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Students Profile Based on Attitude towards Statistics

Hairulliza Mohamad Judi*, Noraidah Sahari @ Ashaari, Hazura Mohamed, Tengku Meriam Tengku Wook

Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Malaysia

Abstract

Instructors in statistics courses usually face huge challenges in dealing with students with lack of interest. These students show signs of negative attitude such as feel tired to follow the course, incapable to appreciate the benefits of statistics, unable to focus in class, tend to interfere during class progress and absent. Student's attitude towards a course is important because it affects the entire learning process. A positive attitude enables students to develop statistical thinking skills, to apply knowledge acquired in everyday life, and to have an enjoyable experience throughout the course. In connection with the matter above, what is the distinguished feature of students having a positive attitude towards statistics compare to that of having negative attitude? Are these categories of students offer a different demographic profile? The two questions are answered in this paper by using data obtained from an online survey using attitude towards statistics instrument. There are six components in the assessment of students' attitude, i.e. affect, cognitive ability, value, difficulty, interest and effort. Data were obtained from a sample of 180 students in a statistics course at Faculty of Information Science and Technology (FTSM) Universiti Kebangsaan Malaysia. In addition to the six-components, student demographic factors are also tested to determine a profile. The results show that attitude components differentiate students into three groups: positive, neutral, and negative attitude towards statistics. However, the analysis reveals that demographic factors do not contribute to the profile of these students. Results from this study will be useful to help lecturers to identify their students and to modify teaching and learning (T&L) methods in statistics course to be more effective and applicable to all students.

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1. Introduction

Statistics courses are important in higher education level. It introduces students to structural concepts and techniques to generate, analyse, present and interpret data. It can be applied both in research and industry. For Information and Communications Technology (ICT) program offered by Faculty of Information Science and Technology (FTSM), in UKM, statistics courses are basic courses that equip students with technical and logic skills in problem solving.

Statistics courses are often considered difficult because it involves many fundamental concepts and techniques. It

* Corresponding author. Tel.: +0-603-8921-6668; fax: +0-603-8926-7950.
E-mail address: . hmj@ftsm.ukm.my

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requires suitable teaching and learning (T&L) approaches to create an appropriate learning environment. Moore(1997) and Mills (2004) suggest that active learning methods should be employed, such as by emphasizing statistical thinking and data processing, instead of using theory and formula alone.

The suggestion is found to be relevant for instructors of statistics courses in FTSM for the sake of students' interests and benefits. Currently, the course instructor is dealing with problems regarding students' interest and enjoyment in the course. These two aspects measure students' attitude towards this course. In a statistics course, a positive attitude enable students to develop statistical thinking skills, apply knowledge acquired in everyday life, and have an enjoyable experience throughout the course. On the other hand, negative attitude makes them feel tired to undertake the course, incapable of appreciating the benefits of statistics, unable to focus in the class, tend to interfere during class progress and absent.

This study attempts to explore the profiles of students based on attitude towards statistics. Among the research questions are:

1) What are the characteristics that distinguish students having a positive attitude towards statistics compare to that of having negative attitude?
2) Are these two categories of students offer different demographic profile?

2. Attitude in statistics course

Attitude is an individual way of thinking and act on a phenomenon. Positive attitude allows individuals to achieve excellence in the field of undertaking. Conversely, negative attitude cause someone to feel depressed in the task given and could not move forward. Attitude is an important element to be addressed by course instructors. According to Papanastasiou (2000) and Tapia and Marsh (2001), students' attitude plays an important role in their academic performance.

The characteristics of students with a positive attitude in a statistics course are shown by their ability to develop thinking skills in statistics, to use statistical knowledge in solving daily life problems, and their desire to follow the course of future advanced statistics (Gal et al. 1997). Characteristics of students who have negative attitude can be identified by their anxiety in the classroom (Ahmad Fauzi et al. 2005). Fullerton and Umphrey (2001) and Zamalia (2009) suggested that instructors play a role in addressing the two groups. The presence of students with negative attitude might create problems in effective learning.

Several studies have been conducted relating to students' attitude in statistics courses. Schau (2003) has introduced the Survey of Attitude towards Statistics (SATS) instrument to measure the six components of attitude. It consists of affect, cognitive ability, value, difficulty, interest and effort. Table 1 lists the components and examples of their items.

At the local level, some studies on students' attitude toward statistics were conducted. Among them is Zamalia (2009), who develop the profile of students taking statistics courses using Schau instruments. Instead of using six components of attitude, only four components of attitude were used in the study; affect, cognitive ability, value, and difficulty.

3. Methodology

This study is a part of a strategic action project to evaluate students' attitude towards statistics and to identify suitable T&L method in statistics course. In the first stage of this project, researchers assess students' attitude and achievement in the course. This includes identifying profile of students according to their attitude towards statistics and examining the correlation between attitude and achievement in statistics course. The next stages involve identifying the effective T&L techniques, implementing them and testing their effectiveness.