Mobile Learning: Modelling the Influencing Factors on Mobile Devices

D.D.M.Dolawattha
Department of Geography
Faculty of Social Sciences
University of Kelaniya
Dalugama, Kelaniya, Sri Lanka
ddmd@kln.ac.lk

Salinda Pramadasa
Centre for Computer Studies
Sabaragamwa University of Sri Lanka
Belihuloya, Sri Lanka
salinda@ccs.sab.ac.lk

Prasad M. Jayaweera
Departmet of Computer Studies
Faculty of Applied Sciences
University of Sri Jayewardenepura
Gangodawila, Nugegoda, Sri Lanka
pja@sjp.ac.lk

Abstract—**With the popularity of mobile devices, learning through mobile device proliferated in the education sector. Now a day's mobile devices and mobile technologies are advancing rapidly. Therefore, mobile learning surpassing all other educational servicing methods. On the other hand, human life style averts stagnated education and demanding synchronous mode education such as learning while working. In this study we set out to look-over influencing factors on mobile devices for applicable and sustainable mobile learning environment. In this study we propose an impact model consists six influencing factors i.e. screen size, supportive software, screen zooming, video playback control, touch screen keyboard, and language predictive tools. 120 university teachers and learners with equal portion in each category participated on the model evaluation through pre and post survey questionnaires. Initially they faced pre survey questionnaire with their prior mobile learning experience and finally took the post survey questionnaire after successfully working on the Moodle mobile app modified by first author. The results revealed that the most significant impact factor in the proposed model was 'screen zooming'. Hence, when designing applicable and sustainable mobile learning environment it should be considered that, the screen zooming as the most significant mobile device feature for learner and teacher to adopt in mobile learning.**

Keywords— Mobile learning, Mobile device features, Influencing factors, Higher education, Moodle mobile app

I. INTRODUCTION

Smart features of mobile phones support for augmented reality enables learners to study in outdoor situated learning environments as well as other collaborative student learning environments [1]. The aim of this study to explore influencing factors for learner and teacher to use mobile devices in higher education. For that we considered application specific smartphone features effect to applicable and sustainable mobile learning system associate with mobile learning application. We didn't consider hardware specific features here as modern smartphones have similar hardware features.

A. Mobile device features

In mobile learning teachers and learners (ml-users) able to pursue mobile device based academic activities with the help of various features associated in mobile devices. In this study for an applicable and sustainable mobile learning framework we designated six popular features.

1) Screen size : Mobile device screen is very important for ml-users to interact with academic activities. Smartphones with various screen sizes available in the market today, but 4.3 inches is the lowest convenient size for knowledge acquiring [2]. Screen limitation is deciding factor for usability [3].

2) Supportive Software : Mobile learning (ML) needs various utilities as supporting software to interact with mobile learning application (MLA) in the mobile device such as document creators/viewers, image and video viewers, and security and authentication and etc [4].

3) Screen Zooming : This is another interesting feature in the mobile devices and it increase the usability of smartphone due to the advancement of readability and visibility. Zooming can be performed double hand with pinch gesture or single hand with tap, double tap, button press, or sliding [5].

4) Video playback control : Videos are very useful in ML. Sometimes quality of the video depends on associated device hardware, device connectivity, recording quality, and video player standards. Video playback controls are start, stop, pause, resume, seek, video quality, and caption on/off. More advanced control actions include zoom, pan, and rotate [6].

5) Touch screen keyboard : Now a days mobile touch screen keyboard or soft keyboards are very popular in mobile devices. It enhancing usability by allowing maximum display by without allocating space for fixed physical keyboard [7].

6) Language predictive tools : Predictive text, auto complete, sentence completion are some of typing aids in modern smartphones. Typing aids are very useful interactions for mobile user specially with the ML to avoid usability limitation in text input in mobile touch screens [8].

II. IMPACT MODEL AND HYPOTHESIS

By literature six variables are identified as impact factors in the proposed model and they are depicted in Fig I.
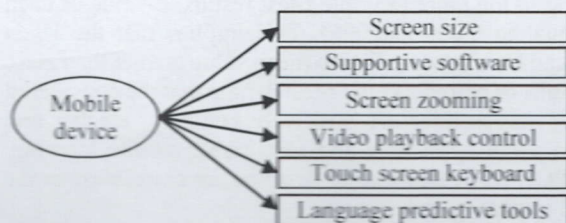

Fig. I   Proposed impact model for mobile device adoption

The hypothesis is constructed as follows,

H_1: Screen size/ supportive software/ screen zooming/ video playback control/ touch screen keyboard/ language predictive tools of the device have effect on teacher and learner to adopt applicable and sustainable mobile learning system.

III. SYSTEM FUNCTIONS AND ARCHITECTURE

We used modified Moodle mobile app (MMA), modified by the first author to implement the proposed impact model. Moodle mobile architecture allows integrating various functionalities to MMA as plugins with mobile support files