Enhancing Science Education in the K-12 Program: Exploring the Impact of Differentiated Instruction Strategies

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Abstract

This study aimed to determine the level of academic achievement of the grade 7 Biology class during the second period using the differentiated instruction for the experimental group. Pre-test post-test experimental design was utilized in this study. The research subjects-respondents of this study were the grade 7 students of one Secondary Education Institutions in the Philippines . The data in this study were obtained using the questionnaires. Frequency, mean, t-test, and f-test were the statistical tools used in this study. A 0.05 level of significance was used to determine whether the hypothesis set in the study will be rejected or accepted. The statistical computations were done using the Statistical Package of Social Science (SPSS). The research findings revealed that the level of achievement of the grade 7 students in Biology during the pre-test and post-test and when take as a whole were very low. However, when grouped according to the experimental and control group, the pre-test post-test of the experimental group ranges from very low to very high, while the control group ranges from very low to average. Findings, also revealed that there is a significant difference in the mean gains in the pre-test and post-test of the experimental and control group. The study also revealed that there is no significant difference between the levels of achievement of the subject-respondents when grouped according to the identified variables in their profiles.

Key words: *Experimental, Student's Achievement, Biology, Pre-test, Post-test*

Introduction

The Enhanced Basic Education Act of 2013, or the K—to—12 Act, establishes a "universal kindergarten" and introduces Grades 11 and 12 to high school education in public and private schools. Aquino said Republic Act No. 10533 institutionalizes a system of education that "truly imbues our youth with the skills they need to pursue their dreams". "By signing this bill into law, we are not just adding two years of additional learning for our students; we are making certain that the coming generations are empowered to strengthen the very fabric of our society, as well as our economy," he told lawmakers, Cabinet officials, diplomats and students.

The law, Aquino stressed, was crafted to plug the shortcomings of the 10—year basic education cycle in which students had less time to understand their lessons, and had to compete with better—prepared graduates from other countries. Every child learns differently (Pearson A. 2008). Different children have different personalities, and likewise, children have different intelligences and learning styles—some are visual—spatial learners, some auditory learners, some kinesthetic learners, and some a combination (Armstrong, T. 2008) Howard Gardner also stressed that human beings differ from one another in a multitude of ways. Just as two people may have different eye colors or different body types, each person has his own individual learning style. Karissa (2008) attested that it is very important that lessons are differentiated to allow for all students to understand and enjoy learning about new concepts. Differentiated instruction, according to Carol Ann Tomlinson (as cited by Ellis, Gable, Greg, & Rock, 2008, p. 32), is the process of "ensuring that what a student learns, how he or she learns it, and how the student demonstrates what he or she has learned is a match for that student's readiness level, interests, and preferred mode of learning" Differentiation stems from beliefs about differences among learners, how they learn, learning preferences and individual interests (Anderson, 2007). Differentiated instruction is a teaching method in which teachers adapt their instruction to accommodate a variety of learning needs. It is more than simply

helping students that need extra assistance after a lesson is presented. It is proactively developing a variety of teaching materials so that all students within classroom can learn effectively regardless of differences in learning style or academic skill (Gregory, G. 2009). Classrooms are currently filled with students who have enormous differences in their readiness, interests, cultural backgrounds, prior knowledge, and learning profiles. Looking at a typical classroom and the ability levels within it, one can conclude that teachers who do not differentiate teach only a fraction of their students (Armstrong, T. 2009).

In other words, a differentiated classroom provides different avenues to acquiring content, to processing or making sense of ideas, and to developing products so that each student can learn effectively she added. Why do we use Differentiated Instruction? No two students are the same. They always have different abilities and they always have different learning styles due to their multiple intelligences such as Verbal or Linguistic, Musical, Logical of mathematical, Visual or Spatial, Kinesthetic, Naturalistic, Intrapersonal and Interpersonal. As teachers, we should get to know the ways in which we can use differentiated instruction such as multiple intelligences, levelling or scaffolding, adjusting assignment, curriculum compacting and flexible grouping (Wormeli, R. 2008).

Teachers ought to be flexible and should not stick to one way of teaching and certainly not teaching dictatorially. There is NO one best way of teaching and that teaching and learning should both accommodate the level of the students. In one class, we have so many students with different levels of potential and different learning styles and the teacher must use a mixture and variety of teaching methods and strategies that will ensure all students are reached out (Benjamin, A. 2007). For example, some students learn best by copying notes from the blackboard and others understand better when the teacher explains to them. Yet there are others who learn better when the teacher is able to connect what he is teaching to real-life examples. And there are others who learn through images and visuals that a teacher might have brought to class. A good teacher who practices differentiated teaching will be able to employ these skills and more in a class. A teacher who practices differentiated teaching also will not risk having a student get left behind in class he added. Daniels, H. (2008) also stressed that teacher who practices this is also able to tell which student progresses more than the others, thus allowing the teacher to set extra tasks for the student to complete while the rest of the students are doing their work. How many times have you been told to sleep by a teacher in the class when you finish a task faster than the rest? Shouldn't the teachers challenge the advanced student more by giving more tasks to do rather than wasting time to sleep and be quiet? In fact, the teacher could also assign the clever student to help his classmates as well. That's the mark of a good teacher! It's no wonder there are so many students who are disillusioned with the school and find schools boring. The school is not boring but the teaching methods and the work assigned simply does not match the potential of the child.

Once a child has mastered something, he would want to do other things instead of just doing the same thing he's already mastered he explained. In light of this premise, the researcher has a strong conviction that there is a need to differentiate instruction especially in Science, Furthermore, in One Secondary Education Institution, Division of Negros Occidental where the teacher is presently assigned as Science teacher, it has been observed that students enjoyed much and performed well in their academic performance when given an activity that are according to their preferences. This was the very thing that prompted this researcher to undergo this study.

Research Problem

The purpose of this study was to find out the effect of differentiated instruction in Science under K- 12 Program. Specifically, this study sought to answer the following questions:

1. What is the level of performance in Science of the subject-respondents before and after the experiment when taken as a whole and when grouped according to experimental and control group?
2. What is the level of performance in Science of the subject-respondents before and after the experiment when grouped according to selected variables?
3. Is there a significant difference between the level of performance of the subject-respondents in the pre-test and post-test and when grouped according to experimental and control group?
4. Is there a significant difference between the level of performance of the subject-respondents in the

pre-test and post-test when they are grouped according to the variables in their profile?

5. Based on the finding of the study what intervention may be developed.

Statement of Hypotheses
1. There is no significant difference between the performance of the subject-respondents in the pre-test and post-test when as a whole and when grouped according to experimental and control group.
2. There is no significant difference between the performance of the subject-respondents in the pre-test and post-test when they are grouped according to selected variables.

Methodology Research Design

The study used the pre-test post-test experimental design. In this particular design, there were two groups, one was given the treatment and the results were gathered at the end. The control group receives no treatment, over the same period of time, but undergoes exactly the same tests. The subject of this study were the grade 7 students in Science. There were 20 students from experimental group and 20 students in the control group. The data gathering instruments used were the second quarter (pre-test and post-test) of the National K-12 Science Learning Modules for grade 7. The researcher used the instructional plans reflected in the learning modules which were modified by the researcher to cater the multiple intelligences of the subject-respondents. These were revised so that differentiated instruction was evident. The modifications of the K to 12 learning modules were checked and approved by Science experts. These instruments were used by the researcher to measure the level of performance of the grade 7 subject-respondents when given a differentiated instruction in Science under the K to 12 program. To determine the level of performance in Science of the subject-respondents during the pre-test and post-test when taken as a whole and when grouped according experimental and control group, mean was used. To determine if there is a significant difference between the level of performance of the subject-respondents in the pre-test and post-test when they are grouped according to identified variables in their profile, t-test and f-test were used. The data were computed using a Window-based SPSS 17.0 version (statistical Package for Social Science) with the help of a qualified statistician.

Results and Discussion

The first concern of this study was to determine the level of performance in Biology in the subject-respondents during the pre-test and post-test when taken as a whole and when taken according to experimental and control group.

Table 1: Level of Performance in Biology of the Subject-Respondents during the Pre-Test and Post-test When Taken As A Whole and When Group According To Experimental and Control Group

Group of subjects	Pre-test			Post-test		
	Mean	SD	Interpretation	Mean	SD	Interpretation
Experimental	8.90	2.63	Very Low	41.70	2.97	Very High
control	7.30	1.98	Very Low	24.65	4.82	Average
As a Whole	**8.10**	**2.44**	**Very Low**	**33.18**	**9.49**	**High**

Legend: SD= Standard Deviation; Int = Interpretation

As shown in table 8, the level of performance in Biology in the subject-respondents during the pre- test and post-test when taken as a whole and when taken according to experimental and control group was average with mean of 8.10;SD=2.44 and 33.18;SD=9.49, respectively. When grouped according to experimental and control group during pre-test the level of performance in Biology of the subject- respondents is very low as indicated by the obtained mean scores of 8.90 and 7.30 respectively. However, in the post-test, the level of performance in Biology of the experimental group was very high while for the control group it was average.

As can be seen in these results, the students in the experimental group had higher mean scores in terms of Biology concepts than the ones in the control group. This is supported by the obtained mean scores of 41.70 and 24.65, respectively. The result of this study was in line with the

views of Koeze P. (2007) on her study about Differentiated Instruction: The Effect on Student Achievement in an Elementary School. This study supported the fact that differentiating for learning styles increases student achievement.

Research conducted by Dunn et al. (1995), revealed that instructional interventions designed to meet the learning needs of the students led to a statistically significant difference in achievement for those students over others not being accommodated. Learning styles inventories should be administered to all students at the beginning of each school year to inform the teacher of this important information. It is research-based and should no longer be an option.

Table 2 : Level of Performance of the Experimental Group According to Age

Test	Pre-test			Post-test		
Age	Mean	SD	Interpretation	Mean	SD	Interpretation
11-12	8.20	1.64	Very Low	40.60	3.13	Very High
13-14	9.41	3.17	Very Low	42.50	2.28	Very High
15-16	8.00	1.00	Very Low	40.33	5.13	Very High
17 @ above	0	0	0	0	0	None
As a whole	**8.90**	**2.63**	**Very Low**	**41.70**	**2.98**	**Very High**

Legend: SD= Standard Deviation; Int = Interpretation

The table reveals that the level of performance in Biology of the experimental group when grouped according to age was very low and very high. Subjects who belong to ages 11-12 year old got very high in the post-test and measuring with means of 41.60 with the standard deviation of 3.13 respectively. Furthermore, those subjects, whose ages range from 13-14 years old got very high in the post test, measuring with mean of 42.50 with the standard deviation of 2.28 respectively. Subjects whose ages range from 15- 16 years old got very high in the post-test measuring with mean of 40.33 with the standard deviation of 5.13 respectively. There was no respondent of the experimental whose ages belong to 17 and above. Table 5 shows the level of performance of the experimental group when grouped according to gender.

Table 3 : Level of performance of the Experimental Group According to Sex

Gender	Pre-test			Post-test		
	Mean	SD	Interpretation	Mean	SD	Interpretation
Male	8.11	1.27	Very Low	40.78	3.38	Very High
Female	9.55	3.29	Very Low	42.45	2.50	Very High
As a whole	8.90	2.63	**Very Low**	41.70	2.98	**Very High**

Legend: SD= Standard Deviation; Int = Interpretation

It shows the level of performance in Biology of the grade 7 experimental group when grouped according to gender was very low and very high. For gender, both male and female got very high during the post-test with a mean of 40.78 and 42.45 respectively. The findings of this study was in contrast with the result of Nwagbo's study (2011) which indicated that male students have higher mean scores than females in terms of Science concepts and processes.

Table 4 : Level of Performance of the Experimental Group According to Parents' Educational Attainment

Educ. Attainment	Pre-test			Post-test		
	Mean	**SD**	**Int.**	**Mean**	**SD**	**Int.**
Elementary	9.25	2.79	Very Low	41.56	3.14	Very High
High school	7.50	1.29	Very Low	42.25	2.50	Very High
College	0	0	0	0	0	None
Vocational	0	0	0	0	0	None
As a whole	**8.90**	**2.63**	**Very Low**	**41.70**	**9.49**	**Very High**

Legend: SD= Standard Deviation; Int = Interpretation

The table reveals the level of performance in Biology of the experimental group when grouped according to parent's educational attainment. The result presented in this table shows that those subjects of the study whose parents were elementary graduates got very low in the pre-test and very high in the post- test with a mean of 9.25 and 41.56 respectively, while those respondents whose parents are high school graduates also got very low in the pre-test and very high in the post-test with the mean of 7.50 and 42.25 respectively. This means that parents' educational attainment does not have the bearings on the academic performance of their children in these aspects.

Table 5 : Level of Performance of the Experimental Group According to Monthly Family Income

Family Income	Pre-test			Post-test		
	Mean	**SD**	**Int**	**SD**	**Mean**	**Int**
5,000.00-10,000.00	**9.00**	**2.67**	Very Low	**42.00**	**2.73**	Very High
11,000.00-15,000.00	**0**	**0**	None	**0**	**0**	None
16,000.00-20,000.00	**7.00**	**0**	Very Low	**36.00**	**0**	Avera
21,000.00 and above	**0**	**0**	None	**0**	**0**	None
As a whole	**8.90**	**2.63**	Very Low	**41.70**	**2.98**	Very High

Legend: SD= Standard Deviation; Int = Interpretation

It can be gleaned from this table that those subjects of the study whose parents income ranges from 5,000.00- 10,000.00 got very low and very high with the mean of 9.00 and 42.00 respectively, while those monthly family income that ranges from 11,000.00 - 15,000.00 there was no respondent whose parents possessed the income of 11,000.00 to 15,000.00. While those whose parents' income ranges from 16,000.00-20,000.00 got very low and very high in the pre-test and post-test with the mean of 7.00 and 36.00 respectively. This means that parents' monthly income does not affect students' performance.

Table 6 : Level of Performance of the Experimental Group According to Parents' Occupation

Parent Occupation	Pre-test			Post-test		
	Mean	**SD**	**Int**	**Mean**	**SD**	**Int**
Laborer	9.29	2.66	Very Low	42.00	2.69	Very High
Driver	6.67	.57	Very Low	40.00	4.58	Very High
fisherman	0	0	None	0	0	None
Teacher	0	0	None	0	0	None
Other	0	0	None	0	0	None
As a whole	**8.90**	**2.63**	**Very Low**	**41.70**	**2.98**	**Very High**

Legend: SD= Standard Deviation; Int =Interpretation

The data on the table reveals that the performance of the experimental group whose parents are laborer is very low in their pre-test and very high in their post-test with the mean 9.29 and 42.00 respectively. And those whose parents are drivers also got very low and very high in their pre-test and post-test with the mean of 6.67 and 40.00 respectively. There was no respondent whose parents are businessman, fisherman, etc. It means that the parents occupations especially laborer and driver did not affect the performance of their children in this aspects. This result was in line with the study of Robert Onzima P. (2009) Parents' Socio- Economic Status and Pupils Educational Attainment. The researcher concluded that parent' low socioeconomic status did not impacted on pupils' performance, through allowing the children access to resources which are readily available to children from higher socioeconomic status.

Table 7 : Level of Performance of the Experimental Group According to General Average in Elementary

Gen. Average (Elementary)	Pre-test			Post-test		
	Mean	**SD**	**Int**	**Mean**	**SD**	**Int**
75-80	**7.50**	**.70**	**Very Low**	**44.00**	**2.83**	Very High
81-85	**9.27**	**3.38**	**Very Low**	**40.91**	**2.70**	Very High
86-90	**8.71**	**1.38**	**Very Low**	**42.29**	**3.35**	Very High
91-95	0	0	None	0	0	None
96-100	0	0	None	0	0	None
As a whole	**8.90**	**2.63**	Very Low	**41.70**	**2.98**	**Very High**

Legend: SD= Standard Deviation; Int = Interpretation

The results revealed that the level of performance in Biology of the experimental group whose general average are between 75-80 is very low and very high in their pre-test and post-test with the mean of 7.50 and 44.00 respectively. Subject-respondents whose general average are 81-85 and 86- 90 performed very low in their pre-test and very high in their post-test with the following respective means of 9.27 and 40.91 and 8.71 and 42.29. This means that having a high general average in Elementary can't be used as basis to project high grades in High School.

Table 8 : Level of Performance of the Control Group According to Age

Age	Pre-test			Post-test		
	Mean	**SD**	**Interpretation**	**Mean**	**SD**	**Interpretation**
11-12	7.00	1.22	Very Low	26.80	4.49	Average
13-14	7.08	2.15	Very Low	23.83	4.88	Average
15-16	8.67	2.31	Very Low	24.33	5.77	Average
17-above	0	0	None	0	0	None
As a whole	**7.30**	**1.98**	**Very Low**	**24.65**	**4.82**	**Average**

Legend: SD= Standard Deviation; Int = Interpretation

Table 10 reveals that the level of performance in Biology of the control group when grouped according to age is very low and average respectively. Subjects who belong to ages 11-12 years old got average in the post-test measuring mean of 26.80 with the standard deviation of 4.49. Further, those subjects whose ages range from 13-14 years old got average in the post test with mean of 23.83 with the standard deviation of 4.88. Subjects whose ages range from 15-16 years old got very low in the pre-test and average in the post-test with mean of 8.67 and 24.33. There was no respondent whose age belongs to 17 and above.

Table 9: Level of Performance of the Control Group According Sex

Sex	Pre-test			Post-test		
	Mean	SD	Interpretation	Mean	SD	Interpretation
Male	7.22	2.39	Very Low	22.44	4.53	Average
Female	7.36	1.69	Very Low	25.64	5.03	Average
As a whole	7.30	1.98	Very Low	24.65	4.82	Average

Legend: SD= Standard Deviation; Int = Interpretation

The table shows the level of performance in Biology of the grade 7 control group when grouped according to gender is very low and average. For gender, both male and female got average during the post- test with a mean of 22.44 and 25.64 respectively.

Table 10 : Level of Performance of the Control Group According to Parents' Educational Attainment

Educ. Attainment	Pre-test			Post-test		
	Mean	SD	Int.	Mean	SD	Int.
Elementary	7.00	1.97	Very Low	24.81	5.13	Average
High School	8.50	1.73	Very Low	24.00	3.83	Average
College	0	0	None	0	0	None
Vocational	0	0	None	0	0	None
As a whole	7.30	1.89	Very Low	24.65	4.82	Average

Legend: SD= Standard Deviation; Int = Interpretation

Table 10 reveals the level of performance in Biology of the control group when grouped according to parent's educational attainment. The result presented in this table shows that those subjects of the study whose parents are elementary graduates got very low in the pre-test an average in the post-test with a mean of 7.00 and 24.81 respectively, while those parents are high school also go very low in the pre-test and average in the post-test with the mean of 8.50 and 24.00 respectively. This means that parents' educational attainment does not have the bearings on the academic performance of their children in these aspects.

Table 11 : Level of Performance of the Control Group According to Monthly Family Income

Family Income	Pre-test			Post-test		
	Mean	SD	Int	Mean	SD	Int
5,000.00-10,000.00	7.31	1.96	Very Low	24.88	4.99	Average
11,000.00-15,000.00	7.25	2.36	Very Low	23.75	4.57	Average
16,000.00-20,000.00	0	0	None	0	0	None
21,000.00 and above	0	0	None	0	0	None
As a whole	7.30	2.43	Very Low	24.65	4.82	Average

Legend: SD= Standard Deviation; Int = Interpretation

It can be gleaned from this table that those subjects of the study whose parents' income ranges from 5,000.00- 10,000.00 got very low and average in their pre-test and post-test measuring the mean of 7.31 and 24.88 respectively. And those monthly family income that ranges from 11,000.00 - 15,000.00 also got almost same means in their pre-test and post-test. This means that parents' monthly income does not affect students' performance.

Table 12 : Level of Performance of the Control Group According to Occupation

Parent Occupation	Pre-test			Post-test		
	Mean	SD	Int	Mean	SD	Int
Laborer	7.56	1.89	Very Low	25.17	4.79	Average
Driver	4.00	0	Very Low	19.00	0	Average
business	6.00	0	Very Low	21.00	0	Average
Teacher	0	0	None	0	0	None
Other	0	0	None	0	0	None
As a whole	7.30	1.98	Very Low	38.70	4.99	Average

Legend: SD= Standard Deviation; Int = Interpretation

The data on this table reveals that the performance of the control group whose parents are laborer got very low and average in their post-test with the mean of 7.56 and 25.17 respectively. And those subjects whose parents are driver also got very low in the pre-test with the mean of 4.00 and average in the post-test with the mean of 19.00. and those whose parents are businessmen got very low in the pre-test and average in the post-test with the mean of 6.00 and 21.00 respectively. It means that the parent occupation especially laborer, driver and businessmen does not affect the performance of their children in these aspects.

Table 13 : Level of Performance of the Control Group According to General Average in Elementary

Gen. Average (Elementary)	Pre-test			Post-test		
	Mean	SD	Int	Mean	SD	Int
75-80	6.50	.71	Very low	32.00	1.41	Average
81-85	7.55	2.21	Very low	24.82	4.67	Average
86-90	7.14	1.95	Very low	22.29	3.49	Average
91-95	0	0	None	0	0	None
96-100	0	0	None	0	0	None
As a whole	7.30	1.98	Average	24.65	4.82	Average

Legend: SD= Standard Deviation; Int = Interpretation

The results reveals that the level of performance in Biology of the control group whose general average are between 75-80 got very low and average in their pre-test and post-test mean the mean 6.50 and 32.00 respectively. While those whose general average are between 81-85 also got very low in their pre-test with the mean of 7.55 and average in their post-test with the mean of 24.82. while those subjects whose general average are between 86-90 also got very low and average in their pre-test and post-test with the mean of 7.14 and 22.29 respectively. This means that having a high general average in Elementary can't be used as basis to project high grades in High School.

Table 14 : Differences Between the level of Performance of the Grade 7 Respondents during the Pre-test of the Experimental and Control Group

Group	Df	t	P	Interpretation
Experimental Control	38	2.173	0.36	Not Significant

Since the obtained probability value is greater than the 0.05 level that there no significant difference between the level of performance of the grade 7 subject-respondents in the pre-test of the experimental and control group is therefore accepted. Results presented, reflect that the two groups of respondents do not differ significantly in their performance during the pre-test. This means that the grade 7 Biology Class in the

experimental and control group are equated before the experiment has started.

Table 15 : Differences between the level of performance of the grade 7 subject respondents during the post-test of the Experimental and control group.

Group	Df	t	P	Interpretation
Experimental Control	38	13.471	.000	Highly Significant

It is indicated in table 15 that when the t-test for independent means was used to determine the difference between the level of performance of the subject-respondents during the post-test of the experimental and control group, the test yielded the probability value that is less than the 0.05 level of significance. The Hypothesis therefore which states that there is no significance difference between the level of performance of the subject-respondents during the post-test of the experimental and control group is therefore rejected. Results presented above means that the grade 7 subject-respondents of the experimental and control group differ significantly in the level of their performance. Significant differences between the levels of performance of the experimental and control group can be attributed to students' positive response towards the differentiated instruction initiated by the researcher during his experiment.

The results of this study were in line with the views of Bayrak et al (2009) on the effect of Web Based learning Method in Science Education on Improving the Students' Scientific processes. The findings of this study revealed that the post-test scores of the students in the experimental group were higher than the post-test scores of the students in the control group.

Table 18 : Differences Between the Level of Performance of the Experimental Group in the Pre-test and Post-Test When Grouped According to the Identified Variables.

Source Of Variation	Test	Df	t	Sum of square	Mean square	F comp	P	Interpretation
Age	Pretest	3	0	1.526	.305	.681	.645	Not significant
	Posttest	7	0	1.350	.193	.359	.909	Not Significant
Gender	Pretest	18	-1.228	0	0	-924	.235	Not significant
	Posttest	18	-1.274	0	0	.856	.219	Not Significant
Educational Attainment	Pretest	18	1.202	0	0	.176	.245	Not significant
	Posttest	18	-.404	0	0	.722	.691	Not significant
Monthly income	Pretest	18	.731	0	0	0	.474	Not significant
	Posttest	18	2.143	0	0	0	.046	Not significant
Parents occupation	Pretest	18	1.666	1.733	.289	.510	.113	Not Significant
	Posttest	18	1.078	0	0	1.440	.295	Not Significant
Gen average	Pretest	5	0	2.143	.429	1.070	.418	Not Significant
	Posttest	7	0	2.500	.357	.857	.591	Not Significant

As shown in this table, the differences among the level of performance of the experimental group in the pre-test and post-test when grouped according to the identified variables are all not significant. It means that the identified variables did not affect the academic performance of the subjects on this particular study.

Table 19 : Differences Between the Level of Performance of the Control Group in the Pre-Test and Post-Test When Grouped According to their Identified Variables

Source Of Variation	Test	DE	t	8um of square	Mean square	F comp	P	Interpretation
Age	Pretest	6	0	2.633	.439	1.104	.411	Not significant
	Posttest	11	0	4.000	.364	.766	.668	Not Significant
Gender	Pretest	18	-155	0	0	2.496	.878	Not significant
	Posttest	18	-1.025	0	0	.001	.324	Not significant
Educational Attainment	Pretest	18	-1.391	0	0	.145	.181	Not significant
	Posttest	18	.294	0	0	1.362	.772	Not Significant
Monthly income	Pretest	18	.055	0	0	.061	.957	Not significant
	Posttest	18	.409	0	0	.158	.688	Not significant
Parents occupation	Pretest	5	0	.883	.177	.675	.650	Not significant
	Posttest	11	0	1.350	.123	.307	.963	Not Significant
Gen average	Pretest	5	0	1.583	.317	.719	.620	Not Significant
	Posttest	11	0	5.050	.459	1.360	.339	Not significant

As shown in this table, the differences among the level of performance of the control group in the pre- test and post-test when grouped according to the identified variables are not significant. It means that the identified variables did not affect the academic performance of the subjects on this particular study.

Conclusion and Recommendation

Based on the foregoing findings, conclusions were drawn. Students who were exposed to Science module modified to differentiated instruction which is based on (MI) Multiple Intelligences, got high level of academic achievement than those exposed to module prescribed by DepEd. And not based on (MI) Multiple Intelligences Differentiated instruction based on (MI) significantly influenced the acquisition of Science concepts as students' multiple intelligences are considered. The age, sex, educational attainment, monthly family income, parents occupations and general average in elementary show no significant bearings on the level of performance. Generally, the level of academic achievement of the experimental group during the post-test was very high and average for the control group.

In light of the conclusions drawn the following recommendations are hereby formulated. The differentiated instruction based on multiple intelligences should be implemented in the school Because it promotes joyful experiences during the learning process and foster high performance level of the students. Teachers should differentiate instruction based on the students' multiples intelligences to get active involvement of the students. Students learned in different ways. Hence, teachers should therefore, use different strategies in teaching.

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