University Students’ Attitudes Towards Quantitative Research Methods: A Comparative/Contrastive Analysis

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Abstract

The study sought to determine the university undergraduate sociology and psychology students’ attitudes towards the learning of the quantitative research methods course, since attitudes influence students’ performance at a discipline. The sample consisted of 55 second year undergraduate social science students. A semi-structured questionnaire was administered to the students. The research findings indicated that more psychology than sociology students had positive attitudes towards the learning of quantitative research methods and seemed more interested to study the discipline. The methods of instruction used seemed to influence the attitudes of the students. The study recommends that the instructional process should be managed in appropriate ways, for example which provoke critical thinking in students, so as to create positive attitudes towards the quantitative research methods course which is numeric in nature.

Introduction

In general in Zimbabwe students have approached disciplines of a numerical nature with fear and have negative attitudes towards them. The National pass rate at O level (ZIMSEC Examinations Board) shows that Science Subjects have the lowest pass rates as from the year 2005 up to 2010. Mathematics is the worst affected with an average of 10.3% as from 2005 to 2010. The highest pass rate for Mathematics was in 2009 with a 13.79% and the lowest in 2008 with a 7.84%. It was, thus, against the above background that the present research sought to find out the students attitudes towards quantitative research methods which is numeric in nature, just like mathematics, as this could have a bearing on their performance.
Statement of the Problem.
Various variables such as motivation and beliefs can influence attitudes towards a numerical discipline, quantitative research methods included. Attitudes are believed to influence performance (Mahmud, 2009). Thus, determining the students’ attitudes towards quantitative research methods is essential as it would enable educators to develop and use suitable methodologies during the teaching and learning of this discipline in order to develop positive attitudes in the students which in turn would improve their performance in the discipline.

Purpose of the study.
The study sought to determine the following about the university students:
- The students’ attitudes towards quantitative research methods course which is numeric in nature.
- Whether there were any differences in attitudes towards the quantitative research methods course between sociology and psychology students.
- Effects of instructional methods on the attitudes of the students towards the quantitative research methods course.

Literature review
Several researchers have found Zimbabwean learners attitudes towards numeric subjects to be related, inter alia, to the methodology used during the instructional process in those subjects. In a study of the relationship between attitudes towards statistics and constructivist strategies used in the course, Mvududu (2003) found University of Zimbabwe students to be more susceptible to be controlled in the learning environment by those in authority than American students, making them more prone to be influenced by negative teaching methods. Further, in a study involving Zimbabwean “0” level students, Nyaumwe, (2006) found the methods used in a significant number of schools to be based on teacher centred instructional approaches, particularly due to the difficulty for teachers to give up old habits and prejudices. In addition to the above, from a research on Zimbabwean secondary school students performance in Mathematics, Wadesango and Dhliwayo, (2012), revealed that many teachers did not use teaching aids frequently in their Mathematics lessons and they did not vary their teaching methods to include some learner centred methods. This has led many learners to fear mathematics and that many of them have negative attitudes towards the subject (Wadesango and Dhliwayo, 2012).

It is significant to note that from the above researches, which cover a decade, teaching methods have, among others, been found to contribute towards students negative attitudes towards numeric subjects. Attitudes have been found to influence performance (Mahmud, 2009). Therefore, with this background of the relationship between teaching methods and attitudes towards numeric subjects in the Zimbabwean Education System, it is essential to investigate students attitudes towards Quantitative
Research Methods Course, since it is also numeric oriented. Findings could valuably reflect on, inter alia, teaching approaches for the better in the discipline.

**Procedure**
A survey and lesson observations were conducted. For the survey, a questionnaire, administered during the introductory lectures, had a 100% return rate and was meant to measure the students’ attitudes during the initial lectures of formal instruction in the quantitative research methods course at the university. Lesson observations were conducted to determine the methods used by the teachers during instruction in mathematics at high school.

**Sampling**
Stratified random sampling was used to select students from the following five undergraduate third-year social science classes: psychology-holiday, day and evening classes and sociology-holiday and evening classes. The selected 55 students constituted 25% of the population of 220 social science students. According to Weiten (1989), 25% is a good representative sample for research purposes. As former similar researches in Zimbabwe had used students at lower levels of education, for example in secondary schools, for instance Rwodzi (2006), it was deemed essential to use university students in the present research. Random sampling was also used to select the teachers whose lessons were observed.

**Instruments**
The research was based on a semi-structured Likert type questionnaire for students and an observation schedule for high school mathematics teachers. The observation instrument revealed the teaching methods used by high school mathematics teachers during instruction in the subject. The structured part of the questionnaire items facilitated statistical analysis and the open-ended part allowed for individualistic qualitative responses. The Likert type items were fashioned out from items used in similar researches, for instance Hodzi (1992), Dhindsa and Chung (1999) and Rwodzi (2006). The items on the questionnaire measured: the importance, enjoyment, anxiety and motivation, at taking quantitative research methods as a course, and those measures constituted components of attitudes (Mahmud and Zainol 2008, Dhindsa and Chung 1999 and Mushoriwa 1998), giving the instrument content validity. Further, in response to the questions, the respondents selected from the alternatives: strongly agree, agree, undecided, disagree and strongly disagree. This structure enhanced the instrument’s construct and concurrent validities, making it quite comparable to similar instruments, for instance those from Mahmud and Zainol (2008), enhancing the credibility of the questionnaire as an instrument for the present research.
Data Analysis
Basing on the Likert type questionnaire, the students’ responses to the items were scored as follows: strongly agree-5, agree-4, undecided-3, disagree-2, strongly disagree-1, for positive items and reversed for negative ones. Then, to obtain a total score, scores for each respondent were added and a maximum possible score (of \( N \times 5 \)) and a minimum score (of \( N \times 1 \)) were got. \( N \) = the number of items on the questionnaire. Positive attitudes were represented by total scores above the midway point, which in this case was 50, and those below it represented negative attitudes, and the undecided (neutral) scores were not included to ensure the directionality of the results (Mushoriwa, 1998). The analysis of the data was done into frequencies and percentages. Then the findings from the observation schedule were analysed to reveal the methods used by the high school teachers when teaching mathematics.

Results

Table 1: Students attitudes towards quantitative research methods

<table>
<thead>
<tr>
<th>Programme</th>
<th>Percentage Of Students With Positive Attitudes</th>
<th>Percentage Of Students With Negative Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology</td>
<td>76.88</td>
<td>23.12</td>
</tr>
<tr>
<td>Sociology</td>
<td>62.5</td>
<td>37.5</td>
</tr>
</tbody>
</table>

Table 2: Teaching methods used during the teaching and learning of mathematics at High school.

<table>
<thead>
<tr>
<th>Teaching method</th>
<th>Number of teachers using this method in the observed lessons</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>Group work</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Class discussion</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Problem solving</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Demonstration</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Discovery</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

Findings and Discussions
The results of this research indicated that high school teachers were in the main not using the appropriate methodologies during the teaching and learning of mathematics at ‘O’ level level in the schools under study. The lecture method was the most commonly used method by the teachers. Thus on the average, the methods of instruction used produce students who cannot comfortably apply numerical concepts to solve mathematical problems. This is evident in the poor performance shown by the students in the ‘O’ level ZIMSEC final examinations especially in questions that
required problem solving. This has an impact on the attitudes of the students as they are prone to believe, from their poor performance, that mathematics is a difficult subject. Hence, quantitative research methods a subject that is numeric in nature like mathematics, is also seen as a difficult subject by the students. Thus, they also develop a negative attitude towards it. This might be a reason why the majority of the psychology and sociology students had negative attitudes towards the quantitative research methods course, especially more so for the latter (i.e. sociology students).

Conclusions
A greater percentage of psychology than sociology students had positive attitudes towards quantitative research methods course. Students’ approach to a new numerical discipline at university is affected by their experiences with a similar high school subject, for instance mathematics. Instructional variables, for example methodology, affect students’ attitudes towards a taught course.

Recommendations
- Lecturers in universities should use instructional methodologies that motivate students so that they overcome the seeming impossibilities in their learning of numerical courses.
- High school mathematics should be taught using methodologies that provoke critical thinking hence motivating the students.
- The fear of high school mathematics should be hindered from being generalized to similar numerical disciplines like quantitative research methods.
- The Zimbabwean education system should provide for and encourage the taking up of statistically based research oriented subjects in secondary school. This would help in engraving a culture of research in students.

References


