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Enhancing classroom interaction via IMMAP – An Interactive Mobile Messaging App

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ABSTRACT

Large classes are prevalent in many higher learning institutions. Drawbacks of large classes over smaller ones include the reduction of quality student-lecturer interactions, and prevalence of teacher-centered approach to learning. Given these constraints, using mobile messaging apps can ease student-lecturer interactions beyond those attainable in face to face classes. As such, the main proposition of this study is to investigate the effectiveness of using an Interactive Mobile Messaging App (IMMAP) in classrooms of higher education for supporting student-lecturer interactions. The key predictors identified from the Interactive Mobile Messaging Acceptance model were used as a guide to design and develop IMMAP. The predictors are perceived ease of use, perceived usefulness, self-efficacy, enjoyment, system quality, information quality, and uncertainty avoidance The pretest-posttest design where participants are studied before and after the experiment concluded was used in this study. Students' perceptions of IMMAP in relation to their adoption intention were obtained using both pretest and posttest surveys. A total of 38 students from two different courses evaluated IMMAP. Findings revealed significant changes on a number of indicators. Uncertainty avoidance level decreased significantly (higher positive score) from pretest to posttest, while system quality increased. In terms of enjoyment, a significant decrease was observed from pretest to posttest. Adoption intention of IMMAP saw a significant increase. The findings reflect students' readiness to use IMMAP in the classrooms to interact with their lecturers. Therefore, investing in the development of mobile messaging apps has the potential to improve the quality of student-lecturer interactions in the classrooms.
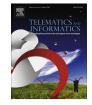
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1. Introduction

Mobile technology is a collective term for technology that is portable and used for cellular communication (Daichendt, 2015). Recent years have seen the rapid growth of mobile technology sophistication. Pagers and mobile phones have evolved to smartphones, tablets, netbook, GPS navigation devices, handheld game consoles, and Internet devices for surfing the web. At the forefront of such growth is the adoption of mobile technology by the masses, particularly among millennials (i.e. born between the year of 1977 and 2000). A study by Mashable Inc., an online news portal on emerging computing trends found that millennials prefer to use mobile devices for communication and to conduct online transactions (Mashable, 2015). In

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Malaysia, approximately 66 per cent of the population are active Internet users, 47 per cent own more than one mobile phones, and more than 10 million of them are 3G subscribers (Teller, 2014). Numerous applied and theoretical researches have been conducted to examine user mobile technology adoption intention. In higher education, mobile technology has made its impact. Learning platforms enabled by computing technology, such as online learning, mobile learning, and distance education are evidences of the Internet and mobile technology influences.

The emphasis on learner-centered as opposed to teacher-centered pedagogies has spurred a shift of focus towards understanding different learning styles and how students are currently using technology, particularly mobile technology to assist their learning activities (Lee et al., 2009). Bernard et al. (2014) examined the correlation between students' online interactions and their achievements within an online learning and distance education context. Findings from their study showed that the students' academic results improved when they were given the online platform to interact with one another and with the learning content. Students are also tech-savvy and are using mobile devices in the classrooms for various reasons, such as accessing the learning materials and capturing the notes written by their lecturer on the whiteboard (Zakaria et al., 2010). The benefits of allowing students to use their mobile devices in the classroom are well documented, such as instilling a sense of responsibility into the students to use their mobile devices for useful purposes (Kay and Lauricella, 2011). Furthermore, with cheaper e-books, students have the option of purchasing and accessing e-books on their mobile devices at great convenience and flexibility. Opportunities for learning outside the classrooms are also made possible with mobile devices, such as collaborating via social networking tools and cloud collaboration services, and viewing webinars or instructional videos uploaded online (Barczyk and Duncan, 2013; Carroll et al., 2013; Huang et al., 2013).

Higher education institutions' courses are often delivered in lecture classes with hundreds of students in large lecture halls. Issues of lack of interaction opportunities between lecturers and students due to time constraint, language barriers, cultural norms, and lecturers' inability to provide adequate attention to all the students are pervasive in large lecture classes (Gan and Balakrishnan, 2014; Smith and Cardaciotto, 2012; Trees and Jackson, 2007). Dynamic interactions among students and lecturers in the classrooms of higher education are crucial. Students' interactions in the classrooms need to be supported to create a learning environment that motivates and engages the students (Yılmaz and Sanalan, 2012). Murugaiah and Thang (2010) applied teaching methods in an English language course that encouraged the students to interact actively, and subsequently helped raised their attentiveness during lectures. Teaching practices that emphasized students' interactions in the classrooms were also found to improve their problem-solving skills and understanding, especially when students were given the opportunity to share their ideas with their peers (Bruce, 2007).

Generally, literature reviews show that student-lecturer interactions are important, however due to issues such as time constrains and language barriers, these interactions rarely take place during lecture classes. Therefore, the current study aims to develop IMMAP to enable student-lecturer interactions in the classrooms using mobile technology. IMMAP is a mobile messaging app customized with functionalities for enabling interactions between students and lecturers. Mainstream mobile messaging apps, such as WhatsApp are not appropriate to be used in this study for a number of reasons. For instance, familiarity or unfamiliarity with WhatsApp may skew perceptions of key constructs, i.e. students who are using WhatsApp actively may score highly on constructs such as perceived ease of use, self-efficacy and enjoyment, while students who dislike WhatsApp may give lower scores. Furthermore, popular messaging apps are designed with features meant for casual conversations and are considered unsuitable for supporting teaching and learning endeavors. Lecturers on the other hand, will be burdened with the tasks of saving their students' mobile numbers, and creating group chats.

Therefore, development of a new mobile messaging app for students and lecturers to interact on academic issues is justified. Additionally, IMMAP was built based on the Interactive Mobile Messaging Acceptance (IMMA) model (Gan and Balakrishnan, 2016) by mapping key functions to the model's significant constructs, i.e. qualities of mobile messaging app that were statistically proven vital to predict adoption intention, such as enjoyment and perceived ease of use. A pretest-posttest experiment approach was chosen to gather students' perceptions of mobile technology (pretest survey), and their perceptions of IMMAP after using the app in actual classes (posttest survey). Perceptions gathered were then subjected to a comparative analysis to discern significant differences.

In sum, this study hopes to discover key factors influencing tertiary students' adoption of IMMAP to interact with their lecturers. In pursuant of this goal, the research questions that drive the overall direction of this study are: (i) What are the key factors affecting tertiary students' adoption of IMMAP to interact with their lecturers? and (ii) How receptive are tertiary students to the use of IMMAP to interact with their lecturers?

The following sections in the paper proceed in this sequence: discussion of problems related to student-lecturer interactions associated with large lecture classes in tertiary institutions, related studies of mobile technology in higher education, followed by an introduction to the IMMA model and its significant constructs, design and development of IMMAP, and lastly results and discussion are presented before the study's conclusion.

2. Mobile technology for interactive lectures

The modern day students are typically characterized as possessing shorter attention span, greater reliance on mobile technology in many aspects of their lives, preference towards digital content as their source of learning materials in the form