MODULAR APPROACH: SUSTAINING THE ACADEMIC NEEDS OF STUDENTS IN THE NEW NORMAL

Jerry S. Mamangcas[1], Husna T. Lumapenet[2]

[1] *Teacher I, Aringay National High School, Aringay, Kabacan, Cotabato, Philippines*
[2] *Associate Professor III and IPR Director, Cotabato Foundation College of Science and Technology, Doroluman, Arakan, Cotabato*

ABSTRACT

The study was conducted to determine the effectiveness modular teaching in the academic achievement of Grade 10 secondary students in Science as perceived by the teachers. The study used quantitative experimental type with Equivalent group study design. The data collected of both groups were analyzed and interpreted using mean, standard deviation and t-test. Result indicated that modular approach in teaching and learning can help the students in the new normal education. It further indicated a that the Grade 10 students' academic success in terms of academic performance is outstanding. Meanwhile, the achievement of the learners as indicated by their GPA is a very satisfactory passing grade based on the DepEd grading scale, descriptor, and remark. Result of the study further revealed that the test scores of the student in Science significantly improved in the post test with the used of modular approach in teaching and learning. Moreover, modular approach in teaching and learning significantly influence the students' academic success in terms of performance and achievement.

Keyword: - *Modular Approach, Academic Needs, Students, New Normal.*

1. INTRODUCTION

Researches on teaching show that learning atmosphere that is conducive for learning gives better results in successful learning. A good teacher not only intellectually challenges students, but also supports the students in their effective learning and comprehension. Cognizant with this in the new normal education as the Department of Education continues to deliver its educational goal amidst the pandemic spread of C19, the Department of Education (DepEd) will provide Self-Learning Modules (SLMs) with alternative learning delivery modalities to be provided to different types of learners across the Philippines in its preparation for school year 2020-2021 [1].

Integrating Self-Learning Modules with alternative modalities of learning delivery (modular, television-based, radio-based instruction, blended, and online) will help DepEd ensure that all learners have access to quality basic education for SY 2020-2021 with face-to - face classes that are still banned due to the public health situation.

Self-Learning Modules and other alternative learning delivery modalities are in place to address each and every learner 's needs, situations, and resources, and will cover all bases to ensure that basic education is accessible in the midst of the current COVID-19 crisis [1].

Self-Learning Modules are supplied in printed format to schools located in coastal areas, far-flung provinces and communities without internet or electricity access. The Department has announced for households with gadgets and devices that Self-Learning Modules can be accessed online or offline, too.

DepEd has provided a set of contextualization Self-Learning Modules for each region which was printed and prepared for nationwide distribution, including coastal and far-flung learners.

The Department has also ensured that teachers and staff's safety and health will be their top priority, as Self-Learning Modules can be done at home. To get supplies to plan the Self-Learning Modules, teachers who would need to visit their schools are required to follow the existing work arrangements and health protocols.

With this context, this study is conceptualized to assess the several outcomes, implications, and possible future directions for modular learning approach in secondary education of the Department of Education and to find out the role and effectiveness of a modular approach in teaching and learning to assess students' performance,

achievement and motivation among public secondary school teachers and students in the Municipality of Kabacan, North Cotabato.

2. METHODOLOGY

The study used quantitative experimental type with Equivalent group study design. The data collected of both groups were analyzed and interpreted using mean, standard deviation and t-test. Hypotheses of the study was analyzed using regression and correlation analysis. The study was conducted in selected public secondary schools in the Municipality of Kabacan, North Cotabato, Philippines. Fifty (50) teachers and fifty (50) students from public secondary schools in the Municipality of Kabacan were taken as a sample of the study. Quota sampling was employed in determining the sample size for the quantitative design. The quantitative component set of survey questionnaires was used to gather data from the teachers on the role of modular approach. The tools were subjected to content validity by experts and later pilot tested to obtain its reliability. The statistical tools used for the quantitative data were weighted mean, percentage, multiple linear regressions and correlation analysis in order to answer the hypothesis of the study.

3. RESULTS AND DISCUSSION

The Role of Modular Approach in Teaching

Table 1 shows that the respondents indicated strong agreement that modular teaching can be administered according to needs of the learners and that it is flexible and can be implemented through a variety of schedules. This implies that the public secondary school teachers have a positive perception on the modular approach in teaching.

Modular instruction is one of the latest innovations in the educational system. This innovation in the modular approach contains a series of activities each of which start with teaching instructions addressed to the learners, explanation, exercises and generalizations. A module is defined as a self-contained, independent unit of a planned series of learning activities designed to help the student accomplish certain well-defined objectives. The learner is able to proceed at this own rate and recycle if necessary. Modules emphasized analysis and application of concepts and techniques and gives concrete style of concepts. It also provides active participation of students in responding and a wait to meet areas of individual interest and helps the teacher extend more individualized instruction in school and at home. With this, the learner is able to proceed at his own rate, choose his own learning mode, select along a variety of topics, identify his strengths and weaknesses, and recycle if necessary. Ideally, modules should include pre-test, objective, criteria for success, instructional activities, a post test, and remedial instruction and/or reinforcement. Modular instruction is based on the psychological principle-learning by doing. The learner works by itself and verifies the correctness of his answers by comparing it with the correct one. It also gives the students some provision whereby the student can obtain immediate feedback. Modular instruction promises a more efficient mass education by offering more effective individual instruction at a time when a teacher is faced with a problem of producing learning in a large group all at the same time. It is a technique of self-instruction that involves the presentation of instructional materials to demonstrate their skills and comprehension [2].

Table 1. Role of Modular Teaching in the academic achievement of Grade 10 secondary students in Science as perceived by the teachers.

Indicator	Mean	Description
1. Modules can be administered to a single user, small groups or large groups according to need.	4.64	Strongly Agree
2. Modules program can be easily revised and upgraded by replacing one module by another amending aspects.	3.64	Agree
3. Ensuring an appropriate formative and comprehensive assessment strategy.	3.96	Agree
4. Module programs are flexible in the sense that they can be implemented through a variety of scheduling patterns.	4.28	Strongly Agree
5. Modular are economical to use.	2.86	Moderately Agree
Weighted Mean	**3.88**	**Agree**

Role of Modular Approach in Learning

The teachers indicated agreement that modular approach can help the learners to study within their own environment, learners could relate new ideas to previous existing knowledge and could study modules with minimum disruption to their normal duties and responsibilities. This implies that the teachers perceived the modular approach in learning could be convenient for the students.

Modular teaching is concerned for each student as an individual with his/her own special aptitude and interest, goal of helping each student to think for himself, and allowing the individuality to each learner. The emphasis must be on the one–one student with unique abilities, aspiration, and influencing experiences and, again to provide quality education, the teacher must personalize and individualize the instructional program. When a teacher devoted to individual learning, he/she finds time for personal discussion with students and giving them individual help. The individual learning may help in developing many notable and self-reliant characters, and in much more modern ways, students enjoy periods in which they pursue their interests and satisfy their curiosities [3].

Table 2. Role of modular approach in learning of Grade 10 secondary students in Science as perceived by the teachers.

Indicator	Mean	Description
1. Learners can study modules within their own environment.	4.24	Strongly Agree
2. Learners can study modules with minimum disruption to their normal duties and responsibilities.	3.84	Agree
3. Relating new ideas to previous existing knowledge.	3.90	Agree
4. Providing clear explanations and cognizance base knowledge to students.	3.52	Agree
5. Structuring in a balanced student workload.	3.66	Agree
6. Providing opportunities for students to pursue topics in depth so that they can understand the material for themselves.	3.80	Agree
Weighed Mean	**3.83**	**Agree**

Students' Academic Success

The Grade 10 students' academic success in terms of academic performance as indicated by the test score has a mean score of 24.82 for the Summative Test 1 and 25.68 for the Summative Test 2. The students' performance for the summative tests has a grand mean of 25.25 which implies an outstanding performance. Meanwhile, the achievement of the learners as indicated by their GPA is 86.86 which is a very satisfactory passing grade based on the DepEd grading scale, descriptor, and remark.

Academic performance of students is a key feature in education [4]. (Rono, 2013). It is considered to be the center around which the whole education system revolves. Narad and Abdullah [5]. opined that the academic performance of students determines the success or failure of any academic institution. Signh, Malik and Signh [6]. also argued that academic performance of students has a direct impact on the socio-economic development of a country. Similarly, Farooq, Chaudhry, Shafiq and Behanu [7], asserted that students' academic performance serve as a bedrock for knowledge acquisition and the development of skills. Additionally, Farooq et al., [7] emphasized that the top most priority of all educators is academic performance of students. According to Narad and Abdullah [5] academic performance is the knowledge gained which is assessed by marks by a teacher and/or educational goals set by students and teachers to be achieved over a specific period of time. They added that these goals are measured by using continuous assessment or examinations results.

Table 3. Academic success of the students in terms of performance, and achievement.

Exam	Mean Score (30 items)	GPA	Description
Summative Test 1	24.82		
Summative Test 2	25.68		
Grand Mean	**25.25**	**86.86**	**Very Satisfactory**

Grading Scale		
90-100	*Outstanding*	*Passed*
85-89	*Very Satisfactory*	*Passed*
80-84	*Satisfactory*	*Passed*
75-79	*Fairly Satisfactory*	*Passed*
Below 75	*Did Not Meet Expectations*	*Failed*

Significant Difference between Pre-test and Post-test of the Students in the 5 Modules

Table 4 shows the mean difference and t-value with probability =0.000; 0.0001 & 0.0005 indicated that there is a significant difference between pre-test and post-test of the students in the 5 modules by pair comparison t-test. This significant result implies that the modular approach in the delivery of instruction during the Covid-19 pandemic will eventually improve the performance of the students in their test scores in Science. The correlation coefficient ranges from 0.57 to 0.83 indicated a moderate to a strong linear relationship which means that the higher is the scores of students in the pre-test will eventually result to higher scores in the post test.

Many see modular instruction as another tool to help technology education achieve its goal of exposing students to new technologies. Linnel [8] said that students must deal with the fact that the world is continuously changing and be able to cope with different technological situations. Walker [9] stated that we must present as many situations as possible to our students so they can cope with the unpredictable future. Gloeckner & Putnam [10] cited that modern technology labs are pictured as examples of how to blend vocational and academic education.

Table 4. Significant difference between pre-test and post-test of the pupils in the 5 modules using pair comparison t-test.

Modules	Pearson Correlation	T-stat	Prob
1	0.8388	-6.8822	0.0000
2	0.5700	-4.0171	0.0001
3	0.6476	-3.4797	0.0005
4	0.6855	-4.8822	0.0000
5	0.6027	-4.2054	0.0000

- Favors post test

Relationship between the Role of Modular Learning Approach in Teaching and learning and the students' academic success in terms of performance and achievement

Correlation analysis pointed out that role of modular learning approach in teaching and learning has no significant contribution on the students' performance and achievement. This can be supported by the lower multiple R. Thus, the null hypothesis of the study is accepted.

However, Table 5 also indicated that Modules 1, 2, 3, 4, and 5, significantly contributed to the students' academic success in terms of the performance indicated by summative test 1, and 2 and the achievement indicated by the GPA. This shows positive significant correlation which simply means that the more the teachers utilize modular approach, it is expected that an increase on students' performance and achievement is expected to occur.

An evaluated and tried out environmental outdoor education module for the use of students found out that the majority of the students' comments and responses to the guide questions and personal insights were positive. The remarks and suggestions were sufficient reasons for considering the modules suitable and purposeful. She concluded that the module was able to a great extent to meet the criteria set in terms of content, instructional characteristics and effectiveness [11].

Table 5. Relationship between the Role of Modular Learning Approach in Teaching and learning and the students' academic success in terms of performance and achievement.

		Summative Test 1	Summative Test 2	GPA
Teaching	Pearson Correlation	.033	-.008	.101
	Sig.	.819	.955	.487
	N	50	50	50
Learning	Pearson Correlation	.095	.047	-.030
	Sig.	.512	.747	.835
	N	50	50	50
Module1	Pearson Correlation	**.717****	**.808****	**.768****
	Sig.	.000	.000	.000
	N	50	50	50
Module2	Pearson Correlation	**.755****	**.778****	**.834****
	Sig.	.000	.000	.000
	N	50	50	50
Module3	Pearson Correlation	**.774****	**.764****	**.685****
	Sig.	.000	.000	.000
	N	50	50	50
Module4	Pearson Correlation	.727**	.772**	.762**
	Sig.	.000	.000	.000
	N	50	50	50
Module5	Pearson Correlation	**.822****	**.846****	**.712****
	Sig.	.000	.000	.000
	N	50	50	50

Influence of Modular Learning Approach Teaching and Learning on the Students' Academic Success in terms of Performance and achievement

Influence of modular learning approach in teaching and learning on students' academic success and performance in terms of the summative test 1

Among the five indicators of modular learning, only module 3 and 5 have influence on the students' academic success in terms of the summative test 1 (F-value=-3.314;3.187, Probability=0.02;0.03). Probability value is lesser than 0.05, thus hypothesis of the study was rejected.

The coefficient determiner of 0.807 explained that 80.7% of the variation is attributed to modular learning approach in teaching and learning and only 19.3% is due to other factors not included in the analysis. The F=25.183; prob=0.000 indicated that modular learning significantly influences students' performance on the summative test 1.

Among the modular learning, module 3 and 5 were considered best indicators of students' performance on the summative test 1.

The term "module" as a complete unit of a particular academic discipline, contributing to the formation of students' one or several universal and professional competences stated in the basic education program [12]. Each module always includes a sequential testing of students' knowledge and skills. A teaching module as a unit of the discipline content has a relative independence and integrity at the level of the education plan or curriculum and it determines the logic of learning process organization. The module is both a data bank and the guidelines to learning these data. The contents of a module must meet the requirements of the integrity, compactness, independence, and clarity [12].

Table 6. Influence of modular learning approach in teaching and learning on students' academic success and performance in terms of the summative test 1.

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	5.073	2.390		2.123	.040
	Teaching	.050	.376	.010	.134	.894
	Learning	.146	.382	.028	.383	.703
	Module1	.129	.159	.093	.811	.422
	Module2	.175	.185	.132	.945	.350
	Module3	.425	.128	.329	3.314**	.002
	Module4	.160	.189	.101	.848	.401
	Module5	.574	.180	.377	3.187**	.003

R^2 = 0.807
F = 25.183
Prob = 0.000

Influence of Modular Learning Approach in Teaching and Learning on Students' Academic Success and Performance in Terms of the Summative Test 2

Table 7 reflected the Influence of the modular learning approach in teaching and learning on students' academic success and performance in terms of the summative test 2.

Result indicated that modular learning approach in teaching and learning significantly influence students' academic success and performance in terms of the summative test 2 (F-value =40.820, probability=0.000. Probability value is lesser than 0.05, thus the hypothesis of the study is rejected.

The coefficient determiner of 0.870 explained that 87% of the variation is attributed to modular learning approach in teaching and learning and only 13% is due to other factors not included in the analysis.

Use of self-learning modules in teaching is another form of individual used instructions. This is called modular approach of teaching and learning [13]. if self-learning modules are available on some topics they can be given to the students as assignments for self-learning. Scientific attitude refers to an individual's outlook towards life. Attitude is a method condition / a stabilized method set which express itself in a tendency to react to any member of the class of stimuli in the same general way [14].

Table 7. Influence of modular learning approach in teaching and learning on students' academic success and performance in terms of the summative test 2.

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	-1.184	2.741		-.432	.668
	Teaching	-.225	.431	-.031	-.522	.605
	Learning	-.109	.438	-.015	-.248	.805
	Module1	.576	.182	.298	3.166**	.003
	Module2	.027	.213	.015	.127	.899
	Module3	.418	.147	.231	2.842**	.007
	Module4	.325	.217	.147	1.502	.141
	Module5	.827	.207	.389	4.002	.000

R^2 = 0.870
F = 40.820
Prob = 0.000

Influence of Modular Learning Approach in Teaching and Learning on Students' Academic Success in terms of the GPA

As shown in table 8 is the influence of the modular learning approach in teaching and learning on students' academic success in terms of GPA.

Result indicated that modular learning approach in teaching and learning significantly influence students' academic success in terms of GPA (F-value =21.0198, probability=0.000. Probability value is lesser than 0.05, thus the hypothesis of the study is rejected. However, among the seven variables of modular learning approach in teaching, only two shows significant influence on students' academic success and performance measured by GPA.

The coefficient determiner of 0.779 explained that 77.9% of the variation is attributed to modular learning approach in teaching and learning and only 22.1 % is due to other factors not included in the analysis.

Varieties of teaching methods that will fixate on cumulating methods that can best realize the creative and constructive engagement with learning activities that leads to understanding Ramsden [15].

Even very good designed modules, with very well-defined learning outcomes, can fail if the edification strategies employed are infelicitous to inspirit and support the learners towards meeting the desired learning outcomes.

Table 8. Influence of modular learning approach in teaching and learning on students' academic success and performance in terms of the GPA.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	51.980	4.714		11.026	.000
	Teaching	.657	.742	.068	.885	.381
	Learning	-.163	.752	-.017	-.217	.829
	Module1	.499	.313	.197	1.596	.118
	Module2	.826	.366	.337	2.259	.029
	Module3	.422	.253	.178	1.668	.103
	Module4	.611	.373	.210	1.640	.108
	Module5	.228	.355	.081	.640	.525

R^2 = 0.779
F = 21.098
Prob = 0.000

4. CONCLUSIONS (Font-11, Bold)

The modular approach in teaching and learning can help the students in the new normal education. The academic success of the students in terms has been very as indicated by their GPA based on the DepEd grading scale, descriptor, and remark. In addition, the test scores of the student in Science significantly improved in the post test with the used of modular approach in teaching and learning. Modular approach in teaching is effective in improving the learners' performance in Science during the new normal.

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