

# Attitude of Students towards Integral Calculus through the Screening Examination Strategy

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## ABSTRACT

One thing that may affect the students' perception of mathematics is the attitude of the students towards the subject. This study was conducted to assess the attitude of students towards integral calculus. The subjects of this study were the 94 second year students of the College of Engineering taking up BSAE, BSCE, BSEE and BSME who were enrolled in Integral Calculus. This group of students were a combination of the first timer and repeaters in Integral Calculus. This were the students who were not screened out from the screening examination conducted by the researcher. It employed the descriptive correlational method using the frequency counts, weighted means and analysis of variance.

The instrument used in this study was the attitude scale. This instrument was administered to the students before the first screening examination and after the last screening examination.

Results revealed that students have favourable attitudes towards integral calculus before and after the screening examination strategy. However, results also revealed that the profile of the students in terms of gender, number of times the student took the subject and the students' performance on the prerequisite subject has nothing to do or did not influence the attitudes of the students towards the subject.

**Keywords:** Screening examination strategy, Attitude, students, integral calculus

## INTRODUCTION

It was observed that the mathematics curriculum standards of many Asian countries including the Phillipines are going into an expanding goal at the turn of the century. Attitudes, confidence and appreciation are receiving more emphasis. In the Phillipine concepts, it is said that repetition in mathematics is common among students that almost one out of the three repeat a mathematics course. Faculty have felt the declining performance of students in the mathematics course. (Cabahug, 2005).

The attitude of the students towards mathematics have always been a great concern. Poor attitude towards mathematics is often being said as one of the contributing factors to lower participation and less success in the course. It affects the performance as performance in turn affect attitudes (Fullarton, 1993).

The means of teaching may also have significant impact on shaping the attitude towards mathematics (Bilbase, 2010). He added that anxieties and attitudes play significant role in learning mathematics.

Varela (2013) believed that the screening examination strategy stimulated the students to do whatever learning strategy they can just to escape from being screened out and eventually passed the subject. This practice was anchored on

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the fact that a student will do his/her best to avoid from being put to a shameful situation. Shame is a factor in student learning. The feeling of shame certainly did not inhibit a student from approaching an achievable task (Johnson, 2012).

Generally, it is observed that the low performing students are those with carefree attitudes and those that do not exert efforts to improve their performance in the examination. It has been also observed that many engineering students fail in higher mathematic subject due to laziness. The high percentage of the failure of the students in integral calculus is quite alarming.

In this study, it is aimed to assess the attitude of the students of the College of Engineering towards Integral Calculus through screening examination.

## METHODOLOGY

A descriptive-correlational design was used in order to establish the possible relationship the effect of the profile of the students to their attitudes towards integral calculus. The respondent of this study were the 94 second year students of the College of Engineering who were enrolled in Integral Calculus during the second semester of the school year 2016-2017. This group of students were a combination of

first timers and repeaters. These students were the students that were retained in the class after the conduct of the screening examination. These students were exposed to a 5 set of screening examination and passed the retention score of 10 points out of 100 points during the first screening examination, 20 points on the second, 30 points on the third, 40 points and 50 points on the fourth and fifth screening examination. These screening examinations was validated by the other professors who were handling the same subject.

The questionnaire on the students' attitude towards integral calculus was patterned from the study of Pelonia. These was also validated and pre tested to students who enrolled in Integral Calculus that was being handled by other professors in the college. These questionnaires were given to the students before the start of the first screening examination and after the last screening examination.

The data gathered were statistically analyzed by measure of weighted mean, percentages. To show the relationship between attitude of the students towards integral calculus and the profile of the students in terms of gender, number of times the students enrolled in integral calculus, multiple regression was used. The following research instrument were used in this study

- Attitude scale. This was administered to the students before the first screening examination and after the last screening examination. This was used to assess if there is significant relationship between the attitudes of the students towards Integral Calculus and the profile of the students in terms of gender, number of times the students has enrolled in Integral Calculus and the grade of the students in the pre requisite subject which is the Differential Calculus.
- A five-set of 10 items equivalent to 100 points screening examination questionnaire which was administered to the students every after the end of the discussion of every chapter up to the 5<sup>th</sup> chapter.

## RESULTS AND DISCUSSION

The attitude of students towards integral calculus before the first screening examination was conducted and after the last screening examination are almost the same which are favorable. This means that the introduction of the screening examination strategy to engineering mathematics students could be possible because it did not negatively affect the attitude of the students towards the subject. Students can feel the importance of integral calculus as a preparatory to higher mathematics subjects regardless of what strategy be employed to them.

On the attitude of the students on integral calculus before and after screening examination. The attitude grand mean before the screening examination was given was **3.90** interpreted to have a favourable attitude towards integral calculus. After the fifth and last screening examination, the measured grand mean attitude of students was found to be **3.92**, also has a favourable attitude. Moreover, students have a high favorable attitude before and after screening examination on the statement: "I can see much importance in integral calculus as a preparatory to higher mathematics. Also, on the statement: "integral calculus is as important as other subjects because it provides foundation for understanding of a higher level of mathematics and general engineering subjects.

However, there was a change in attitude from a favourable attitude before the first screening examination was conducted to undecided after the last screening examination on the statement: "I feel sure of myself in integral calculus and I think integral calculus is fun. This is very normal attitude of the students since they already faced the challenge of screening examination. The notion of most of the engineering students that integral calculus is a very difficult subject may have triggered them to be undecided. The attitude of the students towards integral calculus before and after the screening examination is presented in Table 1.

**Table 1 Attitude of the students towards Integral Calculus before and after the Screening Examination**

STATEMENT	Weighted Mean	Before Screening Examination Interpretation	Weighted Mean	After Screening Examination Interpretation
1. Integral Calculus is an stimulating subject	4.02	Favorable	4.26	Highly Favorable
2. Integral Calculus thrills me and I like it better than the other subjects.	3.95	Favorable	3.79	Favorable
3. I can see much importance in Integral calculus as a preparatory to higher mathematics subjects	<b>4.35</b>	Highly Favorable	4.21	Highly Favorable
4. Integral calculus develops my ability to think logically and reasons out correctly	4.23	Highly favorable	3.88	Favorable
5. Integral Calculus is a very difficult subject	3.71	Favorable	4.12	Favorable
6. I enjoy the challenges of Integral Calculus problems	3.98	Favorable	3.76	Favorable
7. I enjoy seeing how rapidly and accurately I can solve Integral Calculus problems	3.64	Favorable	3.72	Favorable
8. Integral Calculus is as important as other subject because it provides foundation for understanding of higher level mathematics and general engineering courses	4.33	Highly Favorable	4.28	Highly Favorable
9. I feel sure of myself in Integral Calculus	3.41	Favorable	3.32	Undecided
10. I think Integral calculus is fun	3.48	Favorable	3.32	Undecided
<b>TOTAL GRAND MEAN</b>	39.00 3.90	Favorable	39.21 3.91	Favorable

Results also revealed that the profile of the students in terms of gender, number of times the students enrolled and the grade of the students in the pre requisite subject which is the differential calculus did not affect the students' attitude towards integral calculus, hence they did not have significant relationship.

The success of employing the screening examination strategy to students relies on the attitude of the students towards the subject. With this, it strengthen the claim of Fullarton that the attitude towards mathematics have always been a great concern because it is said as one of the contributing factors to lower participation and less success in the course.

#### CONCLUSIONS:

Based on the results of the study, the following conclusion were drawn:

1. The introduction of the screening examination strategy to engineering mathematics students could be possible because it did not negatively affect the attitude of the students towards the subject.
2. Students can feel the importance of Integral Calculus as a preparatory to higher mathematics subject regardless of what strategy be employed to them.
3. The success of employing the screening examination strategy to students relies on how the students accept it. There were students who perceived screening

examination strategy as a threat to their studies on the thought that it could be a hindrance for them to complete the program on time if they will be screened out.

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#### CONFLICT OF INTEREST

None

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