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RESEARCH ARTICLE

# Exploring The Intention of Using Mobile Learning in Flipped Classroom Approach for Arts and Design Students

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## ABSTRACT

The flipped classroom is a pedagogical approach that encourages active learning experience activities in the classroom. The students will receive information and materials before class learning using mobile technology both inside and outside of the classroom to allow for more dynamic, interactive, and advanced learning activities that involve the application of knowledge with higher-order thinking. Studies have shown, students who use the Mobile learning or M-learning platform in a flipped learning method can provide an interactive, engaging, and cost-effective way for graduates to broaden their employability skills. Although research on mobile learning in the flipped classroom approach has been extensive, research on M-learning has been limited. The study's objective is to examine the effectiveness of mobile learning adoption in relation to students' perceptions and responses under the UTAUT2 (unified theory of acceptance and use of technology) model in the undergraduate arts and design students and to review the pilot study model in development for larger-scale future research. Through a quantitative research approach, the pilot study used questionnaires to gather data from 50 undergraduate arts and design in multimedia design programme students of first-year from a local higher education institution. The findings showed that every composite reliability value in this study exceeded the 0.70 threshold value, indicating strong indicator reliability of the factors. Moreover, flipped classrooms increase student involvement, learning motivation, achievements and both at

the same time improving educators' knowledge of how to use the flipped learning model in ways that are most advantageous for their own students.

**Contribution/Originality:** This study enhances the flipped classroom pedagogical approach in higher education, particularly for university students learning art and design. With a flipped learning approach, a mobile learning platform may provide graduates an affordable, dynamic, and captivating means of expanding their employment abilities.

## 1. Introduction

Mobile Learning or M-learning is a term that broadly refers to the use of mobile devices such as laptop, tablet and smartphone with different software applications to deliver online or e-learning contents, or managing online learning programs. It is being frequently adopted in the fields of distance education, professional development workshops, and lifelong learning education. With the help of mobile technology, other than facilitating learning experience, one can conveniently and rapidly access information from anywhere at any time. This will help in exploring the knowledge and skills of a learner (Althunibat, 2015).

The increasing demand of data sharing and the need for more technology-based solutions have led to the development of new ways to enhance the M-learning process. Despite the small sizes and portable characteristics of mobile devices, their numerous features like cameras, recorders, and synchronization ability have also attracted more people to invest in them. This expanding interest has caused the usage of these devices in different possibilities and various fields, in such M-learning is one of the beneficiaries that encourage individuals to be more actively involved in educational activities, concurrently allowing educators to reach out more students with ease of sharing information through different mobile platforms.

These days, due to the advancements in mobile technology with its ease of accessibility and the announcement of a pandemic outbreak since March 11, 2020, by the World Health Organisation (WHO), distance education has been a trend in most of the higher education institutions, where courses are conducted virtually or online using devices (e.g., mobile phones, tablets, and laptops) and online classroom management systems, software applications, or web platforms. These courses involve either a live stream session or pre-recorded conditions to encourage students to actively participate in the virtual and mobile learning environments. Upon the recent move into the endemic phase in Malaysia by April 1, 2022, the earlier adaptation of e-learning during the pandemic has encouraged many higher education institutions to evolve their learning structure from a conventional approach to hybridity, where the concept of flipped classroom learning can be tailed with the transformation.

Furthermore, due to the COVID-19 outbreak, M-learning is the new way of teaching and learning. Boost creativity with m-learning. With its myriad functions, design it to suit your needs. With a simple and intuitive interface, it's never been easier to create powerful and engaging lessons for your students. With this M-learning tool at hand, content creation is no longer limited to just teachers and pupils but anyone who wants to unleash their creativity on the world (Saikat et al., 2021). It has been shown that using a mobile app like WeChat and others is a new trend and can improve student achievement in art and design

classes. Furthermore, using the mobile app is a way to use mobile phones to access art class information and resources (Zhang, 2021). Additionally, according to Alghazi (2020), the potential for using game consoles as mobile learning tools and the use of them offer a more effective route for the learners (Alghazi et al., 2020). Despite the various advantages of mobile devices, such as being able to access educational content, students still tend to use them less (Alghazi et al., 2021).

Academics in higher education see the potential for their learning experience, but the technology's efficacy is still in question. This study investigates students' perceptions of m-learning technology, what motivates them to use it, and how they would react if their institution adopted this new tool (Basurra & Bamansoor, 2021). Art and design studios reflect the economic and social turmoil of the times. When physical spaces are becoming more expensive and transient, it is no surprise that traditional art schools have begun to offer online degree programmes. This approach's growing popularity has coincided with a larger trend towards alternate means of education, as advances in technology have allowed new kinds of learning beyond the traditional classroom setting.

University students can use the pervasiveness of mobile technologies to improve their learning experience and communicate with their constituents (Aish et al., 2013). The usage of mobile phones among university students is high. Mobile phone use by the students has changed their day's life. The top activities involved in using the mobile phone among the students are communication purposes and also taking photos, reading and editing documents (Noor et al., 2021; Alghazi et al., 2020).

Saving time, money, and resources are critical for traditional classrooms' stability and day-to-day operation. With the introduction of the M-learning platform in flipped class that is capable of providing an interactive, engaging, and cost-effective way for graduates to broaden their employability skills. According to the findings of this study, using this learning method can help individuals improve their core and process skills, which are important factors that employers consider when hiring and retaining employees (Abdelaziz, 2021; Vishwakarma, 2015; Kinash, & Crane, 2015).

There is no doubt that m-learning is quickly becoming a key factor in determining the success of university students learning art and design training programmes. With globalisation, technological innovations, and the explosive growth of information, all learning organisations face a critical need for learning content process improvement. Although the potential advantages of mobile devices, such as being able to access educational content, students still reluctance in using it (Alghazi et al., 2021).

Adopting M-learning poses technical challenges. These various types of mobile devices and features are popular among university students, while others only provide basic capabilities. Another issue that students face is insufficient internet coverage. As a result, it is a challenge that both the student and the instructor are dealing with (Eom & Laouar, 2020; Jayasiriwardene & Meedeniya, 2021; Gupta, 2020; Mokhsin et al., 2022). Lack of motivation is one of the most common reasons why students fail to complete their work. This is because there is no one-on-one monitoring of the students' progress. The discipline that students need to follow in order to be successful in m-learning is very different for every student (Gupta, 2020). Various studies have been conducted on the various aspects of M-learning to examine its acceptance. These include the Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Al-Emran, Abbasi & Mezhuyev, 2021; Al-Rahmi et al., 2021; Mussa et al., 2022).

However, in the literature, there is insufficient consideration for the adoption of M-learning among university art and design students in Malaysia. This study utilises M-learning from the university's art and design student adoption literature to investigate this phenomenon. Although past studies on the adoption of M-learning have effectively investigated the factors from a technological standpoint, only a few of them have addressed the flipped classroom issue. In the Malaysian context, most of the past studies in M-learning have focused on learning languages (Mussa et al., 2022), augmented reality (Jasmy et al., 2021; Mokhsin et al., 2022).

Nevertheless, stressed that the application of the UTAUT2 model in the context of M-learning among university art and design students is still in the beginning stage. Therefore, this study has adopted UTAUT2 determinants to examine university art and design student's intention to adopt M-learning. This research will examine university students' perceptions of studying art and design and the adoption of M-learning. M-learning integrates with the learning management system to provide a highly personalised and dynamic learning experience. It works to drive retention, engagement, and productivity by providing students with the best learning possible.

## 2. Literature Review

### 2.1. Flipped Classroom Learning

A flipped classroom is defined as a pedagogical method structured around the concept of transmitting knowledge with direct instruction moving from a group learning setting to an individual learning space. The students will receive information before class to allow in-class time for more dynamic, interactive, and advanced learning activities that involve the application of knowledge with higher-order thinking in groups. For instance, lectures are typically administered online before tutorial or practical classes, where students can view them on their own time and as frequently as they want. The flipped classroom differs from the earlier blended learning model in that it is made up of two types of learning, which are divided into two learning phases. Students are transformed from passive to active learners in the flipped classroom (Ozdamli & Asiksoy, 2016).

Traditional ways of conducting art and design classes are mainly structured with direct instructions given by the facilitators in group learning settings, where knowledge is typically delivered through lectures by the lecturer, followed by Q&A sessions, and step-by-step instructions and one-on-one discussions during the practical or tutorial classes on a face-to-face basis involving physical classroom environments. Such learning processes are passive in nature, where students are receiving information from the instructors and later internalising the information by themselves.

### 2.2. UTAUT2 Model to Measure the Adoption of M-Learning in Flipped Classroom

UTAUT can study all ranges of people's adoption decisions for new technology. The UTAUT theory deals with adoption or acceptance and seeks to describe innovation behaviours among technology users. UTAUT can study all ranges of people's adoption decisions for new technology. This model considers the factors that lead to an information system's behavioural intention or new technology by measuring performance expectancy, effort expectancy, social influence and facilitation condition.

The UTAUT model is synthesised by the eight models (Venkatesh et al., 2003). The theory that will inform this study is the Unified Theory of Acceptance and Use of Technology 2.

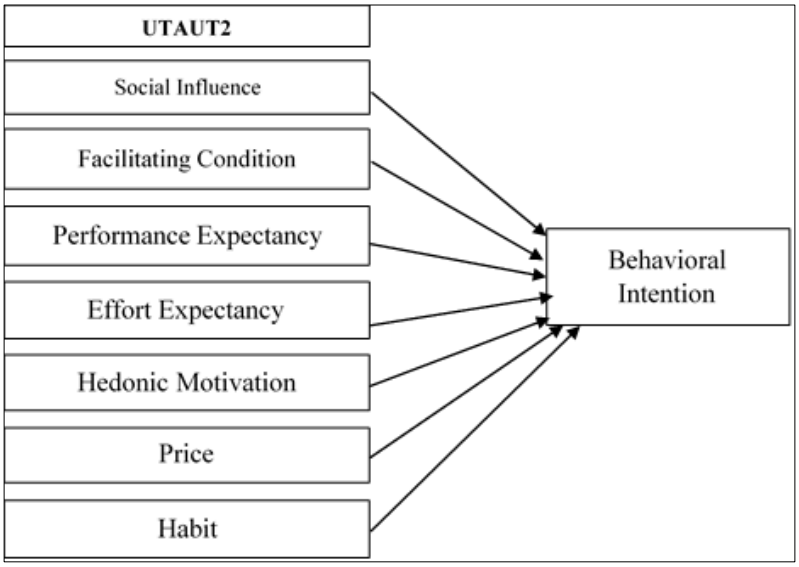
UTAUT 2 is the extended version of the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2012). Besides the four main factors that influence behavioural intention and usage behaviour, the model identifies four moderators, which are gender, age, experience, and voluntariness of use. To moderate the impact of the four critical factors on behavioural intention and use behaviour. In 2012, Venkatesh et al. (2012) extended the UTAUT model with new construction and new relationships, deeper into the consumer perspective. The new model has added three new factors: hedonic motivation, price value, and habit.

### 2.3. The proposed acceptance framework

In this study, the acceptance framework for M-learning in the flipped classroom context incorporates the UTAUT2 model, considering technology acceptance factors and their attributes and distinctions in the technology perspective.

All the factors observed in UTAUT2 model were incorporated in this study (Figure 1). This study focuses on the effects of the variables on behavioural intentions. The suggested model includes the following factors: social influence, facilitating conditions, performance expectancy, effort expectancy, hedonic motivation, price, and habit. The suggested acceptance model demonstrates that the UTAUT2 factors may impact the behavioural intention to utilise a new technology.

Figure 1: Research Model: UTAUT2 study's primary dependent variable to determine the students' adoption behaviour intention of m-learning




Source: Venkatesh et al. (2012)

## 3. Method

To achieve the research goals and the researcher conducted a pilot test to explore the awareness and factors influencing the behavioral intention of first-year university students studying art and design, regarding the use of M-learning in a flipped classroom, the researcher utilised quantitative research methodology and implemented a survey with structured questionnaires to gather data.

The survey instrument utilised studies on the Unified Theory of Acceptance and Use of Technology (UTAUT2) and other literature related to the flipped classroom. The survey was conducted in two different first-year university art and design courses in diploma and degree students. Students were shown a QR code and then asked to scan and answer the survey questionnaire using their smartphones. The majority of the questions were adapted from UTAUT2-related surveys and rephrased to align with the specific research objectives in our survey context.

The survey items were categorised into two sections: demographic statistics and the second section containing 31 questions related to eight factors of UTAUT2 theories, assessing the proposed research model. Responses were rated on a seven-point Likert scale from 1 to 7 (where 1 represents strongly disagree, and 7 represents strongly agree).

The collected data were used to validate the questionnaire. Cronbach's Alpha was employed to test reliability and internal consistency. All these tests were conducted using Statistical Package for Social Science (SPSS) 23 software. According to Sekaran and Bougie, (2016), the Cronbach's alpha acceptable score must be over 0.7.

The study utilised an online survey on the adoption of mobile phones in the flipped classroom approach through non-probability sampling. The study focused on two main subjects: diploma in multimedia design and degree in multimedia design. Subjects were selected through purposive sampling, directly targeting respondents with experience related to the survey questions and the ability to provide new insights.

## 4. Result

The goal of this pilot study is to examine the factors that influence the intention of first-year university students to adopt mobile learning in flipped classrooms. The survey was conducted as part of the UTAUT2 study, which focused on the use of mobile learning technologies. It was distributed to 50 students. The survey was created using a Google form. The items in the survey were separated into two sections: the first section contained questions about demographic statistical data, and the second section contained 31 questions related to 8 factors of UTAUT2 to evaluate the research model. The items in the survey were rated on a seven-point Likert scale from 1 to 7 (1 represents strongly disagreeing and 7 represents strongly agreeing). The survey was conducted in two different first-year university art and design courses: one for diploma students and another for degree students. The students were shown an QR code and then asked to scan and answer the survey questionnaire using their smartphones.

### 4.1. Result of Pilot Test

Table 1 presents demographic information (gender, age, ethnicity, and education status). The survey was distributed to first-year multimedia design students, and 50 people responded. According to Table 1, the majority of respondents (68% vs. 32% male) were female. The majority of participants (60%) were between the ages of 18 and 20, and degree students' bearers showed great interest in the survey with a reply percentage of 66.

Table 1: The result of demographic characteristics information (Pilot study N=50)

| Variable | Description | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 16 | 32 |
| | Female | 34 | 68 |
| Age | Under 18 | 0 | 0 |
| | 18 - 20 | 30 | 60 |
| | 21-24 | 20 | 40 |
| | Over 25 | 0 | 0 |
| Ethnicity | Malay | 0 | 0 |
| | Chinese | 50 | 100 |
| | Indian | 0 | 0 |
| | Other | 0 | 0 |
| Education status | Higher Degree/ Postgraduate Degree | 0 | 0 |
| | Degree | 33 | 66 |
| | Diploma | 17 | 34 |
| | Other | 0 | 0 |

### 4.2. Reliability Test

The objective of this study was to measure the goodness of various measures. The internal and external consistency of these measures was evaluated using Cronbach's alpha test. The data collected during the study were then analysed to determine if they were appropriate for use. In addition, most of the factors in this study have Cronbach's alpha ranging from 0.81 to 0.96, as shown in Table 2. Therefore, this online questionnaire was considered acceptable and appropriate.

According to the study's findings, performance expectancy, effort expectancy, social influence, hedonic motivation, and habit have a large impact on the behavioural intentions of art and design students in a flipped classroom. The pilot study in this research indicated that all factors are valid according to reliability analysis.

Table 2: Result of Reliability Analysis

| Factor | Number of Item | Cronbach Alpha | Result |
|---|---|---|---|
| Performance Expectancy | 4 | 0.9 | Reliable |
| Effort Expectancy | 3 | 0.87 | Reliable |
| Facilitating Conditions | 5 | 0.81 | Reliable |
| Social Influence | 4 | 0.86 | Reliable |
| Hedonic Motivation | 4 | 0.91 | Reliable |
| Price Value | 3 | 0.83 | Reliable |
| Habit | 4 | 0.83 | Reliable |
| Behavioural Intention | 4 | 0.96 | Reliable |

## 5. Conclusion

The aim of this study is to create a theoretical framework for the development of M-learning programs in universities and to understand the factors that influence its adoption among design and art students. The findings of this pilot study were obtained from a small sample of 50 multimedia design students at Tunku Abdul Rahman University of Management and Technology. However, these findings will still be used to develop policies and procedures for the use of M-learning in universities to improve the efficiency

of the education system. It's important to note that the small sample size of this pilot study could limit the generalizability of the results. Additionally, flipping the classroom improves teachers' understanding of how to apply the flipped learning paradigm in ways that are most beneficial for their own students while also increasing student involvement, motivation for learning, and achievement.

## Ethics Approval and Consent to Participate

The Faculty of Communication and Creative Industries at Tunku Abdul Rahman University of Management and Technology, Research Ethical Committee provided the researchers with research ethical guidelines. Every procedure carried out in this study that involved human subjects was done so in compliance with the institutional research committee's ethical guidelines. Every participant in the online survey using Google Forms provided informed consent.

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## Conflict of Interest

The authors reported no conflicts of interest for this work and declare that there is no potential conflict of interest with respect to the research, authorship, or publication of this article.

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