic skill of the experimental and control group in pre-test phase are 1879 and 1869 which means that both the two groups are homogeneous. It can be seen experimental and control group do not differ significantly in pre-test phase so far as motor functioning and academic level of the children with mental retardation is concerned.

SECTION – II

4.2 Comparison between the Post-Test Scores of Experimental and Control Group on motor, academic and communication skills

The main purpose of the present study was to measure the effectiveness of the intervention programme on motor, academic and communication skills in children with mental retardation. In order to assess the significance of difference between the mean post-test scores of experimental and control group on motor, academic and communication skills, t-tests were calculated thus, obtained have been presented in table 4.4 to 4.6

Objective No. 4: To compare the motor development of experimental and control groups after training.

Hypothesis No. 4: Motor functioning level of experimental group is better than control group after training.

Table - 4.4 Significance of Mean Difference between Experimental Group and Control Group on Motor Functioning in Post-test Phase

Group	N	Mean	SD	S _{Ed}	T
Experimental	19	122.84	30.907	10.198	.423 ^{NS}
Control	19	118.53	31.947		

df= 36 Table Value at .05 level = 2.03 NS= Not Significant

From the above table it can be interpreted that the mean values of the experimental and control group after the post test-I is 118.83 and 122.84 respectively which shows the significant difference between them. However the calculated value of 't' is .423 for the degree of freedom 36 which is less than the table value at .05 level of significance which means that there is significant difference between the experimental and control group after the post test-I. Hence the hypothesis stating that motor functioning level of experimental group is better than control group after training is rejected.

Objective No. 5: To compare the academic level of experimental and control groups after training.

Hypothesis No. 5: Academic level of experimental group is better than control group after training.

Table - 4.5 Significance of Mean Difference between Experimental Group and Control Group on Academic Level in Post-test Phase

Group	N	Mean	SD	S _{Ed}	T
Experimental	19	181.74	55.185	16.882	2.04
Control	19	147.89	48.677		

df= 36 Table Value at .05 level = 2.03

From the above table it can be interpreted that the mean values of the experimental and control group after the post test-I is 181.74 and 147.89 respectively which shows the significant difference between them. However the calculated value of 't' is 2.04 for the degree of freedom 36 which is greater than the table value at .05 level of significance which means that there is a significant difference between the experimental and control group after the post test-I. Hence the hypothesis stating that the academic level of experimental group is better than control after training is accepted.

Objective No. 6: To compare the communication level of experimental and control groups after training.

Hypothesis No. 6: Communication level of experimental group is better than control group after training.

Table - 4.6 Significance of Mean Difference between Experimental Group and Control Group on Communication Level in Post-test Phase

Group	N	Mean	SD	S _{Ed}	T
Experimental	19	118.68	30.245	9.320	2.073
Control	19	99.37	27.122		

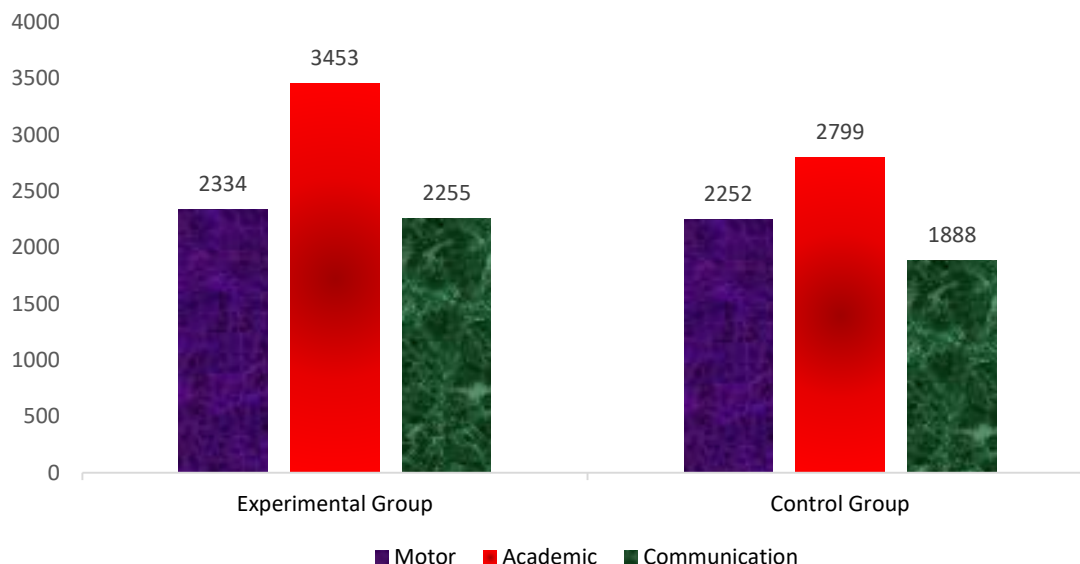
df= 36 Table Value at .05 level = 2.03

From the above table it can be interpreted that the mean values of the experimental and control group after the post test-I is 118.68 and 99.37 respectively which shows the significant difference between them. However the calculated value of ‘t’ is 2.073 for the degree of freedom 36 which is greater than the table value at .05 level of significance which means that there is a significant difference between the experimental and control group after the post test-I. Hence the hypothesis stating that the communication level of experimental group is better than control after training is accepted.

It can be seen in the figure below that the gain score of the experimental and control group in motor functioning after the post test-I is 2334 and 2252 respectively which shows the difference between them. It indicates that experimental group has improved their motor functioning significantly than control group. The gain score of the experimental and control group in academic skill after the post test-I is 3453 and 2799 respectively which shows the significant difference between them. It indicates that experimental group has improved their academic skill as far as motor functioning than control group. The gain score of the experimental and control group in communication skill after the post test-I is 2255 and 1888 respectively which shows the

significant difference between them. It indicates that there is significant improvement in the communication skill of experimental group than control group.

Figure - 4.2: Gain Score of Experimental Group and Control Group in Post-test I



SECTION – III

4.3 Comparison between the Post-test I and Post-Test II Scores of Experimental Group after one month of completion of the training to see the impact on motor, academic and communication skills.

In this part, the comparison between post-test I and post-test II mean score of experimental group has been made to see how far the intervention programme has been effective on the development of motor, academic and communication skills in children with mental retardation. The analysis has been made in table 4.7 to 4.9.

Objective No. 7: To compare the motor development of experimental group after one month of training.

Hypothesis No. 7: Motor functioning level of experimental group in post-test-II is better than the experimental group in post-test-I.

Table - 4.7 Significance of Mean Difference between Post-test I and Post-Test II Scores of Experimental Group on Motor Functioning Level

Group	N	Mean	SD	S _{Ed}	T
Experimental Post-Post I	19	122.84	30.907	.330	2.348
Experimental Post-Post II	19	122.81	31.114		

df= 36 Table Value at .05 level = 2.03

From the above table it can be interpreted that the mean values of the post-test I and post-test II of the experimental group is 122.84 and 122.81 respectively which shows that both the groups are homogeneous. However the calculated value of 't' is 2.348 for the degree of freedom 36 which is greater than the table value at .05 level of significance which means that there is a significant difference between the post-test I and post-test II of the experimental group. It shows that effect of training on the motor functioning level is reducing. Hence the hypothesis stating that the motor functioning level of experimental group in post-test-II is better than the experimental group in post-test-I is rejected.

Objective No. 8: To compare the academic level of experimental group after one month of training.

Hypothesis No. 8: Academic level of experimental group in post-test-II is better than the experimental group in post-test-I.

In the below table it can be interpreted that the mean values of the post-test I and post-test II of the experimental group is 181.7 and 178.53 respectively which shows the significant difference between them. However the calculated value of 't' is 5.846 for the degree of freedom 36 which is greater than the table value at .05 level of

significance which means that there is a significant difference between the post-test I and post-test II of the experimental group which shows the effect of training on the academic level of the students. Hence the hypothesis stating that the academic level of experimental group in post-test-II is better than the experimental group in post-test-I is rejected.

Table - 4.8 Significance of Mean Difference between Post-test I and Post-Test II Scores of Experimental Group on Academic Level

Group	N	Mean	SD	S _{Ed}	T
Experimental Post-Post I	19	181.74	55.185	.549	5.846
Experimental Post-Post II	19	178.53	54.469		

df= 36 Table Value at .05 level = 2.03

Objective No. 9: To compare the communication level of experimental group after one month of training.

Hypothesis No. 9: Communication level of experimental group in post-test-II is better than the experimental group in post-test-I.

Table - 4.9 Significance of Mean Difference between Post-test I and Post-Test II Scores of Experimental Group on Communication Level

Group	N	Mean	SD	S _{Ed}	T
Experimental Post-Post I	19	118.68	30.245	1.032	.889
Experimental Post-Post II	19	118.47	30.255		

df= 03 Table Value at .05 level = 2.03

From the above table it can be interpreted that the mean values of the post-test I and post-test II of the experimental group is 118.68 and 118.47 respectively which shows that both the groups are homogeneous. However the calculated value of ‘t’ is .889 for the degree of freedom 36 which is less than the table value at .05 level of

significance which means that there is no significant difference between the post-test I and post-test II of the experimental group. It shows that effect of training on the communication ability of the students. Hence the hypothesis stating that the communication level of experimental group in post-test-II is better than the experimental group in post-test-I is accepted.

4.4 DISCUSSION OF THE RESULTS

On the basis of the results obtained emerged from the analyses and interpretations of the data, it can be concluded that there exists significant difference between the post-test scores of experimental and control group on the motor functioning level, academic level and communication skills in children with mental retardation. It leads to infer that the children with mental retardation who exposed to training programme have better improvement in their motor functioning level, academic level and communication skills.

Findings of the present study can be supported by the results of the study conducted earlier by Biemiller (2003), Calhoun, Jmaes M. (2011), K. David et al (2004), M. L. Campbell et al (2008), Mary Jo Noonan (2000), Paul Macaruso and Alyson Rodman (2011), Anitha (2005), Kumar (2012), Narayan et. Al. (1994), Rajkamlesh (2008).

Biemiller (2003) found that computer assisted instruction as self-learning materials are influenced by present studies learning in student centered. In a study, conducted by Calhoun, James M. (2011), it was found that computer assisted instruction (CAI) approach as an intervention for low performing students or slow learner is much better than any other approach for intervention. K. David et al (2004) found that learning science has both intellectual and full of feeling suggestions for kids with learning inability. PC innovation gives subjectively captivating and inspiring

instructional devices for a) individualizing the method of conveyance, b) creating master coaches c) tying down direction d) coordinating science with different subjects e) lessening psychological load on working memory. These applications are talked about with suggestions for instructing science to understudies with LD.

Mastropieri, Scruggs and Shiah (1997) concluded that the youngsters with mellow intelligent weakness might be effectively utilize CAI helped direction to encourage number crunching critical thinking. M. L. Campbell et al (2008) concluded that the CAI was best to teach learning technique in enhancing letter sounds to all understudies. Also understudies gained some letter sounds focused for different understudies and coincidental data. Mary Jo Noonan (2000) investigated that CAI was either equivalent or better than TAI technique crosswise over aptitudes and members. Pang Leung (2005) investigated that applicability of behavioural techniques and CAI in improving math skills of students with mental retardation. Similarly, Podell, Tournaki-Rein and Lin (1992) investigated that in subtraction students through computer assisted instruction condition required fewer trials to mastery the task than did students in paper and pencil condition. Vashisht K. C. & Malik S. (2001) explored the computer was a powerful tool to combine approaches and tailor course to meet individual needs. The study conducted by Tzu-Hua Huang et al (2012) revealed that those children learn through CAI having more gain achievement than the control group of students learn by paper pencil or chalk board method. It is observed that CAI methods save time and energy while teaching to children with mental retardation.

Considering the findings of the present study along with the studies conducted earlier, it can be concluded that there exists significant difference between the post-test of experimental and control group on the development of motor, academic and communication level in children with mental retardation. It reveals that training

programme given to the experimental group came out to be effective. After the programme it was observed that the children of experimental group have better improvement in their motor, academic and communication level. It might be due to the training programme in the tremendous way considering the levels, potentiality and circumstances of the students. Another reason of positive effect of the programme might be the interest and attention shown by the students during training programme. The supports extended by the class teachers and the parents to children for participating in the programme may also be the important factors to find the positive effect of training programme.