ISSN 2782-9391

MSU – SULU

KISSA JOURNAL

Volume 1 *Number 1* *First Semester 2021*

MODULAR TEACHING IN STATISTICS FOR FRESHMAN STUDENTS OF THE MSU-SULU COLLEGE OF EDUCATION

By Samson J. Adju
Mindanao State University – Sulu, College of Education

I. INTRODUCTION

Most students in Sulu regard mathematics as hard subject and difficult to understand. Overwhelmed with negative attitude, the students have likely shown disinterest on mathematics and they therefore take for granted the subject and intend only to take the subject as requirement. According to Engineer Omar S. Arabani a former instructor at the Notre Dame of Jolo College in the early eighties, Sulu had been late 30 years in teaching mathematics compared to highly urbanized areas like Manila and Cebu. This means the textbooks used in Sulu are not updated and so with the knowledge and skills of the local faculty members in mathematics. If the knowledge level of the faculty members is quietly low, this tells us also how low the performance level of the students in general. Ranked far behind in teaching mathematics is the overriding factor why the student performance in mathematics is very low. The same reason why most students in Sulu cannot make in the national examination especially the Licensure Examination for the Teacher. Intervention to address this issue is very vital at this point of time.

This study asserts that improving the student performance through innovative approach such as the use of techniques like the SPAA and other computer aided program will likely have an impact on the academic performance of the students. The objective of this study is to examine the traditional method of teaching mathematics and to find an alternative technique making the teaching of mathematics easier and interesting. Experimental method is used in this study. The principal research instruments used in this study are the deployment of controlled group and experimental group, purposive sampling, statistical analysis, pretest and posttest.

II. LEVEL OF ACHIEVEMENT USING TRADITIONAL METHOD

Traditional method of teaching is a method used by the teachers in Math-31 using lesson plan. The teacher initiated the discussion of the lessons using the lessons' objectives. Appropriately, this method of teaching is a teacher-centered. The role of the students is listening, analyzing, and reciting based from the understanding of the explained lessons by the teacher. In some instances, the students are entertained to ask question for further clarification of the lesson. The students are given examples in solving problem lessons and expected to solve further exercises based on the teachers' prepared questions. Generally, traditional method of teaching relies on the teacher's capabilities. The effectiveness in teaching needed for students to attain maximum learning. Several theories have been formulated regarding effective teaching which implies effective learning (Sakili, 1999: 2-7). In the same context on traditional method of teaching a teacher should be knowledgeable, that is, he has mastery of the subject he teaches. Because in teaching it is a big problem on the part of the

teacher unless he is sufficient with this, in other words, a teacher cannot impart knowledge that he himself does not possess (Mijan, 1988: 12-15).

Meanwhile, traditional method of teaching concerns the capabilities of the teacher that surrounds the teaching-learning processes. The failure of the teacher to prepare the lesson plan would eventually affect the presentation of the lesson. In the traditional method of teaching, the teacher solely shoulders the liability of learning. In high school students have consistently show "mathematics to be the most difficult subject" (Ibe, 1993: 189-192). The mean achievement scores in mathematics to cluster within the range 2, 8 percent to 34 percent. Mean gains from pre-test to posttest whom roughly about 8 to 11 percent only. On the average, students could correctly answer only 1 in every 4 or 1 in every 3 test items in mathematics are low showing the poor quality of mathematics education in the country (SEDP evaluation studies from 1986 onwards: 45)."

Traditional method of teaching was observed poorly develop students' achievement. The need of a better teaching method is essential in learning the mathematics. In this study, the researcher focused on the achievements of the College of Education Freshmen Students in Mathematics – 31 (Statistics). Table 1 presents the achievements of the freshmen students in mathematics using traditional method of teaching.

TABLE 1
MEAN POSTTEST SCORES OFCONTROL GROUP FRESHMEN STUDENTS

Grade in Percent	Achievement Levels	Control Group			
		Pretest		Posttest	
		f	%	f	%
96-100	Excellent	0	0	0	0
90-95	Very Satisfactory	0	0	0	0
85-89	Satisfactory	0	0	5	10
80-84	Below Satisfactory	14	28	24	48
75-79	Needs Improvement	17	34	21	42
Below-74	poor	19	38	0	0
Total		50	100	50	100

The pretest and posttest average percentile grades of the participants using Traditional Method of Teaching. The 50 participants in the control group in the pretest 14(28%) achieved below satisfactory level, 17(34%) achieved the needs improvement and 19(38%) achieved the poor level, while in the posttest 5(10%) achieved the satisfactory level, 24(48%) achieved the below satisfactory level and 21(42%) achieved below satisfactory level. Analysis of the percentile grade shows a little adjustment of the achievement level. The effect of teaching is very weak. The teacher in statistics class should ponder to initiate better teaching method to improve the achievement level of the students. Usually, in a traditional method of teaching the teacher may spend some times to research and master the lesson of the day. His failure in mastery and initiative to present understandable lessons would affect the achievements of the students. In a traditional teaching method requires the teacher to write the lesson on the board and probably copied by the industrious students to their notebooks. The teacher had a hard time to go around and check the work of every student to find out

whether the students are doing the task assigned to them. Sad to say the teacher should be strong and energetic enough to prepare his lesson for the day. Some teachers cannot give much of his time in the research and giving correction to the exercises, set work, and assignment to see and witness the improvement of the students. He cannot go around and check everyone to do the necessary task for improvement. Tiredness, distress, being discouraged and develop negative attitudes of the teacher may positively affect the achievement of the students in the traditional method of teaching.

This study shows that the majority (48%) of the freshmen education students in MSU-Sulu in statistics achieved only below satisfactory level of achievements followed by (42%) achieved needs improvement. This result requires improvement in the teaching method from traditional to the new one to improve the performance in statistics class.

III. LEVEL OF ACHIEVEMENT USING MODULAR TEACHING

Modular teaching is concerned for each pupil as an individual with his own special aptitude and interest, goal of helping each student to think for himself and allowing the individuality to each learning. The emphasis must be on the one-one students 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 is devoted to individual learning, he finds time for personal discussion with pupils and giving them individual help. The individual learning may help in developing many notable and self-reliant characters and in much more modern ways pupils enjoy periods in which they pursue their interests and satisfy their curiosities (Manlove and David, 1985: 7-12).

Modular teaching is a method of student centered approach, the role of the teacher is much on facilitator of learning. Although, cases may be required high cognitive development for instance a student who is poor in reading and comprehension would hardly participate but however, the more exposure to the reading module would eventually develop personal learning. Module is advantageous, they reason out, firstly, the users can study modules within their own environment. This means they can be used not only within teaching institutions but also on the job. Secondly, users can study modules with minimum disruption to their normal duties and responsibilities. While this apply to both students and teachers and it is particularly true for teachers who can use modules as resources for staff development. Thirdly, modules may be administered to a single user, small groups or large groups according to need. Fourthly, modules programs can be easily revised and upgraded by replacing one module by another amending aspect of a single module. Fifthly, module programs are flexible in the sense that they can be implemented through a variety of scheduling patters. And sixth, modules are economical to use while initial costs of designed developments are high so they are ultimately cost effective (Brown, et. al., 1977: 21-22).

Module is a specific type of learning resource. Modules are essentially self-contained, self-instructional packages, with learning paced by each student according to her/his individual needs and ability. A module covers either a single

element of subject matter content or a group of content elements forming a discrete unit of subject matter or area of skill. A module has clearly defined, objectives; preferably in behavioral form (Daries, 1981: 72). Module as a unit of work in a course of instruction that is virtually self-contained and a method of teaching that is based on the concept of building up skills and knowledge in discrete units (Taneja, 1969: 155). A module is a set of learning opportunities organized around a well-defined topic which contains the elements of instruction, specific objectives, teaching learning activities, and evaluation using criterion-referenced measures (UNESCO, 1988: 61-63).

This study was designed to develop measures of effectiveness of modular teaching in the freshmen college education students. The author has organized the 50 homogeneous students in a class. The students are treated with module program prepared by the teacher based on the textbook. The students were supplied with module and allows individual student to learn on their own ways. Before the module was distributed, the teacher give pretest with the purpose of evaluating the stock knowledge and skills of the students. After some discussions of both the teacher and the students in class, the teacher evaluates the students on the learned concepts, skills and knowledge using posttest. Table 2 shows the results of the pretest and posttests.

TABLE 2
MEAN PRETEST AND POSTTEST SCORES OF EXPERIMENTAL GROUP FRESHMEN STUDENTS

Grade in Percent	Achievement Levels	Experimental Group			
		Pretest		Posttest	
		f	%	f	%
96-100	Excellent	0	0	0	0
90-95	Very Satisfactory	0	0	4	8
85-89	Satisfactory	0	0	19	38
80-84	Below Satisfactory	9	18	21	42
75-79	Needs Improvement	13	26	6	12
Below-74	poor	28	56	0	0
Total		50	100	50	100

As reflected in table 2, in the pretest, majority of the students in the experimental group 28(56%) were in the poor level of achievement, 13(26%) were in the needs improvement level and 9 (18%) were in the below satisfactory level. After pretest, the students were given module as the source of knowledge. The students are learning in their own ways. This teaching is known as individual pace modular learning. After some discussions with the points mentioned for clarification, the students were evaluated using posttest. The result shows that majority of students 21 (42%) of the students achieved the below satisfactory level, 19(38%) achieved satisfactory level and 4 (8%) achieved the very satisfactory level only 6 (12%) achieved the needs improvement level.

The result shows that the students have improved much in the modular teaching approach. The students who have poor achievements in the pretest shows great changes in the posttest. Comparatively, the teaching method is very effective since there no students in the poor level of achievement in the posttest.

The next discussion will be the comparative effectiveness of the traditional method of teaching and the modular method.

IV. DIFFERENCES BETWEEN ACHIEVEMENTS OF THE STUDENTS IN THE CONTROL AND EXPERIMENTAL GROUPS

Effectiveness of the teaching methods in this study was evaluated through cross sectional comparison of the means and standard deviation of the percentile grades of the control and experimental groups. The result of the computation is given in table 3.

TABLE 3

MEAN & SD OF THE PRETEST AND POSTTEST OF TWO GROUPS

Groups	Pretest			Posttest		
	Mean	SD	Levels	Mean	SD	Levels
Control	76.25	4.21	Needs Improvement	83.62	3.19	Below Satisfactory
Experimental	74.18	4.51	Poor	84.14	3.72	Below Satisfactory

N=100

Legend: Below-74 (poor); 75-79 (Needs Improvement); 80-84 (Below Satisfactory); 85-89 (Satisfactory); 90-95 (Very Satisfactory); 96-100 (Excellent).

Both methods of teaching are effective but shows different levels of achievements in the pretest grades and the same levels of achievements in the posttest grades. The mean difference of 7.36 between the pretest and posttest grades of the students in the control group showed positive effect of the traditional teaching possessed by the control group. The mean difference of 9.76 between the pretest and posttest grades in the modular teaching method possessed by the experimental group also showed the positive effect of the modular teaching. The result showed that both traditional and modular teaching methods have positive effect on the grades of the students in the pretest and posttest. Both teaching methods showed improvements of students' performance in statistics. However, the improvement in the level of achievement showed great difference when using the modular teaching approach which indicates that the modular teaching approach is more effective than the traditional teaching approach. Evidence could be derived using t-test for independent samples. The effectiveness of modular learning is confined in its content as a student-centered approach. Accordingly, module as a unit of work in a course of instruction that is virtually self-contained and a method of teaching that is based on the concept of building up skills and knowledge in discrete units. A module is a set of learning opportunities organized around a well-organized topic which contains the elements of instruction, specific objectives, teaching learning activities, and evaluation using criterion-referenced measures. Most learning packages are entirely individualized but group experiences can be built in it. The main driving force behind the introduction of modules is teaching learning process lies in the fact that they have roles that can help to solve key educational problems (Taneja, 1989: 90-95).

The evidence of the significant difference between the posttest grades of the control group and the posttest grades of the experimental group could be traced back to the result of computation of the independent samples t-test value. The result is given in table 4.

TABLE 4

DIFFERENCE BETWEEN THE CONTROL & EXPERIMENTAL GROUPS

Groups	t-value	α	Sig (2-tailed)	Interpretation
Control grp – Experimental grp	-4.586	.01	.000	Significant

The hypothesis of the study "There is no significant difference between the posttest grades of the control group and the posttest grades of the experimental group" is significant since the sig (2-tailed) value (.000) is less than the significant level of confidence .01. The data provide evidence to say that the grades of the students in the experimental group is better than the grades of students in control group. The data further implies that the modular teaching approach used in the experimental group is more effective than the traditional teaching method used in the control group. The students using modular teaching approach tend to perform better than those students relying on traditional or conventional approach (Yamarik, 2000: 78-81). The students tend to favor modular teaching approach compared to traditional or conventional approach (Holtfeter, 2000: 175). The students tend to become more forward looking to class and actively participate in class discussion (Asten, 1977: 28). They become more positive towards the subject. The students are able to communicate effectively and improving their social skills when using the modular teaching approach (Johnson, et. al. (1986: 47).

V. CONCLUSION

Improving the student performance through innovative approach such as the use of techniques like the SPAA and other computer aided program will likely have an impact on the academic performance of the students. Example of this innovative approach is the modular teaching method which is put to test under this study.

The data shows that the cross-sectional analysis of the results of teaching using pretest-posttest during the three months of teaching is encouraging. One hundred freshmen students were divided into two groups, the controlled group and the experimental group. Using the traditional method for the controlled group, the performance of the students is found out to be unsatisfactory. While the students involved in the experimental group which is exposed to modular teaching instruction performed better than those students who were exposed to the traditional method after three consecutive months of instructions. Therefore, modular teaching method is more effective compared to the traditional teaching method.

REFERENCES

Asaad, Abubakar S. (2008). Statistics Made Simple for Researchers. Philippines: Rex Book Stores

Asten, J. S. (2000). Improving Teacher Education Practice Through Self-Study. New York: Routledge Flamer.

Daries, I. (1981). Instructional Technology and Media. New York: McGraw Hill Book Company

Holtfeter, M. S. (1987). Experimental and Quasi-Experimental Designs for Research on Teaching. Chicago: Rand McNally and Company

Manlove, D. C. and David, B. (1985). Flexible Scheduling. New York: Green and Company

Mijan, Ustia A. (1988). Mathematics Skills of College Instructors in Jolo, Sulu. Unpublished Master Thesis. Zamboanga City: WMSU

Sakili, Muammar. (1999). Teaching Effectiveness in Mathematics Among Laboratory High School Teachers in Jolo, Sulu: An Assessment. Unpublished. Master Thesis. Sulu State College