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ABSTRACT

This investigation compared the attitudes of business and elementary education majors on the enjoyment and value of mathematics. Fifty elementary education majors and 58 business majors participated. The mathematics attitude questionnaire contained two sections of questions: eight questions on the enjoyment of mathematics and eight questions on the value of mathematics. The attitude of enjoyment was not significantly different between the business and elementary majors. However, elementary education majors valued mathematics significantly higher than did the business majors. It was also found that both the elementary education and business majors value mathematics to a significantly higher degree than they enjoy mathematics. No significant differences were found between male and female business majors' enjoyment and value scores. (Author/YP)

ENJOYMENT AND VALUE: MATH ATTITUDES OF BUSINESS AND ELEMENTARY EDUCATION MAJORS

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Running head: MATH ATTITUDES

Abstract

This investigation compared the attitudes of business and elementary education majors on the enjoyment and value of mathematics. Fifty elementary education majors and fifty-eight business majors participated. The mathematics attitude questionnaire contained two sections of questions: eight questions on the enjoyment of mathematics and eight questions on the value of mathematics. The responses were recorded onto a Likert scale of strong agreement to strong disagreement.

The t-test was used to compare how students enjoy and value mathematics and how the elementary and business majors compared in their attitudes toward mathematics. The attitude of enjoyment was not significantly different between the business and elementary majors. However, elementary education majors valued mathematics significantly higher than did the business majors. It was also found that both the elementary education and business majors value mathematics to a significantly higher degree than they enjoy mathematics. No significant differences were found between male and female business majors' enjoyment and value scores.

These findings can help university and college instructors understand attitudes toward subject matter and better address the concerns of the students.

Enjoyment and Value: Math Attitudes of Business and Elementary Education Majors

Attitudes are often described as influential to the learning and teaching of mathematics, therefore, it is important to understand which types of student attitudes exist (Neale, 1969; Aiken, 1972; & Adams & Holcomb, 1986). Rather than presuming that all attitudes are similar in strength, influence or direction, a study of differences in types of attitudes toward a particular subject such as mathematics and their moderating variables is recommended (Aiken, 1970 and 1974). Information of this nature can help direct instruction to address the concerns of particular types of students about a particular subject of study (Gadzella, 1983; Becker, 1986; & Driscoll, 1988).

The purpose of this investigation was to compare the attitudes of university Business (BUS) and Elementary Education (ELE) majors in the areas of the enjoyment and the value of mathematics. The responses of the female and male business students were also compared to determine if gender was a factor which would influence the response to this type of survey. The following questions were addressed:

1. Was there a significant difference between the ELE and the BUS enjoyment scores?
2. Was there a significant difference between the ELE and the BUS value scores?
3. Was there a significant difference between the enjoyment and the value scores of the

ELE students?

4. Was there a significant difference between the enjoyment and the value scores of the BUS students?
5. Was there a significant difference between the enjoyment scores of the female and the male BUS students?
6. Was there a significant difference between the value scores of the female and the male BUS students?

Questions #1 and #2 investigated the differences in attitudes between the two types of majors. Questions #3 and #4 investigated the differences in the attitude of enjoyment and value within each major. Questions #5 and #6 investigated the effects of gender upon attitude scores of the BUS majors.

Method

Subjects and Procedure

Two groups of university students participated in this investigation. Fifty Elementary Education majors (3 males and 47 females) and fifty-eight Business majors (33 males and 25 females) were asked to complete a questionnaire during the first month of instruction of the semester. Each group of students was in a class which required the passing and/or the performance level of a 2.0 GPA in prerequisite mathematics courses.

Therefore, all the subjects had demonstrated minimal achievement in mathematics prior to answering the attitude questions.

Instrument

The mathematics attitude questionnaire contained two sections of questions concerning attitudes toward mathematics. Eight questions addressed the attitude of enjoyment of mathematics and eight questions addressed the attitude of the value of mathematics. These questions were developed in congruence with Aiken's (1974) enjoyment and value attitude scale. The answers to these questions were placed on a Likert-type scale of strong agreement to strong disagreement and scores were computed as a sum of all the answers per section.

Analysis

Analyses using the t-test were computed to: (1) compare the ELE and the BUS enjoyment scores; (2) compare the ELE and the BUS value scores; (3) compare the enjoyment and the value scores of the ELE; (4) compare the enjoyment and the value scores of the BUS; (5) compare the enjoyment scores of the female and the male BUS; and (6) compare the value scores of the female and the male BUS. All analyses were computed using Statistics with Finesse (1984) software program and an Apple IIc microcomputer.

Results

No significant difference was found between the ELE and the BUS enjoyment scores (t = .95). However, a significant difference at the .01 level was found in the value scores between these two groups (t = 2.57). The elementary education majors had

a significantly higher mean score (M = 27.52) in the area of the value of mathematics than did the BUS majors (M = 25.86).

(insert Table 1 here)

The enjoyment and the value scores of the ELE students were significantly different at the .01 level (t = 9.49) as well as of the BUS students at the .01 level (t = 5.26). Value scores for ELE (M = 27.52) and BUS (M = 25.86) majors were significantly higher than their respective enjoyment scores (M = 21.94 and M = 22.83). Thus, not only did both groups of students perceive these two attitudes as significantly different, but also valued more than enjoyed mathematics.

(insert Table 2 here)

When comparing the scores of the female BUS students to the male BUS students, differences in the attitude of enjoyment (t = .17) and of value (t = 1.17) were not found to be at significant levels. Not only were the differences in these scores insignificant but they were relatively low, thus demonstrating that gender was not a moderating variable in the results of the attitude survey.

(insert Table 3 here)

Discussion

This investigation found that the attitudes of the enjoyment and value of mathematics may be perceived differently by students majoring in different areas. Although it was found that some students may value more than enjoy mathematics, there is evidence

that this difference in student attitude is more likely a dimension of their major rather than their gender.

As the group of Business majors was strongly mixed by gender, there was a concern that gender may have been a moderating variable in their attitude scores. Therefore, comparisons of male and female scores were computed for this group. No significant differences were found in either the enjoyment or the value of mathematics, thus limiting this concern.

It is suggested that further research be completed which investigates the differences in types of attitudes toward a subject of study. It is also suggested that these investigations measure the levels of attitudes and their effects on different student populations. A better understanding of how students perceive the topic of study can help instructors appropriately select the type of motivation and instructional techniques which would be most effective.

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Table 1

The Differences Between the ELE and BUS Scores in Enjoyment and Value

Attitude	Group	n	mean	SD	t
Enjoyment	ELE	50	21.94	5.02	.95
	BUS	58	22.83	4.65	
Value	ELE	50	27.52	2.99	* 2.57
	BUS	58	25.86	3.62	

* $p < .01$

Table 2

The Differences Between the Enjoyment and Value Scores of ELE and BUS Majors

Subject Group	n	Attitude	mean	SD	t
ELE	50	enjoyment	21.94	5.02	* 9.49
		value	27.52	2.99	
BUS	58	enjoyment	22.83	4.65	* 5.26
		value	25.86	3.62	

* $p < .01$

Table 3

The Differences in Enjoyment and Value Scores between Female and Male BUS Majors

Attitude	Gender	n	mean	SD	t
enjoyment	female	25	23.00	3.46	.17
	male	33	22.79	5.45	
value	female	25	25.13	2.51	1.17
	male	33	26.24	4.18	

* $p < .05$