Chapter 18
Evaluating Students’ Perceptions of Interactive Response System (IRS): Extending Technology Acceptance Model

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ABSTRACT
A classroom interactive technology, Interactive Response System (IRS) such as NXTudy, is getting popular in the campus. However, little research has explored how students feel regarding to using IRS, and less solid models have been established to depict students’ behaviors systematically. This study develops a model to formulate university students’ perceptions, attitudes and actionable feedback in terms of using IRS by extending Technology Acceptance Model (TAM). A survey was conducted to examine the proposed model and confirm the factor “perceived usefulness” is the most important factor. Instructors should explain the importance of using technology before the class starts and repeat the benefits constantly to enhance students’ understandings, making students realize the usefulness of the technology to raise their intention to use, satisfaction and the willingness of recommending others to use the technology.

INTRODUCTION
Intel Teaching Program (Intel, 2007), founded by Intel Foundation and sponsored by Microsoft and HP, is a teaching program that instructs teachers to apply information technology in the traditional classroom. The program had trained over 3300 primary and secondary teachers in American during 1998 and 1999. Due to the outstanding...
achievement, Intel decided to significantly expand the program in 2000 and planned to reach 13 million teachers in more than 40 countries—and their one billion students by 2011. This program proves the fact that technology is a powerful tool to help students develop and strengthen the skills in succeeding in the global economy.

Making students more active participants rather than passive listeners promotes the effective learning (Chou, 2003). The use of technology is able to foster interaction and lead to a better and more effective learning (Evans & Sabry, 2003). Oral questioning and answering is the most common way for the interaction in the classroom. This traditional method which relies on hand-raising or volunteered responses to questions always only secures responses from a small group of more outspoken students (Slain et al., 2004). Two streams of the technology have been used to improve this issue: “off-line” technology and “on-line” technology. The former provides learner autonomy for students to study by their own outside the classroom, such as podcasting (Campbell, 2005; Frydenberg, 2008), Wiki (Watson et al., 2008), open source software (Watson et al., 2008), web-based systems (Preiser-Houy & Navarrete, 2006). The latter which can be called IRS (Interactive Response System)(Slain et al., 2004) enables students interact with the designed material and get feedback instantly in a classroom setting, such as Student Response System (Horowitz, 2003), Classroom Communication System (Abrahamson, 1999), EduClick (Liu et al., 2003). To facilitate the interaction in the classroom, IRS is getting popular in the campus and it calls the need of this study.

The typical IRS includes a computer attached with a radio signal receiver, particular software, a projector, a screen and personal hand-held devices that are controlled by students to respond to the provided questions. Compared to “off-line” technology, IRS has the advantages: (a) it facilitates active learning because all students are able to answer questions anonymously without dread of ridicule or mistake; (b) it increases the interaction and interests due to it provides a game-like atmosphere; (c) instructors are able to assess students’ comprehension and take remedial measures instantly; (d) it improves students’ attendance (Slain et al., 2004; Siau et al., 2006; Dujuan & Jing, 2009).

However, most research on IRS focused on the IRS performance (Slain et al., 2004), interactivity created by IRS (Siau et al., 2006; Liu et al., 2003) and case study (Horowitz, 2003). Little research has engaged in the exploration of how students feel regarding to using IRS, and less solid models have been established to depict students’ behaviors systematically. Thus, the purpose of this research is to: (a) build a model to formulate students’ perceptions, attitudes and actionable feedback toward using IRS by extending TAM; (b) provide the suggestions of teaching strategy for instructors while applying IRS in a classroom setting. Theoretically, the study links TAM, user satisfaction and actionable feedback (recommend other to use) to form an intact model. This model fully examines the role of the IT artifact and brings more IT research streams. Practically, the results can improve the performance of introducing IRS into the classroom.

**NXTUDY INTRODUCTION**

NXTudy, an IRS, was used in this study. Its hardware consists of a set of signal transmitters and a response signal receiver connected to a computer via a RS-232 cable. A projector is connected to the computer to broadcast the materials. The signal transmitter is an infrared remote controller which is controlled by each student. NXTudy software takes charge of processing the singles from receiver, calculating students’ scores and creating statistical graphs and storing the results in the server. The structure is shown in Figure 1.