

TEACHING EFFECTIVENESS OF THE COLLEGE MATHEMATICS INSTRUCTORS IN JOSE RIZAL MEMORIAL STATE COLLEGE, DAPITAN CITY: ITS CORRELATES

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Abstract

The study determined the level of teaching effectiveness of the College Mathematics instructors in Jose Rizal Memorial State College – Main Campus, Dapitan City during the Second Semester of the School Year 2003 – 2004 in terms of academic knowledge, teaching skills and classroom management skills and its correlates, namely: affective characteristics, educational qualification, attendance in in-service trainings/seminars, and teaching experience. The study revealed that teaching effectiveness and affective characteristics of college Math instructors, their educational qualification and attendance in in-service trainings/seminars are significantly correlated but teaching experience has no significant correlation with teaching effectiveness. Affective characteristics largely influence teaching effectiveness whereas educational qualification and attendance in in-service trainings or seminars slightly affect teaching effectiveness of college Math instructors; however, teaching effectiveness is not significantly influenced by the length of teaching experience. It was also divulged in the study that the administrators' kinds of supervision significantly influences teaching effectiveness. Administrators and college deans should intensify their supervisory functions to monitor instructor's needs and weaknesses and attract them to take postgraduate studies for professional advancement.

Keywords: *teaching effectiveness, teaching correlates, competence, supervision*

Introduction

The importance of Mathematics in the present civilization cannot be overemphasized. Societies need people with high mathematical competence as the globe continues to develop and rapidly change in no time. This can be met and welcomed by ways of thinking and learning.

Indeed, this task lie in schools but the challenges are set upon the teachers. Much is expected for each teacher to perform as he looks forward in making the learner be at par with other learners in the world. It is therefore, the main thrust of this study to find out how the Mathematics instructors of Jose Rizal Memorial State College (JRMSC) fare in teaching Mathematics vis-à-vis the demand of quality and excellence in higher

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education institutions (HEIs) today. Teaching efficacy of JRMSC Mathematics instructors will aid not only towards the progress and development of the College but also towards the realization of its vision, mission, goals and objectives.

Aquino (1997) proposes the types of criteria with which to categorize those who have potential to become effective teachers, namely presage, process and product. It suggested that there are personality attributes and knowledge which influence the outcomes of that interaction. These criteria predict teacher effectiveness. The current analysis attempted to find out what presage variables are needed to attain teaching effectiveness which is the process variable.

Affective characteristics of the teacher is the first presage variable. Miller (1998) believed that a teacher's effectiveness depends on his demonstration of the affective characteristics. These are innate and within the grasp of teachers such as availability, eagerness, humor, concern in the students and endurance. In the study of Tapayan (1992), teachers with good qualities had great influence on students.

The second presage, educational qualification, is believed to strongly affect a teacher's teaching competence (Caasi, 1996 and Enriques, 1992). Butler (1997) points out that the professional training of a Mathematics teacher equips him with the scholarship and techniques that is indispensable to the satisfactory performance of his professional responsibility and obligations. Martin (1996) and Avalos and Haddad (1995) clearly stated that a teacher's performance can also be influenced by the amount and kind of training he receives.

In-service training is the third presage variable. When one graduates from college, his preparation is not complete. Van Dalen & Brittell (1993) documented the maintenance and improvement of the teacher's efficiency. Meanwhile, Lardizabal (1995) and Bayan (1993) posit that one can hold the status of a competent professional practitioner only by keeping him knowledgeable about the latest professional developments in philosophy, educational research and methods.

Teaching experience is considered the fourth presage variable. Filomeno (1990) asserted that whatever knowledge and skills teachers have already acquired, it is being supplemented and upgraded via teaching experience. In addition, Fuengvivat (1999) and Sweet (1992) revealed that there is positive effect of the length of experience upon the variety of techniques utilized in the classroom.

Sarmenta (1995), however, stressed that the nature of supervision a teacher is exposed to largely influenced teaching effectiveness. Intensified supervision has a huge impact on teachers's vigilance, keeping them on the lookout in their daily preparation (Socias, 1994).

The process variables identified in the study includes teacher's academic knowledge, teaching skills, and classroom management skills. Grambs and McClure (1998) stressed that a teacher's competence emerges from certain personal qualities,

specific knowledge and the skills he has been taught. The latter is the basis of his research.

Teaching skills is another area of teaching competence. It refers to the three (3) hows: know how, say how and show how” (Villamin, 1990). It implies that one must plan his lessons carefully, have the necessary tools, equipment and equipment ready for use, ask worthwhile questions, and provide for cooperative learning, lots of interactive approaches, dyadic encounter, shared teaching and the buddy system.

Classroom management, on the other hand, is one of the major ingredients of teacher effectiveness (Gump, 1999). Van Dalen and Brittell (1993), supported Gump stating that superior teachers manager his pupils skillfully, organizes routine procedures efficiently and maintains the most healthful school environment possible. The classroom management skills and the proper application of methods or approaches would likewise indicate their teaching competency (Biddle & William, 1995).

The current investigation was deemed beneficial primarily to the administrators for them to undertake measures for the improvement in the teaching of college Mathematics and make this as basis for planning and implementing faculty development program; for the supervisors and deans to step up work of reinforcing teaching ability of teachers; for the instructors to initiate personal growth in order to cope with the demand of teaching today; and for the students, as prime recipients of administrators, supervisors, deans and instructors’ endeavors, to boost their performance to the higher level.

Objectives

This study aimed to determine the level of teaching effectiveness of the College Mathematics instructors in Jose Rizal Memorial State College – Main Campus, Dapitan City during the Second Semester of the School Year 2003 – 2004 and its correlates.

Specifically, it sought to found out the profile of the Mathematics instructors at the mentioned institution in terms of the following independent variables: affective characteristics, educational qualification, attendance in in-service trainings/seminars, and teaching experience and the level of effectiveness of the Math instructors in terms of academic knowledge, teaching skills and classroom management skills. The significant relationship between teaching effectiveness and each of the independent variables and the significant difference in the teaching effectiveness of the instructors when grouped according to the kind of supervision practiced by the administrators in the campus were tested.

Research Method and Design

The descriptive-correlational method of research was used with the aid of two types of questionnaire: the one for the teachers and the other was for the students. The



questionnaire for the students was tried out to a group of 30 non-respondents at JRMSC – Dapitan Campus, Dapitan City. These non-respondents were asked to evaluate one of their Math instructors. It took an average of 20 minutes for the students to finish answering the questions. The questions were simplified to make them clear, simple and easy to understand.

Slovin's formula was used to determine the required number of respondents for the study and the simple proportionate sampling with lottery method was employed in finding the respondents. The final questionnaire administered personally by the researcher and responded by 228 student-respondents and 10 college Math instructors during the School Year 2003 - 2004 evaluated the teacher's affective characteristics, academic knowledge, teaching skills and classroom management skills. The items in the instrument were based on the Students' Evaluation of the Faculty Forms of the College though some of these items were modified to suit to the needs of this study. The five-point Likert scale was used to arrive at a qualitative interpretation of the teaching effectiveness of Math instructors.

Frequency count, percentage distribution, weighted mean, Pearson r Product Moment and Biserial Coefficients of Correlation and t-test were the statistical tools used to come up with an apt analysis and interpretation of the data gathered.

Results and Discussion

There are personal characteristics which Math instructors should possess. These characteristics are referred to in this study as the affective characteristics which include availability, enthusiasm, humor, interest in the students and patience. Shown in Table 1 is the degree how often the college Math instructors at JRMSC during SY 2003 – 2004 exercised their affective character.

Majority of the respondents (147) claimed that their instructors in Math were always showing interest on them ($x = 4.64$). This is very commendable since the instructors must be committed to the goal of developing numerical dexterity, abstract thinking and problem solving skills. From the observations and interviews conducted by the researcher, it was found out that an instructor who was interested in helping the students to learn Math usually gained positive reactions from students; hence, interest in the subject is developed.

The table further revealed that the respondents' instructors in Math often shown patience and enthusiasm on them ($x = 4.16$). Perceived as a difficult subject, the instructors should understand the predicament of the students in learning Math. A good Math instructor has to demonstrate incredible patience with his students. Patience is shown by an instructor who explains a lesson again when students do not understand the concepts, principles, abstractions or complicated problems being taught. Enthusiasm is also a crucial factor in effective teaching. It is important for a Math instructor to have a

continuous fervor in teaching Math. The more he teaches the subject with life, the more he can influence the way students react towards the subject.

Aside from interest in the students, patience and enthusiasm, Math instructors should be available to deal with students who have difficulty or interest on learning Math topics. As a result, the acquisition of the desired teaching objective is facilitated. Math instructors in JRMSC – Dapitan Campus were available but just often ($x = 3.67$). Meanwhile, the ratings of the student-respondents which is 3.27 showed that the college students found their Math instructors had sometimes shown sense of humor in class.

It can be inferred that because Mathematics is believed to be a difficult subject, the instructors can only offer to make it light by giving “jokes” sometimes. The instructor’s ability to inject jokes related to the subject matter has an effect of alleviating the nervousness and anxiety of students towards Mathematics. Consequently, rapport could be established between the students and the instructor. A light atmosphere can facilitate the acquisition of the needed knowledge and skills in the subject.

As a whole, the affective characteristics of the Math instructors in rJRMSC were often manifested in the classroom ($GM = 3.98$).

Table 1 Affective Characteristics of Math Instructors at JRMSC- Dapitan Campus

| Affective Characteristics | Respondents’ Responses | | | | | Total | Mean Score (x) | Verbal Interpretation |
|---------------------------|------------------------|-------|-------|-------|-------|-------|----------------|-----------------------|
| | A (5) | O (4) | S (3) | R (2) | N (1) | | | |
| Interest in the students | 147 | 81 | 0 | 0 | 0 | 228 | 4.64 | Always |
| Patience | 38 | 190 | 0 | 0 | 0 | 228 | 4.16 | Often |
| Enthusiasm | 43 | 175 | 10 | 0 | 0 | 228 | 4.16 | Often |
| Availability | 14 | 128 | 81 | 5 | 0 | 228 | 3.67 | Often |
| Humor | 67 | 156 | 5 | 0 | 0 | 228 | 3.27 | Sometimes |
| Grand Mean (GM) | | | | | | | 3.98 | Often |

Legend: A - Always S - Sometimes N - Never
 O - Often R - Rarely/Seldom

The influence of educational qualification, in-service training, teaching experience to teaching effectiveness was surmised in this study. It was revealed in the study that most of the instructor-respondents were academically qualified to teach college students for they finished Bachelor’s degree and with Master’s degree units (7 or 70%). Since educational qualification is a positive factor for teacher work success, faculty members should be directed to take graduate and postgraduate studies as personal responsibility to equip them of necessary tools to be able to discharge the function of teaching with competence and other demands this rapidly-changing world require.



A good number of instructor-respondents had attended in-service trainings for the last five (5) years and had served quite long as instructor in the College (6 or 60%). An instructor has a responsibility to himself and to his profession. In order to enable himself to have new dimensions in teaching Math, he must be engaged in continuing search for new ideas and concepts to awaken enthusiasm in students and update new-fangled fund of Mathematical knowledge, trends and issues in them by attending in-service trainings/seminars. Such trainings/seminars afford teachers with insights of their own ability on the subject. To some extent, this would be a step towards the improvement of Math instruction in general and the students in particular.

The teaching effectiveness of the instructors in this study was classified into three: academic knowledge, teaching skills, and classroom management skills as rated by their students. Mathematics as one of the fundamental and very important subject requires to be taught by an effective instructor.

Table 2 discloses that most of the Math instructors in JRMSC were much effective in teaching the subject to the students ($GM = 3.48$): much effective in terms of academic knowledge and teaching skills ($AWV = 3.36$ and 3.52) while only effective in classroom management ($AWV = 3.26$)

Academic knowledge includes mastery of the subject matter. Mastery of the subject matter does not mean adequate preparation in the course being taught only but also how it is planned out, organized and delivered. Also an indicator of the academic knowledge of the instructors is the ability to relate the subject matter to practical and real life situations.

In the presentation of the content or subject, appropriate strategy and method of instruction must be employed. Teaching Math involves more than knowing and enjoying the subject. The Math instructor must motivate and stimulate students to develop desirable attitudes and appreciations on Mathematics. He must communicate his knowledge to them and must guide them to discover ideas. Methods and materials serve as links between the knowledge of subject matter, principles of psychology and actual practice in the classroom. Johnson and Rising (1997) asserted that a Math instructor must employ an array of instructional aids and must select relevant goals for introduction of individual units to attain these goals. Finally, he must guide the students to discover the solution of Math problems and build understanding, accuracy and efficiency in computation thus evaluating their achievement on concept and problem solving skills. Table 2 divulges that the teaching skills of Math instructors at JRMSC – Dapitan Campus are much effective. This could be due to their very good academic knowledge which they had gained from their in-service education besides have knowledge from pre-service.

Mastery in and having good teaching skills on the subject are not only requirements for successful Mathematics teaching. Classroom management is another vital factor to deliver effective instruction. How to make the classroom a pleasant place

for effective learning lies on the proper management of the teacher. According to Aquino (1997), teaching effectiveness is determined often by the manner the class is planned and supervised. Proper management requires from a teacher skills in planning, organizing, directing and controlling classroom. As reflected in the summary table, all the instructors were rated by the student-respondents as just only effective. This implies that instructors are not only focusing on the acquisition of academic knowledge and development of teaching skills but classroom management was also done effectively in Math classroom.

Table 2 Summary Table on Teaching Effectiveness of Math Instructors at JRMSC – Dapitan Campus in terms of Academic Knowledge, Teaching Skills, and Classroom Management Skills

| Variable | Average Weighted Value | Descriptive Equivalent |
|-----------------------------|------------------------|------------------------|
| Academic Knowledge | 3.36 | Much Effective |
| Teaching Skills | 3.52 | Much Effective |
| Classroom Management Skills | 3.26 | Effective |
| Grand Mean | 3.48 | Much Effective |

A main of concern to know is what constitutes an effective teacher. Certainly the institutions that prepare instructors for the schools cannot do so most effectively if the critical and contributing factors for successful training are not identified. There are factors that contribute to Mathematics teaching success. These factors are referred to as the correlates that affect teaching effectiveness. Table 2 reflects the test of relationship of the teaching effectiveness and its correlates at 0.05 significance level.

Using the Pearson r and Biserial r_b Coefficients tested at 0.05 level of significance, the study revealed that the affective characteristics ($r = 0.466, t = 3.766$), educational qualification ($r = 0.21, t = 1.457$), and in-service training programs attended and teaching effectiveness of Math instructors at JRMSC – Dapitan Campus are significantly correlated.

This implies that the mentioned variables influence the teaching effectiveness. Therefore, the study confirmed that availability, enthusiasm, humor, interest in students and patience, instructor’s educational qualification, and attendance in in-service trainings/seminars affect directly or indirectly teaching effectiveness in Mathematics; however, the length of experience ($r = 0.13, t = 0.89$) in teaching does not affect the effectiveness of teaching the subject.

For many years now, seminars/in-service trainings are used as venues in upgrading instructors on various topics, issues and concerns on Math education. This study revealed that there is a correlation but slight ($r = 0.20, t = 1.38$) between the teaching effectiveness of instructors who had attended in-service trainings than those who had not attended any. Supportive to this findings are of Rayann’s (1997) who found out



that teaching methodologies in classroom behavior were also related to in-service trainings.

In fact, when compared to teachers with only pre-service or no professional training, there was a positive effect on the quality of the lesson planning and on instructional skills. Some educators believed that teaching experience does not contribute to good teaching performance but this study disclosed no significant relationship between teaching effectiveness and length of teaching experience.

The finding seems to give credence to the adage that the number of years of experience does not always guarantee effectiveness. This entails that there is a need for supplementary in-service training to encourage sagging interest of veteran instructor to facilitate the instructors with long length of service but less effective in teaching the subject master their dexterity and forte.

Table 2 Correlation Results at 0.05 Significance Level Between Teaching Effectiveness and Affective Characteristics, Educational Qualification, Attendance in In-Service Trainings/Seminars, and Teaching Experience of Math Instructors at JRMSC – Dapitan Campus

| Variables | r / r_b | t -value | Decision |
|--|-----------|------------|---------------------|
| Teaching Effectiveness and Affective Characteristics | 0.466 | 3.766 | Reject H_0 |
| Teaching Effectiveness and Educational Qualification | 0.21 | 1.457 | Reject H_0 |
| Teaching Effectiveness and Attendance in In-Service Trainings/Seminars | 0.20 | 1.38 | Reject H_0 |
| Teaching Effectiveness and Teaching Experience | 0.13 | 0.89 | Do Not Reject H_0 |

Further investigation revealed that the teaching effectiveness of the Math instructors at JRMSC – Dapitan Campus differed significantly as to the kind of supervision practiced by their administrators. Table 3 illustrates the ratings of the administrators according to their frequency in attendance in faculty meetings, classroom demonstrations, observing classes, checking of syllabi and the pre- and post instructors conferences.

Mathematics instructors who experienced good supervision were very much effective than those who experienced poor supervision. This is so because instructors were always alert in their daily preparation. Subject matters were mastered, suitable methods were selected and good classroom management was practiced. They were also motivated to read more and attend seminars for their professional development. According to Aquino (1997), the most significant utility of supervision is the stimulation of professional growth and development of teachers.

Table 3 Test of Significant Difference in the Types of Supervision and Teaching Effectiveness of Math Instructors at JRMSC – Dapitan Campus

| Variable | Ratings | Competence | t-Value | df | Tabular Value | Decision |
|---|-------------|------------|---------|----|---------------|--------------|
| Good Supervision and Teaching Effectiveness | 3.1 – 5.0 | 4.17 | 1.70 | 9 | 1.30 | Reject H_0 |
| Poor Supervision and Teaching Effectiveness | 1.20 – 3.09 | 4.08 | | | | |

Taking into account the findings of this study and in light with the conclusions drawn, it is recommended that administrators and college deans should intensify their supervisory functions to monitor instructor’s needs and weaknesses and attract them to take postgraduate studies for professional advancement. Aside from directing the Math instructors to take postgraduate studies in line with their field, recruitment of Math instructors should be strengthened and standardized. Evaluation of their academic knowledge, classroom management and teaching skills shall be stipulated along with its associates, specifically: affective characteristics, attendance in in-service trainings/seminars and educational qualification. Teaching experience should not be given great priority as this study divulged that it does not purport to measure and guarantee Math teaching effectiveness.

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