CHAPTER 4

ANALYSIS OF DATA AND INTERPRETATIONS OF THE RESULT

4.1 Introduction

In the previous chapter, the researcher defined the appropriate methodology and sample of the study. The researcher prepared the appropriate tool for data collection and determined the scoring criteria for the tool.

In this chapter, the appropriate statistical tools have been used to analyse the data collected from the student through the questionnaire, such as sum, mean and t-test and the results obtained thereby have been interpreted.

4.2 Testing of Hypotheses

4.2.1 Hypothesis 1

$H_0$1 : There is no significant difference between the mean scores of pre-test of the experimental and control groups in the academic achievement test of Physics.

Table 4.1 : Independent Samples t-test for control and experimental group (Pre-test)

Group	N	Mean	SD	Df	P	t-cal	t-crit	Interpretation	Decision
Control	30	8.33	3.13	58	0.18	1.25	1.67	Not Significant	$H_0$1 Accepted
Experimental	30	9.43	3.61						

Note: Df = Degree of Freedom, t-cal = t-calculated, t-crit = t-critical, SD = Standard Deviation

Table 4.1 reveals the outcome of the analysis of the pre-test scores of the learners who underwent ICT - Mediated learning and the traditional approach to teaching. In the control group, the mean and standard deviation were M = 8.333, SD = 3.133, whereas in the experimental group, they were M = 9.4333, SD = 3.616. From the table, it is also evident that no statistically significant difference exists between the pre-test scores of the two groups of learners. At the 0.05 level of significance, the calculated t-value (1.259) is less than the critical t-value (1.671). In addition, the p-value (0.181) is greater

than the 0.05 level of significance. Hence, H_01 receives support, implying that there was no significant difference between the two groups, meaning that both experimental and control groups were equal before the start of the treatment, coming from the same class.

4.2.2 Hypothesis 2

H_02 : There is no significant difference in the academic achievement of students taught through ICT-mediated in Physics.

Table 4.2 Paired sample t-test for experimental group (Pre-Test and Post Test)

Test	N	Mean	SD	Df	P	t-cal	t-crit	Interpretation	Decision
Pre test	30	9.43	3.61	29	0.00	23.42	1.69	Significant	H_02 not Accepted
Post test		17.96	3.99						

Note: Df = Degree of Freedom, t-cal = t-calculated, t-crit = t-critical, SD = Standard Deviation

Table 4.2 describes the comparative study of learner outcomes of the pre-test and post-test scores of the experimental group undertaking a ICT – Mediated teaching. According to the table, there is a significant difference between the pre-test (M=9.433, SD= 3.616) and post-test results (M= 17.966, SD= 3.995) of the students exposed to ICT – Mediated learning. From the output result, it is clear that learner test results in the pre-test and post-test scored highly significant difference for those exposed to the game-based instructional method. The p-value of 0.0000 is less than the 0.05 level of significance. Furthermore, a t-test analysis also confirmed that the computed value of the t-statistic (23.423) is greater than the critical t-value (1.699). Hence, the null hypothesis H_02, which states that there is no significant difference in the pre-test and post-test scores of the experimental group, is rejected. This implies that students can get better marks when ICT - Mediated strategy is at work.

4.2.3 Hypothesis 3

H_03 : There is no significant difference between the mean academic achievement scores of students taught using ICT-mediated instruction and those taught using traditional teaching methods in Physics.

Table 4.3 Independent Samples t-test for Post-test of control and experimental group

Group	N	Mean	SD	Df	P	t-cal	t-crit	Interpretation	Decision
Control	30	14.5	3.84	58	0.00	3.42	1.67	Significant	$H_0$3 not Accepted
Experimental	30	17.96	3.99						

Note: Df = Degree of Freedom, t-cal = t-calculated, t-crit = t-critical, SD = Standard Deviation

Table 4.3 shows the results of an independent t-test, where the variance is assumed to be unequal, to compare the overall mean score of the experimental and control group concerning the post-test. In the control group, the mean and standard deviation were 14.5 & 3.848, while those of the experimental group were 17.96 & 3.995. In Table 4.3, at the 0.05 level of significance, the t-calculated value 3.42 is greater than the t-critical value of 1.671. Since the computed p-value 0.0014 is less than the 0.05 level of significance, there is a significant difference in the post-test scores of the students of both groups. $H_0$3 was thus rejected. This outcome underpinned that the difference does exist between the achievement of students exposed to the ICT – Mediated teaching strategy and those taught through the traditional method. In another way, the experimental group outscored significantly the control group.