Proposing a Model to Explain Teachers’ Intention to Use Technology: Identifying Constructs and Formulating Hypotheses

Timothy Teo, University of Auckland, New Zealand

ABSTRACT

In this paper, the author identifies the constructs that influence teachers’ intention to use technology for instructional purposes. Drawing from widely used and validated theories and models with origins from social psychology, a total of seven constructs were identified to develop a research model. Following, twelve hypotheses were formulated to describe the relationships among the constructs and the teachers’ intention to use. Further studies on the research model for greater validity and expansion are suggested.

Keywords: Education, Intention to Use, Technology Acceptance, Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), Unified Theory of Acceptance and Use of Technology (UTAUT)

INTRODUCTION

Technology has been a mainstay in many educational systems and teachers play a crucial role in the effective implementation of technology for teaching and learning in schools (Zhao, Tan, & Mishra, 2001). Thus it is important to understand the factors that drive teachers’ intention to use technology. However, many studies on educational technology have focused on the practical strategies that motivate teachers to use technology in the curriculum, with limited research on the factors that affect teachers’ intention to use technology. Although most teachers would agree that learning with technology has many benefits, this alone does not ensure effective use of technology in the curriculum. Notwithstanding the level of technological sophistication in a school, the affordances of technology cannot be harnessed if it is not used pervasively in instruction and administration.

From the literature, the factors that influence teachers’ intention to use are typically grouped into personal factors, technical factors, and environmental factors. Some examples include effort expectancy (Venkatesh, Morris, Davis, & Davis, 2003), computer self-efficacy (Teo & Koh, 2010), technological complex-
ity (Teo, 2009; Thong, Hong, & Tam, 2002), computer attitudes (Teo, 2007), and facilitating conditions (Ngai, Poon, & Chan, 2007). To gain insights into teachers’ intentions to use technology, it is essential to identify the significant drivers from the many variables proposed in the literature.

Purpose of the Study

Despite the research that has been conducted to examine the factors that explain teachers’ intention to use technology (Smarkola, 2007), there is currently no model to explain the relationships among the factors and how they impact on teachers’ intention to use technology. Such a model has the advantage of pooling the variables to assess for statistical significance for model expansion and modifications, explaining the interaction among variables, taking into account measurement issues (e.g., errors), and facilitating replication studies to be conducted. The purpose of this study is to propose a model to explain teachers’ behavioural intention to use technology. In the process, the constructs will be identified and this is followed by the formulation of hypotheses to depict the relationships among the constructs.

RESEARCH MODEL AND HYPOTHESES

Arising from the interests in understanding users’ intention to use technology, researchers have adopted several models/theories from social psychology. Among these are the Technology Acceptance Model (Davis, Bagozzi, & Warshaw, 1989), Theory of Planned Behaviour (Ajzen, 1991), and Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003). For example, the Technology Acceptance Model and Theory of Planned Behaviour have received empirical support for being robust and parsimonious in predicting technology adoption in various contexts and a variety of technologies (Sugar, Crawley, & Fine, 2004; Teo, 2009).

The Technology Acceptance Model (TAM) was among the first models to include psychological factors that affect technology acceptance (Davis, 1989). Since its appearance, it has been found to be efficient in explaining user behaviour across a broad range computing technologies and user populations. In the TAM, the relationships among perceived usefulness, perceived ease of use, attitude towards use, and behavioural intention to use technology are specified. Behavioural intention is posited to be affected by attitude towards use, as well as the direct and indirect effects of perceived usefulness and perceived ease of use. Both perceived usefulness and perceived ease of use jointly affect attitude towards use, whilst perceived ease of use has a direct impact on perceived usefulness but the reverse is not true. Davis (1993) argued that this was because perceived usefulness concerned the expected overall impact of system use on job performance (outcome), whereas perceived ease of use pertained only to those performance impacts related to the process of using the system per se. In other words, no matter how useful a system is, it will not be used if potential users perceive it to be difficult to use. Using an extended TAM, Teo, Lee, and Chai (2008) found that 24% of the variance in pre-service teachers’ computer attitudes was explained by perceived usefulness, perceived ease of use, subjective norm, and facilitating conditions.

The theory of planned behaviour (TPB) was proposed by Ajzen (1991) as an extension of the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980). In the TPB, behavioural intention is hypothesised to be the most influential predictor of behaviour and the former determines how hard people are willing to try to perform a behaviour (Ajzen 1991). According to the TPB, a person’s behavioural intention is influenced by an attitude towards the behaviour, subjective norms, and perceived behavioural control. Armitage and Conner (2001) examined empirical 185 studies published up to the end of 1997 and found that the TPB accounted for 27% and 39% of the variance in behaviour and intention respectively. On a study of 157 student teachers, Teo and Lee (2010) found that the TPB was an efficient model that explained 40% of...
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