

### Self- Paced Instruction and Mathematics Achievement

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### Abstract

Self-paced instruction attempts to bridge the gap between the felt need and the course objectives of equipping the students with mathematical tools needed in skills development. This study used a non-randomized experimental and control groups, pretest-posttest designs in two separate intact classes in College Algebra. For a period of 10 sessions, the experimental group was subjected to the proposed material — the self-paced instructional module, and the control group instead was given lectures on the same topics on exponents and radicals. t-test for uncorrelated mean was used to determine the significant difference between the pretest and posttest mean scores of the experimental and control groups. Experimental results demonstrate the efficiency and the effectiveness of the proposed method.

Key Words: Self-Paced Instruction, Module, Mathematics Achievement

### 1. Introduction

Teaching has come a long way in establishing itself as a profession. Teachers are internationally being recognized as professionals in their own respect. Like other professionals, the status of teaching hinges in large measure the professionalism of its members. Hence, for society to recognize and acknowledge the significance and dignity of the teaching profession, teachers have to continually improve the teaching competencies with which to guide student learning.

The center of any educative process is the learner. Without the learner, there would be no need for teaching. Formal education is based on the premise that the learning process can be directed and facilitated. Such direction and facilitation of learning, however is not a simple task. According to Bustos et al (1996), "The system of education or schooling is a macro-view of the learning process. Education is a means of transmitting the values and knowledge necessary for society's continuation." On the other hand, the teaching-learning process which occurs in the classroom setting is a micro-view of the educational process. There are inherently several variables worth considering when examining the teaching-learning process. Moreover, the quality of instruction largely determines the probable outcome of the teaching-learning process. As Leano (1995) pointed out, the teacher is a great factor in the teaching-learning process and therefore should have a thorough knowledge and understanding of the students which serves as essential starting point in harnessing their potentialities and achieving optimum development of their own endowments. Nocon et al (2001) wrote that, those in the field of teaching, especially in Higher Education, will certainly agree with the generalization that the mathematical ability of the average high school graduate enrolling in College is not getting any better. There seems to be a wrong emphasis somewhere. The basic mathematical skill seems to have been overlooked. According to Maceda (1997), a country can never be a real tiger in economy in a technology-driven world if the next generation is weak in Mathematics and Science. Teachers need to be retrained, textbooks need to be revised and classroom facilities need to be improved. The goal of Mathematics education is to encourage the use of precise and accurate thinking to solve problems. Intuitive reasoning is used as a guide to rigorous thinking. Rigor in Mathematics means honesty and clarity. The purpose of rigor in a beginning course is to make the concepts easily understood and used.

The researcher teaches College Algebra for two decades and found out that the performance of the students in Algebra, specifically on exponents and radicals, were relatively low. For the improvement of the teaching learning process, the students should be given self-instructional materials that would serve as their learning modules. Vicente (2002) believes that, individualization is one of the educational tenets of our country. Some educators believe that the most important of the school objectives should be to teach all students the learning skills, attitudes, and habits that will enable them to study independently. From this significant point, a module should be developed.

A module is a self-paced instruction constructed in such a way as to facilitate the most efficient method of a user to acquire a new body of knowledge, learn new skills or be challenged on existing attitudes. Modules as instructional materials have concretized pretty well the principle of individual differences allowing each student to proceed at his own pace. Modules also attempt to bridge the gap between the felt need and the course objective of equipping the students with mathematical tools needed in skills development. With the desire to instructional module in Algebra.

### 1.1 Objectives of the Study

The main focus of the study is to develop and validate a self-paced instructional module in Algebra. Specifically,

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