The Longitudinal Study of Computer Simulation in Learning Statistics for Hospitality College Students

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ABSTRACT

The class quasi-experiment was conducted to determine whether using computer simulation teaching strategy enhanced student understanding of statistics concepts for students enrolled in an introductory course. One hundred and ninety-three sophomores in hospitality management department were invited as participants in this two-year longitudinal study. Students received computer simulation intervention in experimental group and traditional teaching method in control group. In particular, learning effectiveness difference was found in two groups. The pretest scores were found to do something with the improvement rate. The preliminary results of this study indicated some evidence that these methods may improve student understanding of statistics concepts.

Keywords: Computer Simulation, Hospitality Education, Latent Growth Modelling (LGM), Statistics

1. INTRODUCTION

Today’s educators are facing the students who are in net-generation (Oblinger, 2003). Some researchers indicated students belong to virtual communities and they can encourage learning by using technology and trying out different alternatives to develop social relations and explore new identities (Zemsky & Massey, 2004; Boyd, Parikh, Chu, Peleato & Eckstein, 2011). The growth of virtual worlds has impacted dramatically the higher education, including computer simulation. Shannon (1975) addressed simulation constructs a various model and reproduces the interaction of numerical objects that can make up a system which can happen in real world over a period of time.

Many university students majoring in the hospitality management find the required statistics course to be blunt as well as difficult. Because of this reason, there is also a considerable interest in how to teach statistics (Loustau, 2013; Tong & McBride, 2014; Zhang & Schwartz, 2014). For statistics concepts that tend to be very difficult, many researchers have recommended using lots of different teach-
ing strategies, including computer simulation methods and others, but there have been very few empirically and theoretically based studies related to student achievement using these methods (Thompson & Verma, 2003; Rosenblatt & Nadler, 2014). There were few studies focused on teaching and learning statistics in hospitality education.

Much attention has been focused on the ability of student employment and competency to meet with the relatively simple requirements of hospitality management. Some researchers found that hospitality students had done badly in mathematics, statistics and science and many students considered those courses which are irrelevant to the needs of hospitality industry (Robert & Ineson, 1980). Statistics education historically has been regarded by many students as hard and unpleasant to learn and can be viewed as a new and emerging discipline, when compared to the other area of study and inquiry. Many teachers or instructors also felt frustrated and unrewarded to teach. The research of statistics education even can seem to be an invisible, fragmented discipline (Henningsen & Stein, 1997).

Nevertheless, problem-solving is one of the extremely important competencies in the context of hospitality industry. Moore (2006) indicated, “Statistics has some claim to being a fundamental method of inquiry, a general way of thinking that is more important than any of the specific techniques that make up the discipline” (p.134). A numbers of researches demonstrated the statistical literacy, reasoning and thinking help students to build the ability. Because of students’ lack of statistical background, many of them regarded statistics as useless and bored subject, as a consequence, they got lots of information and transport it with the wrong way while they were in the industry. A recurrent complain within industry is that schools need to make students aware of the uses of numbers and information in management in situations when no alternatives exist. For instances, the ability of presenting reports and analyse the market make it essential for the hospitality manager to related to the professionalism.

Since teaching statistics in hospitality management required some different approaches from both teachers and students from other components, this posed particular problems if the teacher has not studied statistics, or if the teacher is not the hospitality and statistics subject specialist. Even the teachers are the hospitality management specialists and familiar with statistics, they are always faced with many challenges in instructing students in learning statistics. For example, it is hard to motived student to learn complex, counterintuitive and difficult statistical concepts. Many students in hospitality major have no the underlying mathematics which interferes with learning related statistical content. The majority of students rely on their experiences and intuitions to provide their answers, rather than apply the statistical procedure. The worst challenge is students always equate statistics with mathematics.

To deal with those challenges, many researches introduced different teaching strategies for the statistics education. Teaching is an essential part of the statistics instructors, but most of them receive little training for teaching in general. For the past decades, researchers and educations have put lots of effort in the research for seeking more effective ways of teaching and learning statistics. Computer simulation represents one of the better models of teaching among those strategies (Penfold, 2003; Thompson & Verma, 2003).

2. PROBLEM STATEMENT

Traditional teaching statistics resulted in students having low statistics knowledge, critical thinking and consequently transfer ability (Buuren, 2006; Simmons, 2014). Usually, statistics has been regarded as a general course and separated the content from the content in terms of hospitality management. This study proposes a new module that removed this separation by using computer simulation students to learn statistics. It describes the new module and compares the learning outcomes of students following the proposed computer
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