

The 7Es Instructional Model and its Longitudinal Impact on the Mathematics Achievement of Tertiary Students

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Abstract

This study aimed to determine the effectiveness of utilizing the 7Es Instructional Model on the Mathematics achievement in Calculus of tertiary students of the Don Mariano Marcos Memorial State University, Philippines in comparison with the traditional teaching method. The study sample consisted of sixty students who were divided into two groups: the experimental group of thirty students, who studied Calculus by using the 7Es Instructional Model – Elicit, Engage, Explore, Explain, Elaborate, Evaluate and Extend; and the control group of thirty students, who studied the same concepts using the traditional method. ANCOVA results of the students' scores in the mathematics achievement tests indicated that the 7Es Instructional Model is more effective than the traditional teaching method. Furthermore, the paired-sample t-test findings revealed that the model had a significant positive longitudinal effect on the retention among the students.

Keywords: 7Es Instructional Model, longitudinal impact, mathematics achievement

Introduction

Mathematics plays a key role in shaping how individuals deal with the various spheres of private, social, and civil life (Anthony & Walshaw, 2009). It is regrettable; therefore, that many students struggle with Mathematics and consider it as a very difficult subject. It is an irrefutable fact that the success of learning the subject is influenced by different factors one of which is teacher factor. Research findings indicate that effective teachers facilitate learning by truly caring about their students' engagement and creating the right atmosphere that enhances student learning (Noddings, 1995). In the light of these, teachers need to utilize different teaching strategies and methodologies in teaching mathematics to further encourage them to love the subject.

Objectives of the Study

This study aims to find out if there is a significant difference

- a. between the Mathematics performance of the experimental group (the use of the 7Es Instructional Model) and the control group (use of traditional method of teaching)
- b. in the mean gain scores of the two groups of respondents
- c. in the mean scores achieved by the students in the post-immediate application of the achievement test and their scores in the post delayed application test attributed to the teaching method using 7Es

Methodology

This study made use of the experimental research design with 60 students as sample divided into two matched groups – the experimental group using the 7Es Instructional Mode - Elicit, Engage, Explore, Explain, Elaborate, Evaluate and Extend; (and the control group making use of the traditional method of teaching. The researcher-made test used in the experiment has undergone validity and passed the reliability test. All computations were done using SPSS.

The 7Es Instructional Model is a constructivist approach developed by Lawson in 1995 and narrated by Kanli in 2007. (<https://5j2014misshooban.wordpress.com/tag/7e-model/>) The approach allows learners to construct their own learning. They construct learning that is meaningful for their lives.

It makes use of the following:

1. **Elicit** - This involves drawing out students' prior knowledge. What do they already know about the topic? This can be achieved through brainstorming, quick quizzes, traffic lights and statements of learning (what I know, what I want to know and what I have learned). This is also a good time to address any misunderstandings and to discover what areas students are interested in
2. **Engage** - This involves the level of interest students have in the subject or topic. What makes your class interesting? This is a pivotal stage in the learning process. As educators one needs to spark curiosity and captivate the attention of the students. This can be achieved through addressing the big questions, showing startling facts or statistics, using engaging technology or interesting video clips. The method used at this stage will depend on the subject/topic.
3. **Explore** - What can students find out? This stage of the learning cycles promotes a very student centered, constructivist approach. Students should be given opportunities to work together through group work or pair work. Peer teaching should be incorporated into this stage. This is the point where the teacher becomes the facilitator and the students take a more involved and direct role in their own learning.
4. **Explain** - At this stage the teacher takes a more direct role. What input is needed from the teacher to formalize the concept? This can be achieved through setting students the task of explaining concepts or definitions in their own words. It is important, at this point, that no new learning is undertaken without clarity that previous learning is understood.
5. **Elaborate** - This stage students should have obtained a meaningful understanding from their learning and in order to demonstrate this they should be able to develop and apply their learning
6. **Extend** - How can you encourage students to apply or extend the concept in a new situation? Students make connections not just in the subject/ideas studied but also beyond it. They are able to apply ideas/ generalize and transfer principles
7. **Evaluate** - How much progress have students made? Self reflection is a significant part of evaluation. Students should be able to self evaluate their own learning. At this stage of the learning cycle the statement of learning could be revised. (What I know, What i want to know, What I have learned)

Discussions

Results indicated that

- a. The use of the 7Es instructional model is more effective than the traditional teaching
- b. There is a significant difference in the mean scores of the two groups of respondents.
- c. There is a significant difference in the mean scores achieved by the students in the post-immediate application of the achievement test and their scores in the post delayed application test attributed to the teaching method using 7Es

Recommendations

Based on the findings of the study,

- a. Teachers should try to use the 7Es Instructional Model in teaching mathematics concepts.
- b. The institution should send teachers to seminars on the use of the 7Es Instructional Model
- c. More studies on the use of the 7Es are encouraged.

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