A report on the implementation of a mobile learning framework and trial language course study: to inform on the future development and language practices in M-learning

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1. Introduction

Evidence shows that the majority of university students own smartphones and current research in higher education suggests that Mobile learning (M-learning) provides an enormous potential as a learning tool (Manteghi, 2010). The literature reviewed in Section (2) shows that research in M-learning contributes to some new and innovative pedagogical and technological practices in Higher Education. For the ICT team at Iwate University this raises a question about online learning. If students were given access to online English and language courses for self-study: What would be the efficacy for utilizing E-learning for students to use their smartphones? This study aims to answer this question.

The current ICT platform is the starting point for a new design to i) upgrade the learning management system (LMS) to enable mobile learning, and ii) implement a strategy to introduce and test a trial M-learning framework for a self-study program. For the ICT administrators, these two stages of development will be set up and evaluated. In stage one the project reports on the upgrade of the E-learning system by selecting a new responsive theme for mobile devices. This initial report will provide details on the procedure undertaken to select a responsive theme to implement the system upgrade. An integral part of this report outlines a strategy for the redesign of the FrontPage and the User ProfilePage. Stage two of development reports on the new design and implementation to trial demonstration courses. Students were invited to participate in a small demonstration course and were then asked to complete a short online questionnaire. The implications form these results will be used to inform on a student-centered strategy to promote online courses for English and language learning. It is expected that this primary mobile development for the ICT learning platform will lead to more advanced

development in the near future.

2. M-learning background in higher education

The "Millennial" generation (Tapscott, 1998) is a term used to describe the first generation of university students to grow up with digital media. As a result M-learning is currently being researched to investigate how significant smartphones can contribute as a learning tool for everyday university life. For example, in various M-learning trials, Mansouri et al (2010) showed that university students reflected a positive view and interest regarding M-learning as part of their education. If this is the case, then the ICT project team believes that M-learning offers an enormous potential to conduct a trial to introduce online courses as a self-managed English and language program.

One of the technical challenges for the implementation of M-learning is the development of the user interface for small screen devices such as smartphones. A method to evaluate the use of an online course using student smartphones would also need to be implemented. It is expected that students would have to carry out this trial without teacher supervision and with no other learner support or test taking support. M-learning research provides insight into how mobile phones have been pedagogically set up within various independent and autonomous learning contexts. For example, social media applications on mobile phones are used to promote collaborative learning (Gikas & Grant, 2013). Podcasts are used as a revision tool on mobile phones demonstrating an alternative method to using books or computers (Evans, 2008). Since the aim of this project is to upgrade and conduct current E-learning courses on student smartphones, it is also recognized that limitations exist for carrying out various kinds of learner activities in M-learning contexts (Keegan, 2003).

In the next Section (2.1) relevant pedagogical practices in student-centered and mobile learning research informs on the methodology design to trial M-learning and to evaluate the recent study's development. The projects proposed architecture for the technical and self-learning pedagogical framework for the upgrade and new design phase: to create a user-friendly mobile interface for conducting E-learning courses on student smartphones, is outlined in Section (2.2). This will lead into the projects mission statement

(see Section 2.3). In Section (3) the methodology for the implementation of a mobile theme and the development of a new site protocol will be outlined. Implementing a demonstration course trial using student smartphones will test this upgrade and new system design. These results (see Section 4.) and the implications (see Section 5.) based from this study will inform on the further development of the system. Finally, the conclusion (see Section 6.) will give a final project statement for the next development aims and objectives.

2.1 M-learning pedagogical practices

Gikas and Grant (2013) explored teaching and learning when cellphones and smartphones were implemented in higher education. Data were collected through student focus group interviews and the findings on students' perceptions from three universities across the US in various learning contexts. The results of this study presented advantages of mobile computing devices and the use of social media, which created opportunities for interaction and supported group collaboration work. Internet learning tools, for example, online learning applications and social media applications such as LINE, is also currently being explored in higher education (Staehlin & Townsend, 2016).

In another study carried out by Evans (2008) the effectiveness of M-learning in the form of podcasting for teaching undergraduate students in higher education is evaluated. The results in this study suggests that the use of podcasts as a revision tool has clear benefits in terms of the time students take to revise and how much students feel they can and need to learn. Other advantages include flexibility in when, where and how the revision podcasts are used when carried out on mobile phones by students. Other research in higher education supports the effectiveness for using mobile devices to work as an extension of current learning tools, rather than replacing textbooks and materials and other traditional learning and teaching methods (Kukulska-Hulme & Traxler, 2002; Trifonova, 2003). This project proposes that a new self-study program provides an optional learning avenue that should benefit students currently enrolled in regular English classes and other language programs. However, as Keegan (2003) points out, not all learning content or activities are suitable with mobile devices. A contributing

factor for the implementation of M-learning includes how activities will be carried out on smartphones, for example; playing videos and doing online quizzes.

Similarly to a study undertaken by Goh and Kinshuk (2006), the primary aim of development undertaken by the ICT administrators was to investigate the efficacy for taking an existing E-learning system and utilizing mobile devices. Goh and Kinshuk (2006) point out that E-learning systems are tailored toward PC based web access and not customized for use through mobile devices, in their case using Personal Digital Assistants (PDAs). Goh & Kinshuk (2006) concluded that that M-learning could significantly complement E-learning with the right design and infrastructure developed. Next the proposed architecture will outline how this project intends to incorporate Internet learning effectively through mobile learning devices.

2.2 Proposed Architecture

In practical terms the project aims to develop a user-friendly mobile device interface for an existing E-learning system. The architectural design recognizes that a significant factor in the transition from a standard PC interface to a mobile interface is dependent on the capability of the new responsive theme – how the theme automatically adjusts to various mobile screen sizes (Aberdour, 2013). For the Moodle system administrator, the theme control-panel provides various options and other settings to customize the appearance of the device. Also to make this system work effectively with users, the system administrator has to design a new user strategy, before log in after log in: site protocol. This is necessary to determine what and when information is visible to the user, and where this content is located on the screens interface. It is predicted that the new theme would require a flexible interface and options for displaying the current E-learning format. This includes theme features to enable and adjust how various types of course activities such as playing videos and carrying out online quizzes. In particular, theme settings control user permissions that determine how the user can navigate and engage in course activities. For example, students will be expected to manually record the completion of activities to record progress. This self-completion and tracking process is deemed a significant component

for effective self-managed and online course work. Other important functions to engage students in the learning process include how students will view quiz results and be given access to the student GradeBook to monitor activity results and course assessment. The new theme for M-learning will be interchangeably used in this paper as a responsive theme, a mobile theme, or a responsive mobile theme.

2.3   Mission Statement

First this project aims to update the current E-learning system and implement a responsive mobile theme for smartphones. This theme upgrade is defined as a procedure to enable and enhance viewing capabilities for all small screen devices including smartphones. The primary aim for introducing an M-learning program is to provide a method to access computer-based learning on student smartphones. A key development component for the success of this project will be determined by the new site protocol, which will set up a new user role for self-managed and online student-centered learning. Finally, the implementation of a trial and demonstration course strategy will be evaluated. This is to determine the efficacy for conducting online courses by utilizing student smartphones as the primary device for learning to take place.

3.   Methodology

3.1   Theme selection and testing process

There are two development stages for the system upgrade. The initial stage of development in this study is to carry out the selection process for the new responsive theme. Once the new theme has been selected and installed, then a new FrontPage will be designed for mobile interface, and a new user strategy for log in access will be created (Aberdour, 2013). The secondary development stage will be to devise a strategy to trial a course with students and at the same time, test and evaluate the new interface on smartphones. Themes will be selected from the Moodle LMS homepage (www.moodle.org) to ensure system compatibility. Next, it is expected to select at least three demo-themes and an evaluation criterion outlines the projects requirements for the theme upgrade (see Figure 1). This criterion in prioritizes how the user

engages with the new system interface, both before and after log in. Once these demo-themes have been downloaded onto the hosting server computer, they will be uploaded into the LMS system and compared using the test criterion. For example, how well the current PC display and interface can be adapted for smartphones, by using the responsive settings for theme appearance will be tested. Before the user logs in, this includes how site information is presented. The students ProfilePage is where the user will be directed to after the user logs in. The mobile user is then able to navigate throughout the entire site through the 'touch-screen' functionality.

Figure 1: Mobile theme evaluation criterion

Before log in	After log in
• the appearance of FrontPage • options for page background, colors, headings, and text • organization of site information • site navigation • language control • viewing capability • site support	• the appearance of the users page • site navigation • user profile and permissions • course enrollment • course display options • activity performance and completion • viewing results • language control • site support

Foreseeing the future and ongoing development needs for this project will also influence the administrator's selection process for a mobile and responsive theme. Therefore, the both the theme's technical capability and potential to enhance the students learning experience through the mobile interface will be significant in the decision making process. Once the new responsive theme is downloaded, the theme settings will be permanently set up to begin the implementation of a trial to evaluate students carrying out a demonstration course online using smartphones.

3.2　Smartphone course trial

The method used to implement a course and smartphone trial is dependent on the new mobile theme. Therefore, the specific technical specifications and overall theme capabilities will determine the design and test procedure used. It is expected that students will carry out the test on their smartphones in their own time without supervision. First year students with various levels of English proficiency will be asked to volunteer. If students do not have a smartphone then they will not be expected to participate in this trial. A short version of a current course will be set up as a demonstration course. Similar to Microlearning as a tool to engage students in online learning (Semingson et al, 2015) a short sample of course activities will be evaluated; video and an online quiz (Mello, 1997). In addition to these two activities, the students will be expected to carry out an online questionnaire. This questionnaire will ask students valuable feedback about using the E-learning system on their smartphones.

3.3　Collecting data

A mixed methodology approach will be used for the evaluation of the theme upgrade and overall responsiveness of the site; through an online trial course using smartphones. A developers' Logbook (journal) will be used to record the theme selection and implementation procedure, the revision of the FrontPage, and the new design of the User ProfilePage. This will include the site protocol implemented to engage the learner, which provides the student with access to special course features as well as control to hide and unhide site content and other course information. The strategy used to design and trial a demonstration course on smartphones will also be reported. The trial course will use a topic video and an online vocabulary quiz to evaluate a short course strategy, and the students' quiz attempts will be recorded and downloaded as a spreadsheet. After students attempt the video-quiz activity, an online questionnaire that contains 25 multiple-choice questions will be conducted. A four-type Likert method is used (Jamieson, 2004) to record the student responses for each question; strongly agree, agree, disagree, strongly disagree. The questionnaire responses will also be downloaded as a spreadsheet.

3.4 Presenting results

Section (4.1) will present the 'Implementation and Development Report' which consists of i) information about why the new theme was selected; ii) the design of the new FrontPage and mobile interface; and finally iii) the log in protocol. Section (4.1.1) provides the M-learning trial. In Section (4.2) the video-quiz results will be presented in Table format to determine the successful number of completed test attempts. The questionnaire results (see Section 4.2.1) for each question will be presented as a graph. In addition, the overall questionnaire results will be graphed to present the entire sample of the student attitudinal responses for carrying out the trial course on smartphones.

4. Results

These overall results gives insight and valuable feedback in the potential for M-learning for self-managed and directed learning, and informs for the future use of M-learning that provides implications for future development of the project.

4.1 Implementation and development report
Responsive theme

In this Section of the report some reasons why the 'Essential' theme was selected and downloaded will be given. This theme was located and downloaded from the plugins area of the Moodle official Homepage (https://moodle.org/plugins/). The theme has several customizable features to support site appearance and course display options for mobile devices, as well as advanced options for customizing the user profile page. On the FrontPage a top bar enables a language menu, and a link for the user to log in. One of the highlights of this theme was the dynamic slide show. These sliders can be customized to feature important site content. A slider moves across the page, which is set up to alternate at a specific time interval. One of the advantages for using sliders is that you are able to present key information, and users can click on the slider which links to another page. In addition, below the slide show are three marketing spots. A marketing spot is designed for advertising and promoting site information. As well, for mobile devices users have the

option to hide and unhide information displayed as blocks. Finally, an extensive selection was available for changing the page layout, and setting colors for page themes. In the next Section, how the interface for the FrontPage for mobile devices was created will be given in more detail.

FrontPage and mobile interface

Figure (2) provides a screenshot of the mobile FrontPage screen. It was decided to use the university colors (green and black) in the *Site Banner* to promote the FrontPage. For mobile devices, the green banner adopted a softer tone for improved visibility on small screens. The *Language Menu* was placed on the left side of the screen and the *Log in Access* was set up on the right side. A simple site logo and heading represents the university in a plain black outline. A fixed white background with blue icons and all text-links in a light brown color, with a light black hover text were set for overall presentation on all devices. Beneath the site banner, the sliders were utilized to promote the trial demonstration courses in the *Display.* A course description and a button was enabled to link to the demonstration course page. The slides were set to alternate at three-second intervals. Marketing spots below the sliders were also used to promote the trial course strategy and this will be explained in more detail in Section (4.1.1.). In the next Section the site strategy for the site protocol will be explained.

Site protocol

Figure (3) explains the site protocol for mobile devices before and after log in. The protocol for user access was designed with the aim to create a user-friendly interface. Once the user logs in, they are directed from the *Site FrontPage* to the *User ProfilePage.* In the next paragraph the strategy used to engage and support how the user interacted within the system will be explained.
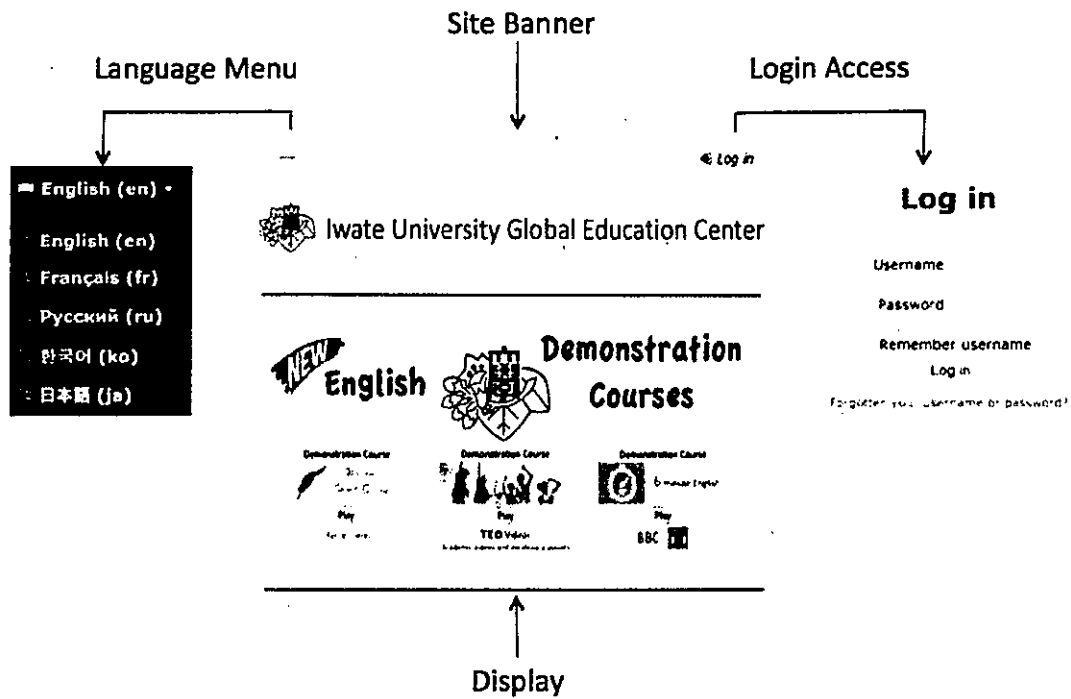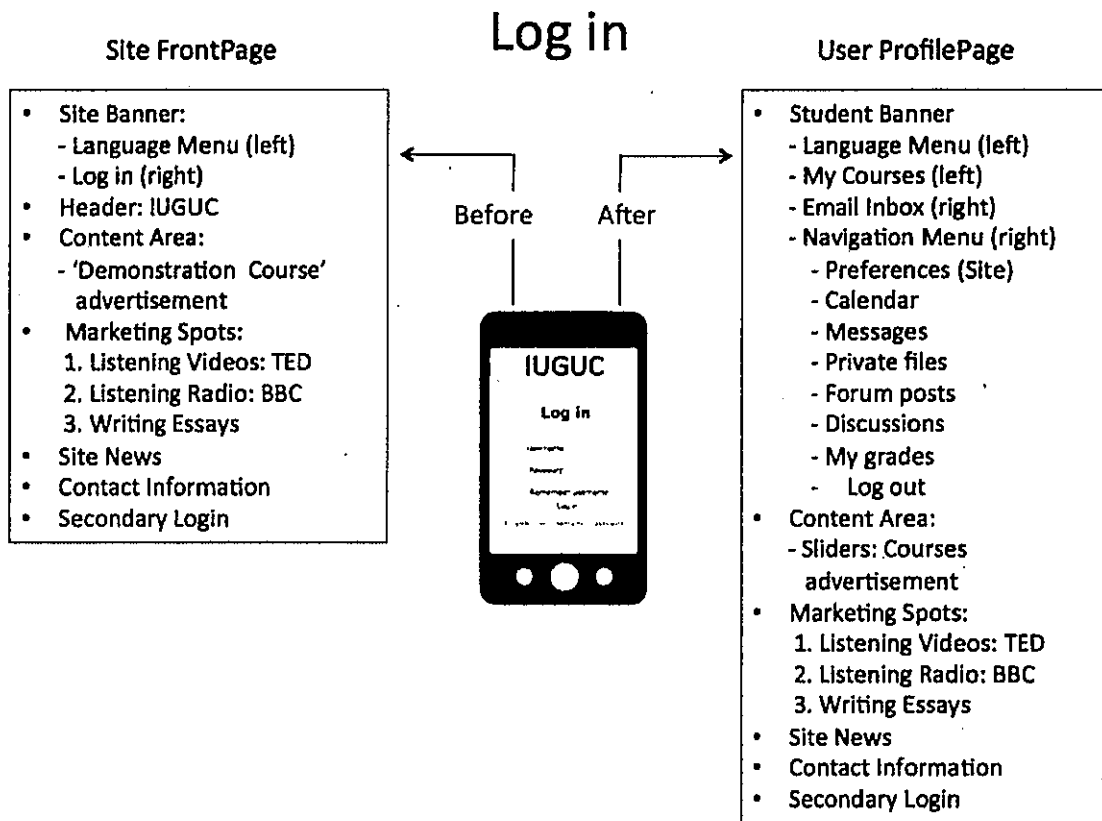
Figure 2: FrontPage mobile interface

Site Banner

Language Menu

Login Access

- English (en) •
- English (en)
- Français (fr)
- Русский (ru)
- 한국어 (ko)
- 日本語 (ja)

◀ Log in

Iwate University Global Education Center

English **Demonstration Courses**

Demonstration Course
Demonstration Course
Demonstration Course

TED Video
BBC

Log in

Username

Password

Remember username

Log in

Forgotten your username or password?

Display

Figure 3: Protocol for user access and permissions

Log in

Site FrontPage

Before   After

IUGUC

Log in

User ProfilePage

- Site Banner:
  - Language Menu (left)
  - Log in (right)
- Header: IUGUC
- Content Area:
  - 'Demonstration Course' advertisement
- Marketing Spots:
  1. Listening Videos: TED
  2. Listening Radio: BBC
  3. Writing Essays
- Site News
- Contact Information
- Secondary Login

- Student Banner
  - Language Menu (left)
  - My Courses (left)
  - Email Inbox (right)
  - Navigation Menu (right)
    - Preferences (Site)
    - Calendar
    - Messages
    - Private files
    - Forum posts
    - Discussions
    - My grades
    - Log out
- Content Area:
  - Sliders: Courses advertisement
- Marketing Spots:
  1. Listening Videos: TED
  2. Listening Radio: BBC
  3. Writing Essays
- Site News
- Contact Information
- Secondary Login

The main aim for implementing the site protocol is to determine user engagement within the system after the user logs in. The system administrator set this up by first of all defining a specific user role. In this case a 'Self-Study' role was created for students to self-enroll into courses and conduct exercises and other activities including tests without supervision (Aberdour, 2013). The next step was to determine what functions the user had access to and other permissions that controlled how the user adopted these functions. The primary functions, for example, 'Language Menu' and 'My Courses' were positioned at the top of the ProfilePage. A direct link to the students university email account was provided. A significant factor to support learners was the implementation of the 'Navigation Menu' (see Figure 3). The Navigation Menu is a drop-down box directory and it was decided to give students the freedom to control functions and other options to customize their phone display that would influence how they engaged during their learning experience. This will be explained in more detail in the next paragraph.

Students were given permission to turn a function on or off in the Navigation Menu. For example, the student can disable messages if the user does not want to be contacted by other online users. The user can also decide whether or not they want to participate in site and course forums, or other online led student discussions. One of the key functions for the user in this directory is the site 'Preferences'. This allows the user to customize visual aspects on their mobile device or smartphone. For example, it was decided to give users full permission to control 'Blocks'. This enables the user to decide how site information and other course content is displayed on their screens. The user can basically hide Blocks on their screen to increase the size of the display on their user interface. For example, if the user does not need to access test scores, the user can hide the GradeBook Block. The user has the capability to hide and unhide the Gradebook whenever they want to. In addition, beneath the Navigation Menu the sliders and marketing spots provided access to the demonstration courses, as well as other site news and contact support information. In the next Section the trial course and method used to implement and evaluate the M-learning strategy for using smartphones will be given.

4.1.1 M-learning trial

It is predicted that students would benefit from trialing a course prior to enrollment. To provide courses aims and to demonstrate course activities, a method called microlearning was used (Semingson et al, 2015). This method provides a short course of the main course and reviews the main learning concepts and ideas. Three trial courses (3) were set up as part of the demonstration strategy, however only one demonstration course was implemented for this initial study. In addition, the trial course would also provide feedback on the student's language ability, by implementing a small test online. The trial format was set up as a short 15 to 20minute course. The main course however would expect the student to participate between three to five hours. The sliders were created to display and promote available demonstration courses. Figure (4) shows a screenshot of one of the slides created for a listening course called TED Video's. Students can access this demonstration course by pressing the 'Play' button.

Figure 4: Slider example

Listening

English chef Jamie Oliver.
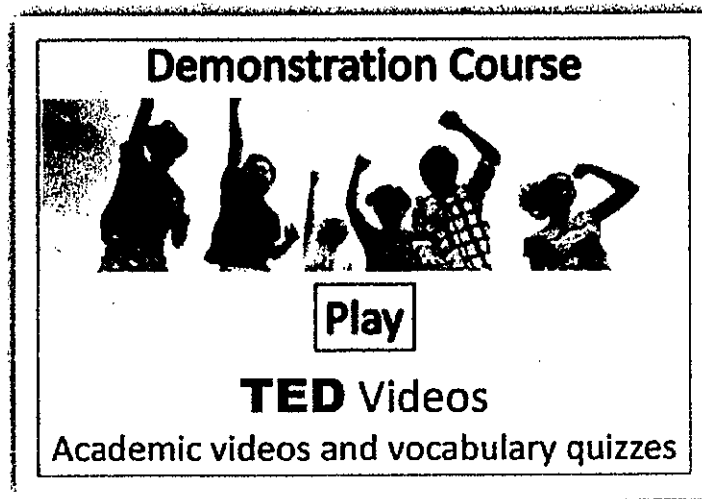
Currently there are four sliders that consist of a promotion slide, and three sliders for the demonstration courses available. The marketing spots

(see Figure 5.) have also been designed to give the user the option to either trial the demonstration course or self enroll directly into the main course. In the system course database these sliders and marketing spots ink to two course categories, which are Listening and Writing. For the purpose of this design and development stage, one Listening Course was selected to conduct the trial for this study. The next paragraph outlines how a M-learning trial was set up to administer a demonstration course 'TED Video's: Jamie Oliver - TED Talk on Obesity and Food' and an online test to quiz students on the topic vocabulary.

Figure 5. Marketing spots

TED Video's	BBC Radio	Short Essays
TED Videos Academic videos and online vocabulary quizzes	**BBC Radio** 6minute listening and 5 quiz questions	**Short Essays** Paragraph essay writing

Finally, for the purpose to test and evaluate a demonstration course requires students to read course information and follow course instructions. In addition, since the demonstration course will provide a test, an online quiz was prepared to test the users vocabulary based on the video-topic. The video length was three minutes, and the on-line quiz was made up of 10 multiple-choice questions. The quiz was set up for one attempt, and immediate feedback was given to the students on the questions they answered correctly or incorrectly. If the student got the wrong answer, then the right answer was provided. In the next Section, the quiz attempts were recorded to determine how many students completed the test, and the short course. The student questionnaire was conducted at the end of the trial to receive important feedback on the students learning experience in the trial course using smartphones.

4.2 Quiz results

First, the results of the online vocabulary quiz (See Table 1) will be given. As expected the quiz results produced a mixed level of test scores. These results also conclude that all of the students (66) completed the quiz and demonstration course successfully.

Table 1: Student quiz results

| Results	0	0	0	3	6	17	19	15	5	1	0
Score	0	1	2	3	4	5	6	7	8	9	10

4.2.1 Questionnaire results

The student responses are now explained and presented in a graph.

Question 1. *Is the position and the display of the demonstration course easy to recognize on the front page of the website?*

Table 2 Results: Out of 62 responses only 5 students disagreed that the demonstration course information was correctly positioned on the user's smartphone screen.

Table 2.

Question 1

strongly agree ⬜ 16

agree ⬜ 41

disagree ⬜ 3

strongly disagree ⬜ 2
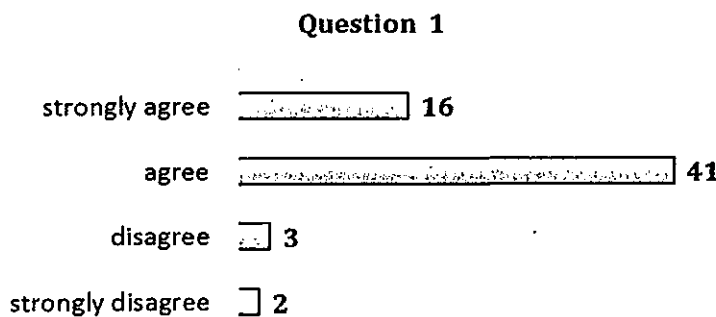
Question 2. *Was the information and instructions in the demonstration course easy for you to understand?*

Table 3 Results: A total of 50 students out of 62 students agree that the delivery of the demonstration course content was easy to read and comprehend on his or her smartphone.

Table 3.

Question 2

strongly agree	15
agree	35
disagree	10
strongly disagree	2

Question 3. *Do you think that doing a 'demonstration course' is a good way for students to learn what the aim of the 'full course' is?*

Table 4 Results: The majority of the students agreed that the demonstration course is a good way to introduce an English course (43). There were 17 students that disagreed and only two students strongly disagreed with this demonstration and course introduction strategy.

Table 4.

Question 3

strongly agree	10
agree	33
disagree	17
strongly...	2

Question 4. *Was the 'demonstration course' helpful to give you feedback on your English level or ability?*

Table 5 Results: A total of 58 students agreed that the demonstration course and immediate feedback on results was helpful for them to know and understand their English level or ability. Only four students disagreed that the demonstration course was not helpful in this regard.

Table 5.

Question 4

strongly agree [bar] 17

agree [bar] 41

disagree [bar] 3

strongly... [bar] 1

Question 5. *Does a 'demonstration course' encourage you to enroll into any 'self-study course' in the future to improve your overall language and learning ability?*

Table 6 Results: A total of seven students strongly agreed and 30 students agreed that the demonstration course would encourage them to improve their English level by enrolling full-time into a course online. Twenty students disagreed and only five students strongly disagreed with this method of learning.
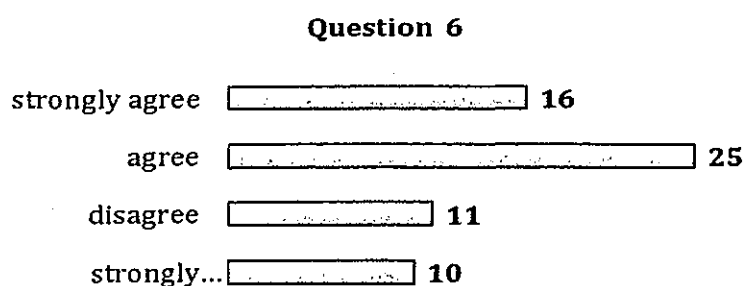
Table 6.

Question 5

strongly agree [bar] 7

agree [bar] 30

disagree [bar] 20

strongly... [bar] 5

Question 6. *Were you able to navigate and carry out the language activities in the 'demonstration course' on your mobile phone satisfactorily?*

Table 7 Results: A total of 41 students out of 62 students were able to navigate and conduct the demonstration course online, and agreed that language learning using smartphones to do activities was satisfactory. There were 22 students that disagreed overall.

Table 7.

Question 6

strongly agree	16
agree	25
disagree	11
strongly...	10

Question 7. *If you wanted to enroll into the 'full course', would you be confident to carry out and do all of the lesson activities on your mobile phone?* Table 8 Results: Out of the 62 responses there were 38 students who have expressed confidence to learn online full-time without supervision, and carry out the language activities. While 22 students, informed that they would not be confident to use their smartphones for the entire course.

Table 8.

Question 7

strongly agree	8
agree	30
disagree	20
strongly...	4
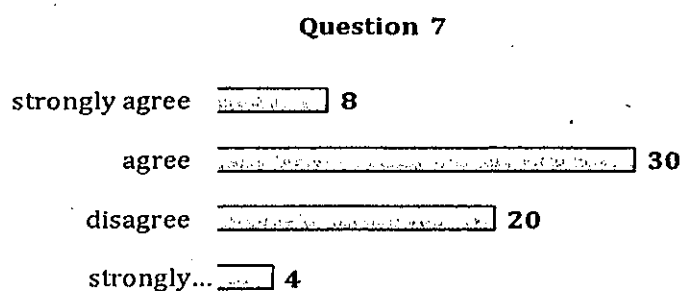
Summary

The overall findings a) gives insight into the effectiveness of the a trial course strategy to introduce and use online language courses in the future, and b) highlights whether or not students are confident to carry out self-regulated learning on smartphones.
Table 9 Results: A convincing response record from 62 students shows that students 324 times agreed that this demonstration course and mobile learning strategy was effective. In total 89 students strongly agreed and 235 agreed. A total of 84 responses disagreed and only 26 responses strongly disagreed.

Table 9.

Question 1 - 7

strongly agree ⬜ 89

agree ⬜ 235

disagree ⬜ 84

strongly disagree ⬜ 26

5. Implications

The initial investigation of this study asked the question: What would be the efficacy for utilizing E-learning for students to use their smartphones?

After the initial mobile upgrade of the ICT platform a microlearning strategy that implemented a short demonstration of the main course was trialed and tested with 66 students. The student responses in questions one to five reflected a positive attitude towards the trial of a video-quiz demonstration course. The student's responses in questions six indicated that there is learning potential for M-learning. In question seven some students expressed confidence to conduct independent online courses and activities using their smart phones. In the next Section implications that informs on taking the project to the next development stage will be outlined.

5.1 Proposal for future development

It is recognized that the trial evaluation of the video-quiz course did not require participants to become familiar with, nor test all of the User FrontPage mobile functions. The current development will be used as building blocks for the next stage, and two main areas of development are proposed. The first part of development (A) is aimed to improve viewing capability the FrontPage and User ProfilePage using mobile devices. The second part of development (B) recognizes that a self-enrollment procedure needs to be implemented and tested so that students are able to manually enroll into courses online.

A. Improvements and further development in site and course design
- Improving presentation layout of site information
- Improve access to a variety of courses and demonstration courses
- Modifying the layout of course content to improve screen display for mobiles
- Updating LMS tools: media players, online-quiz and writing text box
- Improvement for site protocol and user role capabilities

B. Online and self-enrollment procedure
- Design a procedure for students to self-enroll into courses
- Integrate manual enrollment for mobile interface
- Provide information for course enrollment to students
- Test and evaluate trial enrollment procedure

Summary

The next stage of development predicts that primarily first year students will carry out course enrollment utilizing mobile devices for the first time. It is important to recognize that previously these freshman students have had little to no previous opportunity to conduct learning online. To support the next stage of development and to promote M-learning it is realized that both pre-enrollment and post-enrollment support would be advantageous. For example, enrolment support would be beneficial to aid students using the system for the first time. In addition, helping students to select appropriate level courses would enhance the learner's experience. In particular ongoing instruction to further support students when they are carrying out courses would benefit the online and mobile learning outcome.

6. Conclusion

The overall achievements for the one-year project that set out to upgrade a current E-learning system to complement M-learning will now be summarized. This project has successfully updated a responsive and mobile theme. Furthermore, the new site protocol has enabled user requirements for using smartphones to log in to the system, access site content and manually enroll into a course and carry out activities. A microlearning-based design was

set up for a short course that included a video, online-quiz and questionnaire, and was implemented successfully and tested out on student smartphones. The quiz results showed that all of the participants (66) completed the mobile course successfully. The project questionnaire was used to evaluate the students attitudes based on their experiences for doing an online course and using their smartphones. These results indicated that most students perceived positively towards doing mobile and optional courses. In addition, project implications were identified and discussed to help guide the next stage of development, which recommends both technical support and personalized support for student guidance and learning outcomes.

It is without doubt that the global trend in recent years for online learning has rapidly developed more ways to use mobile phones and other devices in education. Throughout the development of this project, an important design factor recognizes that these courses are also available for teachers. This project aim is to initially provide optional courses for students to improve their learning and language proficiency. It is not in the realm of this report to discuss the potential for M-learning in the ESL classroom. Although, a recent budget cut in ICT funding has resulted in less CALL classrooms are now available in the next academic year for teachers. To conclude, as smartphones take over as the number one preferred device for communication and access to the Internet, we endeavor to provide improved and flexible learning experience for our students' educational needs.

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