



ABSTRACT

Name of Institution : De La Salle University – Dasmariñas

Address : Dasmariñas, Cavite

Title : **Development of Placement Test in
Mathematics for College Freshman
Students at the De La Salle**

University-Dasmariñas

Author : Lorelei B. Ladao-Saren

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STATEMENT OF THE PROBLEM:

The main purpose of the study was to develop a placement test that would determine the mathematics readiness of college freshman students at the De La Salle University-Dasmariñas in order to facilitate better classification and placement of students according to their mathematical abilities.

Specifically, this study sought to answer the following questions:

1. What content/skills in mathematics should college freshman students in DLSU-D possess based on the 1998 Philippine



Secondary Schools Learning Competencies (PSSLC), 2002 Basic Education Curriculum (BEC) and the College Algebra syllabus of DLSU-D and with respect to the following cognitive domains:

- 1.1 Knowledge;
 - 1.2 Comprehension;
 - 1.3 Application; and
 - 1.4 Analysis?
2. What should be the leveling parameters for streaming students to
 - 2.1 Math Intensive Program for College Algebra;
 - 2.2 Regular College Algebra course;
 - 2.3 Higher mathematics course?
 3. How valid/reliable are the leveling parameters?
 4. How valid/reliable is the proposed Placement Test in Mathematics?

SCOPE AND COVERAGE:

The study was conducted at De La Salle University-Dasmariñas during the first semester of school year 2002 – 2003. The samples of the study consisted of 318 college freshman students of DLSU-D for the first semester of the school year 2002-2003.



METHODOLOGY:

This study made use of quantitative type of research that is both a descriptive and a development study. The standard procedures in test construction were applied in this research.

The statistical tools utilized were mean, standard deviation, skewness, Pearson correlation and Spearman correlation.

MAJOR FINDINGS:

1. Based on the PSSLC, BEC, and College Algebra syllabus of DLSU-D, college freshman students at the DLSU-D should have the following content competencies with respect to knowledge, comprehension, application, and analysis skills: The Algebra and Geometry of Real Numbers, Algebraic Expressions, Equations and Inequalities, Graphs and Equations, Functions and Their Graphical Presentation, Systems of Equations and Inequalities, Matrices and Determinants, Polynomial Functions and Polynomial Equations, Partial Functions, Series/Sequence, Sets: Basic Notation, Operations, Subsets, Counting Techniques, Sigma Notation and Mathematical Induction, and Binomial Theorem.

- 1.1 The Placement Test in Mathematics (PTM) developed in this study consists of 55 items testing content areas covered in the PSSLC, BEC, and College Algebra syllabus of DLSU-D,



where 7% tests for knowledge, 29% for comprehension, 33% for application, and 31% for analysis;

1.2 Based on the test scores, college freshman students belonging to Group A had difficulties on almost all content areas in secondary mathematics curriculum. Remediation through enrolment in a basic mathematics class to be taken prior to the Math Intensive Program (MIP) for College Algebra course is necessary. College freshman students belonging to Group B need the MIP to enhance their mathematics competencies. College freshman students belonging to Group C are knowledgeable in topics covered in the PTM but also need to enhance higher order thinking skills.

2. Based on the leveling parameters, the results of the PTM should be interpreted as follows:

2.1 A student should be placed in the MIP if:

2.1.1 He gets a score of 16 and below from items 1 to 24;

or,

2.1.2 He gets a score of 17 or more from items 1 to 24 and score of 13 and below from items 25 to 44;



2.2 A student should be placed in the regular College Algebra class if:

2.2.1 He gets a score of 17 or more from items 1 to 24 and score of more than 13 from items 25 to 44: or,

2.2.2 He gets a score of 17 or more from items 1 to 24, score of more than 13 from items 25 to 44 and score of 7 and below from items 45 to 55.

2.3 A student should be placed in higher mathematics course and should have units credited in College Algebra if he gets a score of 17 or more from items 1 to 24 and score of more than 13 from items 25 to 44 and score higher than 8 from items 45 to 55.

3. The leveling parameters were valid/reliable based on the criteria set by the researcher.
4. The reliability of the PTM was found to be equal to 0.93 using the Kuder-Richardson's Formula 20 and 0.96 using the Spearman Brown Prophecy Formula. The standard error of measurement was found to be equal to 2.31.



CONCLUSIONS:

1. Most college freshman students at DLSU-D lack the expected mathematics competencies based on the 1998 PSSLC, the 2002 BEC, and the College Algebra syllabus of DLSU-D and with respect to the knowledge, comprehension, application and analysis skills. Higher order thinking skills of the students need to be developed or enhanced.
 - 1.1 College freshman students with below average performance in high school mathematics will not be able to cope up even with the MIP. They need a basic mathematics class teaching prerequisite knowledge and skills required in the study of College Algebra. Enrolment in this class must be a prerequisite to enrolment in the MIP.
 - 1.2 College freshman students with average performance in high school mathematics need the MIP to develop and enhance their mathematics competencies.
 - 1.3 College freshman students with above average performance in high school mathematics do not necessarily possess the mathematics competencies needed in the study of tertiary level mathematics.



2. Students differ in mathematics content/skills competencies. The leveling parameters determined in this study provide sufficient and accurate information on the mathematics content/skills competencies of students.
3. The leveling parameters are valid and reliable as aid in streaming students to Math Intensive Program for College Algebra, regular College Algebra course, or higher mathematics course.
4. The PTM is a valid/reliable instrument for determining mathematics competency of college freshman students at DLSU-D.

RECOMMENDATIONS:

1. The College Algebra syllabus in DLSU-D should be reviewed to adapt to the instructional mathematical needs of the students.
2. The policies and implementation of the MIP should be redirected so that the specific instructional needs of the college freshman students would be provided;
3. Mathematics teachers must revise the instructional objectives of the MIP and the regular College Algebra course using the findings of this study as basis;
4. A basic mathematics course should be offered to college freshman students who need remediation; and, that this basic mathematics



course should be considered a prerequisite to the MIP, to be taken one semester ahead of the MIP.

5. The Placement Test in Mathematics should be proposed to the DLSU-D Academic Council for its ultimate use in DLSU-D;
 - 5.1 All DLSU-D freshman students should be required to take the proposed Placement Test in Mathematics;
 - 5.2 The proposed PTM must be reviewed and revised yearly by mathematics educators at DLSU-D to prevent obsolescence. For a testing material not to suffer from obsolescence, a pool of test items should be continuously developed and subjected to the same statistical analysis. From this updated pool, substitute items could be readily drawn in the event of revisions;
6. Related studies, which were not part of the scope of this study, should be conducted, such as assessment of error patterns made by students taking the PTM so that appropriate instructional remediation are developed by math teachers handling math courses, especially the MIP.
7. For security purposes, the copy of the PTM and discussions of its specific content are not included in this paper.