JUNE 2020 VOL. 1 SPECIAL ISSUE

E-ISSN: 2716 6333

https://doi.org/10.33093/ijcm

INTERNATIONAL JOURNAL OF CREATIVE MULTIMEDIA



International Journal of Creative Multimedia

June 2020 Vol. 1 Special Issue 1

E-ISSN: 2716-6333 doi: https://doi.org/10.33093/ijcm

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Aim and Scope

The International Journal of Creative Multimedia (IJCM) is a peer-reviewed open-access journal devoted to publish research papers in all fields of creative multimedia, including Digital Learning, Film & Animation, Media, Arts & Technology and Visual Design & Communication. It aims to provide an international forum for the exchange of ideas and findings from researchers across different cultures, and encourages research on the impact of social, cultural and technological factors on creative multimedia theory and practice. It also seeks to promote the transfer of knowledge between professionals in academia and industry by emphasising research where results are of interest or applicable to creative multimedia practices. We welcome all kinds of papers that connect academic researches with practical and industrial context in the field of creative multimedia. The scope of the IJCM is in the broad areas of Creative Multimedia following the five major thematic streams, includes but not limited to:

- Digital Learning
- Media, Arts & Technology
- Games and Virtual Reality

- Cinema and Film Studies
- Animation and Visual Effects
- Visual Design and Communication

Foreword from Digital Learning Editorial Team

Greetings from the Editors and welcome to the Special Issue on Digital Learning in the 21st century. In this Issue, we present papers from international and local researchers focusing on research papers in areas of education technology, learning analytics, e-learning, engineering, IT, business and management, creative multimedia and many other domains that seek to improve the learning process of the learner with technologies. These papers were presented in the ELITE 2019 International Conference held in Multimedia University, Cyberjaya, Malaysia on October 2, 2019, in conjunction with the 2019 IDE4TE International Exhibition on Oct 1, 2019. Themed, "Empowering Learning, Innovating Teaching Environments", this event showcased best practices of Malaysian Universities, particularly from the network of Industry Driven Education Alliance (GLU iDE4) comprising of Universiti Teknologi Petronas (UTP), Universiti Multimedia (MMU), Universiti Tenaga Nasional (UNITEN) and Universiti Kuala Lumpur (UniKL), as well as from international presenters from China, India, Bangladesh and Maldives.

The papers presented in this Special Issue centred around 5 sub-themes; 1) Innovative Pedagogies & Instructional Design, 2) New Roles of Teachers, 3) Redesigning Curriculum for Education 4.0, 4) Emerging Technologies In The Classroom, and 5) Designing Learning Spaces for 21st Century Education, and are very timely articles for readers interested in adapting technology in today's classrooms. We hope that these papers will provide further insight and contributions to the knowledge base in these fields and we hope you enjoy reading them.

Prof. Ts. Dr. Neo Mai, Multimedia University, Malaysia

Professor Dr. Neo Mai is the Director for Academic Development for Excellence in Programmes and Teaching (ADEPT) for Multimedia University, and Professor in the Faculty of Creative Multimedia, and the Institute for Digital Education and Learning (IDEAL). Prof. Mai is the Director of the award-winning MILE Research lab and founding Chairperson form the CAMELOT (Centre for Adaptive Multimedia, Education and Learning cOntent Technologies) Research Centre. Prof. Mai's research interests are in the design of constructivist learning environments, micro-learning, team-based learning and webbased education. She was the recipient of the 2014 Excellent Researcher Award, an AKEPT Certified Trainer for Interactive Lectures (Level 1, 2, 3), an HRDF certified trainer and is certified in Team-Based Learning from the Team-Based Learning Collaborative, USA.

Dr. Gan Chin Lay, Multimedia University, Malaysia

Dr. Gan Chin Lay is a Senior Lecturer affiliated with the Faculty of Business, Multimedia University. Her main research interest is in learning analytics, particularly related to technology-enhanced student-centered learning environments. Her research domains include teaching and learning issues such as student engagement, and educational technology integration frameworks.

Dr. Liew Tze Wei, Multimedia University, Malaysia

Dr. Liew Tze Wei is a Senior Lecturer at the Faculty of Business, Multimedia University, Malaysia. He is leading the Human-Centric Technology Interaction Special Interest Group, in addition to serving as the collaboration & innovation coordinator and research & innovation committee member in the faculty. His research interests and contributions fall within learning sciences, human-computer interaction, and media psychology; with a strong focus on experimental research approach.

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The International Journal of Creative Multimedia (E-ISSN: 2716-6333) is published biannually.

Typeset by MMU Press. Cover Images by Kok Yoong, Lim. Cover Design by Nekhat Sultana.

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International Journal of Creative Multimedia

Mobile Learning Readiness among Students of Maldives Higher Education Institutions

Fathimath Mumthaz The Maldives National University, Maldives

Abstract

Mobile learning and connecting development and trends are widely discussed globally. Literature evidences exist confirming mobile learning and its impact on higher education. Mobile learning opportunities can be one option for higher education institutions to reach a dispersed population of the Maldives. Although readiness of mobile learning has been analysed in several counties and contexts, this contributes as the first research on this subject in the Maldives. Therefore, this article is intended to find out students' readiness for mobile learning (mLearning) in the higher education institutions contributed to the research. A total of 343 institutional students enrolled in flexible delivery programs responded to the online questionnaire survey. Considering the level of programs, cluster sampling technique was used in shaping the sample of the research. Data was analysed using descriptive statistics and SPSS to interpret the findings on student readiness for mobile learning. The findings indicated that the students were confident in using mobile and other mobile devices in daily activities. Also, findings indicated that majority of students were confident with the basic and advanced mobile skills of mobile learning.

Keywords Mobile learning; Student readiness; Basic readiness; Higher education institutes; Maldives

Introduction

The involvement of mobile technology has changed the mode of communication at work and education with the introduction of smart gadgets such as mobile phones and tablets (Ozer & Kılıç, 2018). Blending



in technology in higher education instructional designs is growing widely through integration of intensive learning pedagogies of 21st century. Supporting this, Wagner et al. (2016) expressed that the efficiency of technology-based learning stimulates all types of verbal activities aided with computers, multimedia programs, and videos. Popular mobile devices owned and used by students include PDAs, tablets and mobile phones. Out of these devices, mobile phones gain the first place in rank (Hussain et al., 2012). More than 40% of the world population access the internet and learners are motivated to upgrade their learning skills making use of the learning options through online platforms (Becker et al., 2017). New approaches towards organizing the educational process in higher education institutes enable learners with technology enhanced mobility in education.

The population of Maldives spread across an archipelago of twenty-six atolls consisting more than one thousand one hundred and ninety islands (Maldives, n.d.). Higher education opportunities are mainly situated on the capital island, Male' and only a few are reached. Hence, institutions are adopting flexible models of learning to cater the unreached population on the islands. On the other hand, on average, Maldives is a technology friendly country, where mobile devices are abundantly used by all age groups of the population. Especially by young learners who use technology enabled mobility for academic and nonacademic purposes inside and outside the classrooms.

This study was done to explore whether the technology enabled society is ready with basic mobile readiness to adapt mobile learning in the higher education institutes of Maldives. Thus, this study is expected to get answer for the following questions.

- a. What percentage of higher education students own mobile phones and obtain internet access in Maldives?
- b. To what extent do the students have of mobile basic skills and advanced skills?

The main focus of the research was to explore the basic readiness of Mobile Learning in the higher education institutes of Maldives. The content of the research consists of the problem that led to the development of the research, the methodology adopted is to find out the basic readiness and the results generated based on the response of students studying in Maldives higher education institute. The outcome of the data and results are illustrations in the form of tables and graphs.

E-ISSN: 2716-6333

Literature Review

Mobile Learning

Mobile Learning is defined as use of private electronic device in the learning process with supportive social and content interaction (Saxena & Saxena, 2015). The growing new style among youth and the desire to be connected anytime anywhere has brought a new angle of living in daily activities. The 21st century learners rely on mobile connections to grow their relationship upon (Saxena & Saxena, 2015). Supporting the new style, Poushter (2016) states that in spite of the location there is a massive rise in socializing, communication and entertainment happening in most of the countries due to the adoption of technology. Sönmez, Göçmez, Uygun, and Ataizi (2018), in a review on current studies of mLearning, stated that using smartphones and tablets for social interaction is commonly practiced by learners through different communication techniques which include reading books or articles, emailing and Facebook posting while having coffee or travelling.

The advantages of mLearning and its connectivity with eLearning cannot be disregarded. History of eLearning shows the lead from eLearning to mLearning is due to the insufficiency and limitations perceived from conventional eLearning (Mehidipour & Zerehkaf, 2013). Adding on, the authors stated that focus of mLearning is advantageous as it promotes mobility and the portable interactivity of the learner. mLearning outstands from other learning for its access to information and learning activities, interactivity and its multi-functional capabilities when compared to the traditional implementations.

Blending in technology in the higher education instructional designs is growing widely through the integration of intensive learning pedagogies of 21st century. Mobile devices play a key role in everyday activities for all age groups of human life. Smart devices have been seen as a common tool for accessing information globally (Wabner, 2016). According to Horizon Report (2017), more than 40% of the world population access the internet and learners are motivated to upgrade their learning skills making use of the learning options through online platforms such as YouTube.

Approaches to mobile learning are mostly through applications and its introduction in the daily activities have increased so much that mobile apps are being used worldwide from shopping to banking to education depending on the quality of the apps being functional both online and offline (Rajput, 2018). According to many researchers, mLearning has a special focus among learners and educators for the flexibility and digital reach. However, the differences in internet connectivity and the socio-economic status

of learners have forced higher education providers to continue maintaining or improving the quality and affordance of the deliverables (Horizon report, 2017).

Pedagogical approaches used in higher education are no longer fixed with hard copies, PowerPoint presentations, and textbooks. The integration of technology is unavoidable and hence challenging for educators not to use them in classrooms. Facing the challenges, Li & Wong (2018), implemented mobile learning using smartphone application at the University of Macau due to the observation of losing students' interest in the conventional pedagogy over smartphone applications and social networking. This step-up in the pedagogy resulted in significant improvement in teaching and learning. Affordable and accessible language recognition and translation mobile applications supporting inclusivity among learners.

"There are several mature speech recognition services being offered through cloud services, e.g., iOS Siri, Amazon Alexa, Android speech to text, IBM Watson, and Google Cloud Speech.

(Kasrani, et al., 2018)

Decades passed since mobile learning has enlightened the higher education systems incorporating the mobility and technology in the facilitation. A variety of factors attract mobile learning based on individual universities and countries. The abundant use of mobile phones, encouraging strategies and accessibility to shared information are some of the factors for Saudi Arabia (Elfeky & Masadeh, 2016). Likewise, in Maldives mobile learning is encouraged as the population is spread across the small islands separated by sea.

Methodology

Quantitative method was adopted to seek answers for the research questions. Survey design was chosen to implement and understand the current status of mLearning in Maldives higher education institutes. By studying a sample of the population, survey design can figure out statistical patterns creating opportunity for the researcher to generalize for the population (Creswell, 2009). Hence, the survey results from different institutes were used to generalize and obtain the readiness of the mLearning stand among students studying in the alternative or flexible delivery modes in Maldives higher education institutes.

E-ISSN: 2716-6333

Population and Sampling

Population for the research was students who studied in the first term of 2019, who also enrolled in flexible delivery programs offered by the higher education institutes of Maldives. A population can be considered as the entire group of people with common features (Kenton, 2019). A sample of 340 students from undergraduate and postgraduate programs enrolled in three higher education institutes participated in the research. The sample was selected using probability sampling technique. Singh (2018), states that in probability sampling, every element gets equal opportunity to take part in the research. Therefore, by using probability sampling technique known as single-stage cluster sampling, all students had the chance to take part in the research. Undergraduate (n=1295) and postgraduate students (n=392) were considered as two clusters, and by using purposive sampling, all students who attended all of the flexible programs were taken as the sample.

Instrument and Validity

An online survey questionnaire was distributed across the institutes including the main campus and island campuses using Viber application. The questions developed for the questionnaire were adapted from questionnaires used at Kampala University, Uganda to assess mobile learning readiness of their students in 2017. The questionnaire consists of three main parts. The demographic data, mobile phone and internet access readiness and basic mobile skills readiness. Single option selection, multiple selection and five-point Likert scale were used to measure responses to the main questions, with ratings of 'strongly disagree', 'agree', 'neutral', 'disagree', 'and', 'strongly disagree'. The questions were tested to check the Cronbach Alpha value to confirm the internal consistency of the questions and validity.

Statistical Procedures

Participants' responses to the questionnaire items were computed using the automatic analysis generated by Google forms and SPSS Version 23. Descriptive statistics such as frequencies and percentages and data summarising tables and graphs were derived from the data. In addition to this, Pearson Correlation test was run to check whether there is any significant connection between age group and mobile basic skills and advanced skills. The Pearson Correlation test is one of the tests or techniques used by researchers to confirm whether the null hypothesis can be qualified to reject (https://libguides.library.kent.edu/SP SS/PearsonCorr). The analysed results were evaluated and compared with the objectives, converged to make conclusions and recommendations for future research in mobile learning.

Results

Demographic Data

The results section demonstrates participants' demographic attributes mainly using descriptive statistics. The study shows that a total of 340 students from three different higher education institutes responded to the research.

	Gender	Age	Program	Program
			Level	Discipline
	Frequency/	Frequency/ Valid	Frequency/	Frequency/ Valid
	Valid %	%	Valid %	%
Female	260 / 72.6			
Male	81 / 23.8			
18-25		77 / 22.6		
26-35		151 / 44.4		
36-45		83 / 24.4		
46+		29 / 8.5		
Masters			50 / 14.8	
Post Graduate Dip			6 / 1.8	
Bachelor's Degree			224 / 66.3	
Advanced Diploma			18 / 5.3	
Diploma			40 / 11.8	
Education				160 / 47.1
Health				82 / 24.1
Business				17 / 5.0
Religion				14 /4.1
Language				25 / 7.4
IT				6 / 1.8
Tourism				19 / 5.6
Other				17 / 5.0
TOTAL	340	340	340	340

Table 1 Gender, age, program level and program discipline

Among the 340 respondents, male 81 (23.8%) and 260 (72.6%) were female. Results of the four age groups indicated that 77 (22.6%) were 18 to 25 years, 151(44.4%) were in the range of 26 to 35 years, 83 (24.4%) were in the range of 36 to 45 years and 29 (8.5%) were above 46 years (Table 1). The majority age group is 26 to 35 years, showing that this group of participants were not fresh school leavers but mature students who were studying while working. The least contributed age group was above 46 years showing that when there is flexibility to education, age doesn't matter.

The results also revealed that participants were from five different levels of programs. There are total of 50 (14.8%) participants studying in Masters' level, 6 (1.8%) were studying in Postgraduate Diploma, 224 (66.3%) were in Bachelor's Degree, 18 (5.3%) were in Advanced Diploma and 40 (11.8%) were studying in Diploma level programs (Table 1).

In addition to this, the results also confirmed that the participants belonged to the programs of more than seven disciplines that were delivered in different forms of flexibility. This included 160 (47.1%) from education, 82 (24.1%) from heath, 17 (5.0%) from business, 14 (4.1%) from religion, 25 (7.4%) from language, 6 (1.8%) from IT, 19 (5.6%) from tourism and 17 (5.0%) from other disciplines. Almost 50% of participants were studying in education-related programs. Therefore, majority of the students trained in flexible or blended models are going to be future educators.

Basic Readiness

The basic readiness of students was assessed based on mobile access, internet access and usage patterns. The frequencies showed that all of the participants owned a mobile phone and mostly carried it with them. 70% always carried mobile phone, 25% usually carried mobile phone and 5% of students sometimes carried the mobile phone. Among the participants, 97% agreed to be having smartphones and 95% of the phones had a screen greater than 3 inches. The data also showed that majority of participants (73%) used their own mobile data packages, (86%) use home WiFi as the source of internet. On the other hand, 49% of students used campus WiFi and 42% used MiFi for internet access. Based on the results, it was seen that students managed their own internet for learning.

The data collected on the use of Microsoft skills indicated that most students opened and use documents of MS. Word by 85%, MS. Excel by 72%, PDF by 92% and PowerPoint by 76%. In addition to this, 88% students used video files, 81% used audio files and 86% agreed on using photo/ graphics from mobile phones.

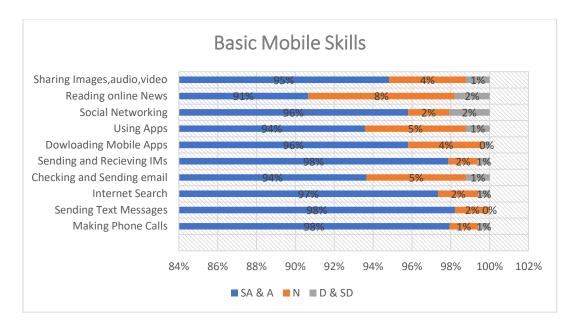


Figure 1 Use of Basic Mobile Skills among Students

The basic mobile skills acquired by students were assessed based on the agreement of participants' use of the skills. Evidently, more than 90% of students agreed on being equipped with basic skills as shown in Figure 1, numbered as: 1) Sharing images, audio and video, 2) Reading online news, 3) Social networking, 4) Downloading mobile apps, 5) Sending and receiving IMS, 6) Checking and sending emails, 7) Internet search, 8) Sending text messages and 9) Making phone calls.

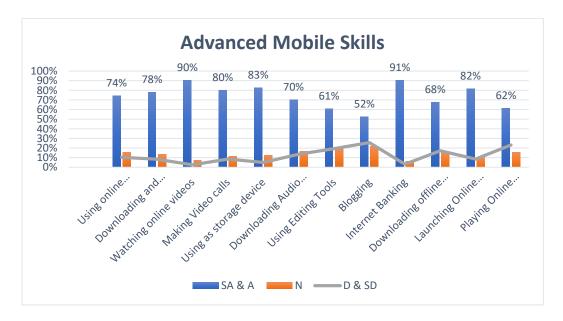


Figure 2 Use of Advanced Mobile Skills among Students

Similar to basic mobile skills, data collected on students' advanced skills showed a high percentage of agreement in the use of all the skills mentioned in the survey as shown in Figure 2. Watching online videos and internet banking were the skills practiced by 90% of the participants. 80% or more agreed on working on online programs, making video calls and using smart mobiles as a storage device. However, few students indicated that they do not engage in advanced mobile skills on the mobile device.

The mobile skills (basic and advanced) were computed with the five age groups (Table 2 & 3) to check whether there was any significant relationship between age of the students and the basic skills for mobile learning using Pearson Correlation.

		Age	Basic Mobile Skills
Age	Pearson Correlation	1	.104
	Sig. (2-tailed)		.056
	Ν	340	339
Basic Mobile Skills	Pearson Correlation	.104	1
	Sig. (2-tailed)	.056	
	Ν	339	341

Table 2 Pearson Correlation on age and basic mobile skills of students

Table 3 Pearson Correlation on age and advanced mobile skills of students

		Age	Advanced Mobile Skills
Age	Pearson Correlation	1	004
	Sig. (2-tailed)		.942
	Ν	340	337
Advanced Mobile Skills	Pearson Correlation	004	1
	Sig. (2-tailed)	.942	
	Ν	337	339

The Pearson correlation coefficient computed to assess the relationship between age and mobile skills resulted that there was no significant relationship between age and basic mobile skills or advanced mobile skills. The "p" value for both the tests was greater than .01. Therefore, statistically, it can be said that the increase or decrease in age has no impact on the basic skills required for mobile learning by students.

Conclusion

In all, the study assessed student readiness for mobile learning in the higher education institutes of Maldives. Students' readiness on mobile learning was explored by analysing the response of the students' survey aimed to gain an understanding of the students attending flexible mode of delivery programs. The analysis of the results suggested majority of them owned a smart mobile phones and other mobile devices for academic and non-academic purposes. The results also indicated that the students access and use internet in daily activities including social interaction, internet-based transactions, gaming and downloading resources such as videos. In addition to this, the results confirmed that the majority of students of Maldivian higher education institutions were confident in both basic and advanced mobile skills which show their basic readiness for mobile learning.

The use of technology-enabled mobility is more societal behaviour than focussing on a single group of students. Therefore, further research is recommended on the basic mobile readiness of students attending traditional programs in higher education environment.

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Acknowledgements

I thank Dr. Godwin Kodituwakku, my PhD supervisor for the tremendous assistance and contribution to the completion of the research. Also, I thank my colleagues Ibrahim Adam and Aishath Suad and my good friend Aniyath Ali for their input in the development of this paper.

Authors' Bio

Fathimath Mumthaz is an instructional designer by profession and Lecturer at Centre for Educational Technology and Excellence of the Maldives National University (MNU). She obtained her Master of Instructional Design and Technology from Open University Malaysia. Ms. Mumthaz has been serving MNU in the e-Learning department since 2007. She maintained a good reputation as a lecturer, facilitator, content developer, instructional designer for e-Learning programs at MNU. Furthermore, she has been the Head of e-Learning Department (2014-2016) and training e-facilitators at MNU through short intensive workshops. She also trains e-Learning students of MNU to guide them to become e-Learners. Currently, Ms. Mumthaz is a PhD student researching on mobile learning in Maldives and one of the team members of the AMED Project (Advancing higher education in Maldives through e-Learning development) going on at MNU.

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