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Center for Educational Measurement (CEM) Diagnostic Performance Science Achievement of Grades 6 to 10 Students, SY 2015-2016

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ABSTRACT: This quantitative research descriptive- correlational study was conducted to find the out the relationship of the results of Grade 6 to 10 Center for Educational Measurement- Diagnostic Test (CEM) to the Science Achievement of students. Two hundred Twenty- one (221) students were the subjects of Infant Jesus Academy, Kalibo in the School Year 2015- 2016. The dependent variable in this study was the Science Achievement and Center for Educational Measurement (CEM) Diagnostic Performance of Grades 6 to 10 students were the independent variables. Secondary data were used in this study. It underwent validation and analysis. The descriptive statistics used were frequency, percentage, mean and standard deviation. The inferential statistics used were the Pearson r and linear regression to correlate the results of Center for Educational Measurement- Diagnostic Performance to the Science Achievement of the students. The level of significance was set at 5%. Major findings of the study revealed that the results of the performance of the students from Grades 6 to 10 after taking the Central for Educational Measurement- Diagnostic Performance is "average mastery". The level of Science Achievement of the students from grades 6 to 10 after the first three quarters of the school year is "Proficient". There is a significant relationship between the results of Center for Educational Measurement- Diagnostic Performance to the Science Achievements of the students. The results of Center for Educational Measurement- Diagnostic Performance is a significant predictor to the Science Achievements of the students.

KEYWORDS: Assessment, Science Performance, Educational Measurement, Diagnostic Performance

Introduction

Standardized assessment is a lens into the classroom. It sheds light on why a child might be struggling, succeeding, or accelerating on specific elements of their grade-level standards. Results from standardized tests help inform the next step in learning for our students (Malley, 2001). Students take the same test in the same conditions at the same time, if possible, so results can be attributed to student performance and not to differences in the administration or form of the test. For this reason, the results of standardized tests can be compared across schools, districts, or states (Wilde, 2004).

Infant Jesus Academy offers another standardized- diagnostic test at the end of the school year, which is the Center for Educational Measurement (CEM). The CEM diagnostic test is designed to measure the achievement levels of pupils and students in the competencies prescribed by the curriculum of the Department of Education (DepEd).It aims to measure the academic capability of the students in the different academic subjects such as Filipino, English, Mathematics and specifically Science(www.cem-inc.org.ph/glance.july14,2015).

The tests measure competencies in content areas related to analysis, logic and reasoning, critical thinking, judgment, problem solving, and evaluation, among others—essential processes in the K to 12 curriculums. This standardized and diagnostic examination is being administered from Kinder up to Grade 10 and has been practiced by the school since they operate a branch here at Kalibo, Aklan. In addition, the scores in these exams are reported as percentage of items correctly answered.

In the school where the researcher currently teaching, every month of May the administrator and the faculty conducted In- Service Training. One of the main issues taken in the said training was the result Center for Educational Measurement – Diagnostic Test. The scores of the students are being compared to the academic performance of the students. Since Infant Jesus Academy aligned the curriculum based on the Department of Education's (DepEd) Curriculum, IJA's made curriculum and the results of Central for Educational Measurement – Diagnostic Test. The researcher wants to find out if there were relationships among variables which may be a good indicator or predictor to prepare the teachers what are the best techniques and strategies to employ in teaching so that the students will be prepared before getting the CEM- Diagnostic Test.

Statement of the Problem and the Hypotheses

This study was conducted to determine the relationship of Center for Educational Measurement-Diagnostics (CEM) test results in Science and Science Achievement of Grade 6 to Grade 10 students of Infant Jesus Academy, Kalibo, Aklan , Academic Year 2015- 2016.

Specifically, the study sought to answer the following questions:

1. What is the level of Center for Educational Measurement- Diagnostic Performance results in Science of Grade 6 to Grade 10 students?
2. What is the level of Science Achievement of Grade 6 to Grade 10 students?
3. Is there a significant relationship between Center for Educational Measurement- Diagnostic Performance results in Science to the Science Achievement of Grade 6 to Grade 10 students?
4. Is Center for Educational Measurement- Diagnostic Performance results in Science a significant predictor of Science Achievement of Grade 6 to Grade 10 students?

Based on the above stated statement of the problem, the following hypotheses were advanced:

1. There is no significant relationship between the results of Center for Educational Measurement- Diagnostic Performance in Science to the Science Achievement of Grade 6 to Grade 10 students.
2. The Center for Educational Measurement- Diagnostic Performance result in Science is not a significant predictor of Science Achievement of Grade 6 to Grade 10 students.

Methodology

Research Design

The study used the descriptive- correlational method of research.

Participants

The subjects of this study were the students of Infant Jesus Academy who took the CEM- Diagnostic Test in the previous school year. All 221 students were the population size subjected in this study. Census was used in this study. It is the official process counting the number of people in collecting information.

Data-Gathering Instrument

Records or document analysis were used in gathering the secondary data which were the results of Center for Educational Measurement- Diagnostic Test (CEM) and the Science Achievement.

Percent correct (PC) was used to determine the scores of the results of CEM- Diagnostic test of Grade 6 to 10 students. All the raw scores on the test or the number of correct answers were converted to percent correct (PC). It was the proportion of correctly answered items to the total number of items in each content area, cognitive skills (such as remembering, understanding, applying, analyzing and evaluating) or in the whole test. For example, a percent correct (PC) overall score of 75 means that the examinee correctly answered 75 items in a 100- item test. It ranges from 0 to 100.

Average grades of Grades 6 to 10 students in Science subject from first quarter to third quarter were used. By following the components in computing the grades, 1/3 of the grades came from the class standing such as long test (includes written and performance task), quizzes, laboratory/ worksheets activities, home works, seat works and class participation and the 2/3 came from the quarterly examinations. All raw scores were being transmuted using transmutation table.

Results and Discussions

Center for Educational Measurement (CEM) – Diagnostic Performance Results in Science

The result indicates that generally, the students have “average mastery” with a mean of 54.59 and standard deviation of 15. 40.

It implies that the students who took the Center for Educational Measurement- Achievement Test are heterogeneous in terms of achievement level. There were several reasons why Grade 10 students got the lowest standard deviation. These are: the Grade 10 CEM test was not parallel to K-12 curriculum; and there was a deviation in the test administration procedure.

The “average mastery” results of CEM test implies that the students are progressing but the performance is not yet proficient. Students revealed that they tend to memorize facts only for the sake of remembering without analyzing and understanding the context itself. In addition, teachers also reason out that due to many and some extracurricular activities in the school held simultaneously students were not prepared in taking the CEM. Also, the topics listed in the course outlines especially in the fourth quarter are not being discussed by the teachers since the policy of the school, that the 80% of the students should master first the topic before they proceed to the next topic so, the teacher should reteach the specific topic.

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Table 1

Means, Standard Deviation and Descriptions of the Center for Educational Measurement- Diagnostic Performance Result in Science

Grade	Mean	N	SD	Description
Grade 6	60.15	62	14.35	Average Mastery
Grade 7	59.89	19	14.76	Average Mastery
Grade 8	50.05	38	15.72	Average Mastery
Grade 9	57.88	50	16.24	Average Mastery
Grade 10	45.77	52	10.67	Average Mastery
Overall	54.49	221	15.40	Average Mastery

Science Achievement of Grades 6 to 10 Students

The result indicates that mostly of the students have "Proficient" with a mean of 86.00 and the standard deviation is 5.72.

The results indicate that students from grade 6 to 10 have "proficient". It was conform by the teachers, that most of the students has a low retention memory and mostly of the students has a poor study habit. In addition, teachers have difficulty in choosing the right strategies that suits to the needs of the learners since they are grouped in heterogeneously.

The "proficient" result of the level of achievement of the students implies that students at this level have developed the fundamental knowledge and skills and core understandings and can transfer them independently through authentic performance task.

In addition, the students from grades 7 and 8 are the groups perform "approaching proficiency" while the rest of the group perform "proficiency" in the first three quarters of the school year. Grade 8 students are one of the major concerns of the school administration and teachers, since it has been observed that this group of students have a behavioral problem that affect their academic performance, not only in science but also in other subjects.

Table 2

Means, Standard Deviation and Descriptions of the Level of Science Achievement of the Grade 6 to 10 students

Grade	Mean	N	SD	Description
Grade 6	85.74	62	5.47	Proficient
Grade 7	82.84	19	6.45	Approaching Proficiency
Grade 8	84.24	38	5.29	Approaching Proficiency
Grade 9	85.48	50	5.54	Proficient
Grade 10	89.25	52	4.86	Proficient
Overall	86.00	221	5.72	Proficient

Relationship between Center for Educational Measurement (CEM)

Diagnostic Performance Results in Science to the Science Achievement

The data show that the results of Center for Educational Measurement- Diagnostic Test has a significant relationship ($r= 0.470 = p< 0.05$) with the Science Achievements of the Grades 6 to 10 students. It shows that the relationship between the two variables is very high and positive. It means that students who have a higher cognitive ability can get a higher score in CEM- Diagnostic test.

The result also implies that the Center for Educational Measurement- Achievement test results is related to the Science Achievements of the students. This means that results of CEM- Diagnostic Test can be a good predictor to the performance of the students in Science and vice versa.

Table 3

Pearson's r of the Center for Educational Measurement- Diagnostic test and Science Achievement

CEM Test Result in Science	R	.470*
	Sig.	.000
*p<0.05, significant @ 5% level of significance		

Regression Analysis of Center for Educational Measurement-

Diagnostic Performance Result as Predictor of Science Achievement

The regression analysis of Center for Educational Measurement- Diagnostic test result as predictor of Science Achievement of Grades 6 to 10 students is reflected on Table 5. Findings reveal that Center for Educational Measurement- Diagnostic test result in science is a significant predictor of Science Achievement of Grades 6 to 10 students with t= 7.88 = p< 0.05.

This implies that achievement of the students in science can predict their performance in the Center for Educational Measurement- Diagnostic Test at end of the school year. For example, in table 2 it shows that the average score in CEM Diagnostic performance in Science of Grades 6 to 10 student is 54. 49, using the regression equation, the answer is 85.73 or 86.00. The answer is equal to the general average grade shown in table 3 which is 86.00. It simply means that in every 1 notch increase in CEM result there were a corresponding 0.17 increase in Science Achievement. It means that CEM- Diagnostic test is an effective standardized type of test that can determine and predict the level of achievement in science of the students. Since it predicts performance of the students in science which means that the students who have a low result in CEM, may take remedial classes or tutorial as interventions to prepare them for the next school year. By this, it will help the students to improve their future performance in science.

Table 4

Regression Analysis of CEM Test Result in Science as Predictor of Science Achievement

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	76.49	1.25		61.01	.000
CEM Test Result in Science	.17	.02	.470	7.88*	.000
*p<0.05, significant @ 5% level of significance					

Conclusions

Based on the findings of the study stated above, the following conclusions were drawn:

1. The Center for Educational Measurement- Diagnostic Performance results of the students are “average mastery”. This means that students are progressing but the performance is not yet proficient for this level. The results may be due to the effect of the following: test administration procedure; test readiness; completion of the topics in the course outline and the school curriculum should parallel to each other. Similarly, students tend to memorize facts instead analyzing and understanding the concepts is another factor that affects the scores of CEM- Diagnostic Tests.
2. The level of science achievement of the students from Grades 6 to 10 after the first three quarters of the school year is “Proficient”. This means that students have developed the fundamental knowledge and skills and core understandings and can transfer them independently through authentic performance task. Behavioral problems, study habits, family problems, heterogeneous type of students and correct teaching strategies are the factors that affect the academic performance of the students in science. In addition, less exposure of the students to the laboratory and hands- on activities contribute to the factors that affect the performance of the students in science.
3. The results of Center for Educational Measurement- Diagnostic Performance is significantly related to the Science Achievement of the students. Good test takers already tend to have a high level of working memory, processing speed and abstract reasoning skills. It simply means that students who had a higher cognitive skill tends to perform well during the test. Since cognitive skills is one of the nine factors that affect the academic achievement of the students.
4. Results of Center for Educational Measurement- Diagnostic Performance is a good predictor to the Science Achievement of the students. Therefore, CEM- Diagnostic Test is an effective standardized test that can determine and predict the level of achievement in science of the students. So, teacher will have an idea for the possible performance of the students in the whole year. Teachers must employ strategies that will effectively address the learners’ needs.

Recommendations

Based on the findings and conclusions, the following recommendations are suggested.

1. Proper information dissemination to the students and parents carried by the teachers on the reasons why students need to take the CEM- Diagnostic test at the end of the school year. Likewise, the teachers should double their time

in discussing the topics so that the topics listed in the course outline will be discussed so that the knowledge of the students are well equipped before they get the CEM- Diagnostic Test.

In addition, many studies have been conducted the effects of using Center for Educational Measurement-Diagnostic Tests that it has a good effect in the school community. So, the researcher recommends to the school administrators to continue to use this type of Achievement Test. Proper monitoring of the teachers if they integrated the topics where the students find difficulties in the specific topic or areas in the CEM- diagnostic result.

Similarly, guidance counselor and administrators also shall recognize the students who get a higher percentage in CEM in the beginning of the School Year. By this, the students may motivate to perform well during the CEM – Diagnostic Test.

2. One of the core values of Infant Jesus Academy is excellence, meaning students are expected to give their best when it comes to Academic Achievement. Study habits should improve, minimize memorizing facts but rather to understand. Adopting positive mental attitude, asking questions and helps to the adults (e.g. parents, guardians and/or teachers) when they have difficulties in learning and participating in class discussions, and especially avoid procrastination instead self- motivation will help to increase the academic performance of the students.

   Teachers have the most direct, sustained contact with students and considerable control over what is taught and the climate for learning, improving teachers' knowledge, skill and dispositions through professional development is a critical step in improving student achievement. Classroom discussions and activities that involve metacognition should integrated such as analyzing, organizing and elaborating. Through this, the students will be more active in learning.

   The administrators shall motivate the teachers to upgrade their skills in teaching through enrolling graduate studies, attending seminars, workshops and training. Likewise, lessen the activities of the teachers such as paper works and overload subjects, will give enough energy and time in preparing their lessons.

3. The students need to be physically and mentally prepared before getting the exam. In addition, after the result is given, review their performance CEM- Diagnostic Test. By this, they will be informed the skills and topics that they need to develop and give focus.

   Remembering, understanding, applying, analyzing and evaluating are the skills being measured in CEM-Diagnostic Tests. The teacher shall incorporate the skills needed to be enhanced in every class discussion. *In addition, teacher shall observe the proper way on how to administer the test and discuss the results of CEM-Diagnostic Test to the students for proper remediation.*

4. The teacher shall give consideration on the needs of the learners in choosing an effective strategy. They should double their time in discussing the topics so that the knowledge of the students is well equipped before they get the CEM- Diagnostic Test.

   To the test makers of CEM must give an update to each of the school what will be the final coverage of the test. To the future researcher, another variable may be added to this study to find out and to confirm the observations of the teachers and students, as well regarding the factors that affect the science performance and CEM- Diagnostic Test of the students.

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