A Case Study on Utilizing a Mobile Application to Teach Malaysian Governance to International Students

Azizan Yatim

Centre for Pre-U Studies, UCSI Univesity, Sarawak Campus, Lot 2498, Block 16, KCLD, Jalan Tun Jugah, 93350, Sarawak, Malaysia

ABSTRACT

Malaysian Studies is a compulsory course for international undergraduate students in Malaysia. The subject comprises Malaysian history, its governance and administration system. Due to different socio-cultural backgrounds and histories, most, if not all, international students, struggled with this subject. This research project aims to create, implement and evaluate a mobile application (app) as a catalyst for mobile learning (m-learning) for one particular topic of the Malaysian Studies course. The increased use of technology in learning environments has changed instructional approaches by making it more accessible and essentially, more student-centered. Using a design-based research approach, the mobile app is aimed to guide students to write their own notes to assist in deeper understanding of the subject. The mobile app was also reviewed by users to gauge its effectiveness and ease of use. Findings from the tests showed the potential to structure the students' learning from the topic. From the research, there are a few improvements and suggestions that could be implemented for similar future studies and projects.

Keywords: Mobile learning, m-learning, technology-based learning environment, constructivist learning, Malaysian Studies, Malaysian governance components, student engagement, design-based research

INTRODUCTION

This design-based research project investigated how a mobile app could be used as a catalyst for learning. The development involved the analysis, design, development, implementation, and evaluation processes, following what is more popularly known as the ADDIE model (Forest, 2014), which was used as a guide by educators in both the designing and evaluating of their instruction.

In this research project, a mobile app was developed for one of the Malaysian Studies class session in one of the private universities in East Malaysia. An analysis of the learners,

the topic, potential problems and the appropriate learning theories was conducted before the app's design process. The design process incorporated the findings from the analysis and the app was later developed using the appnotch software. Upon completion, the learners were given full access to the app to use as part of their class activity. The learners were given the freedom to either work together with their course mates or as individual activity using the app as a guide. Online evaluation forms were used to evaluate the app's effectiveness and usability.

RESEARCH SCOPE

The Topic

The topic for the learning environment is "Components of Malaysia's Government System". This topic is part of the *Mata Pelajaran Umum (MPU)* Malaysian Studies course for international students.

In the topic, the students will learn about the fundamentals of Montesquieu's Separation of Powers Doctrine, draw an outline of the Malaysian system of government and finally to be able to understand the roles, limitations and importance of the key figures in Malaysia's administrative system.

This topic was chosen for several reasons. Primarily, it has been the hardest topic for international students to master in previous semesters. Previous students showed that they were not able to see the bigger picture of the topic, more specifically, how the main components are interrelated to each other. Though there has been no known research done in the area, the reason may be the apparent differences in governance systems for the international students. The socio-cultural backgrounds of students studying in foreign countries have an impact on their learning. Mahmud, Amat, Rahman, & Ishak (2010) found that among the three areas of concern - culture, climate and care, the cultural aspects causes the main concern for international students in Malaysia. The cultural part in the research focused on language, values, food and sanitation practices and the cause for the concern is due to their acculturation issues in Malaysia. Academic and social adjustments were also discovered to play an important part in international students' learning and experience in Malaysia (Malaklolunthu & Selan, 2011). Hence, the topic was chosen because the Malaysian governance system is different from the students' own due to their socio-cultural backgrounds.

The next reason for the selection of this topic for this project is due to the difference in the students' needs, wants and expectation in their classes. Alavi & Mansor (2011) conducted a study at Universiti Teknologi Malaysia, which indicated that factors such as boring classes (34.1%), inefficient teaching (39.3%) and curriculum and method of teaching (12%) caused concerns among international students in their studies here. Thus, the use of mobile apps would enable these students to learn at their own pace by guiding them to construct their understanding of the course material. Also, the usage of mobile apps, especially apps created by the instructor themselves, gives a "wow-factor" to the students in their classes, and thus, this is aimed to reduce boredom in classes. Hence, the other reason for the selection of this course is to fulfil the international students' needs and expectations for their course.

The Malaysian Studies and *Bahasa Melayu Komunikasi* course are part of the MPU subjects offered under the new Ministry of Higher Education policy. These subjects, offered

since September 2013 for private higher education institutions, are aimed to immerse, or at least, introduce international students to the Malaysian socio-cultural systems and history. But, international students tend to see these subjects as uninteresting and more importantly, not related to their programs. This is supported in the study by Alavi & Mansor (2011) which discovered that 20% of the international students surveyed from five private higher education institutions, see certain subjects as not related to their programs. Thus, the topic was selected in hopes of making the subject interesting for the students.

To conclude, the topic was chosen as it is among the hardest topic to master in this subject, the differences in the international students' socio-cultural backgrounds and the fact that the subject is seen as not being related to their programs.

The Technology-Based Learning Environment

For this project, the technology-based learning environment is the use of mobile app in the instruction. The app is aimed to guide students to produce their own notes that would further enhance their understanding of the topic. At the end of the class, the students shared their notes and the instructor helped by correcting any incorrect understanding and misconceptions by emphasizing the main points of the topic.

The increased use of technology in learning environments has changed instructional approaches by making it more accessible and essentially, more student-centered. Strommen & Lincoln (as cited in Hannafin & Land, 1997) mentioned that rapid technological development played an integral role in the evolution of student-centered learning environments.

The use of mobile phones in classrooms is the next dimension in the use of technology. It can be said that mobile learning (m-learning) is an extension and the next step for e-learning. Wireless mobile technology empowers learners from all around the world by giving them access to learning materials and information from to enable them to learn anywhere, any time (Ally, 2012). Georgiev, Georgieva, & Smrikarov (2004) defined m-learning as a learning activity that is not limited by geographical constraints by constantly being connected to cable networks by utilizing mobile and portable devices which must be able to connect to other devices that presents educational materials and open up two-way information exchange between the learners and the teacher. Therefore, m-learning emphasizes mobility, portability and accessibility that is absent from traditional and even e-learning platforms.

The use of mobile devices is relatively new in education and studies have been conducted to investigate the potential for m-learning and to develop the framework to implement the technology in classrooms, such as by Alioon & Delialioglu (2015); Motiwalla (2007); Sharples et al. (2005). These studies recommend the best methodologies and practices for m-learning. It is undeniable that there are challenges for the implementation of m-learning (small screen size, keyboards, limited memory, battery usage, application compatibility, multimedia elements' use and high price), but it is getting more popular as continuous advancements are made in information and communication technologies (Georgiev et al., 2004). Thus, there is an emerging potential for further studies and application of m-learning in the future.

For this project, the inclusion of mobile apps may prove useful in the helping the international students manage the differences in culture, the method of teaching and learning

styles as it gives them freedom to learn at their own pace. The multiple capabilities of mobile technology are useful as they support different instructional strategies, provide an efficient delivery of the course and enhance student learning (Ferdousi & Bari, 2015). Thus, mobile devices and apps provide students with options on their learning. Therefore, the use of the mobile app is a new approach for the intended learners for this project.

The Integrated Learning Theory

In creating the app, two learning theories were drawn upon. The learning theory that underpins the app's purpose and application is Constructivism.

Constructivism is a learning theory where the responsibility to learn is from the learners. This is because under this theory, the learners are the knowledge and information builders, or more appropriately, the constructor. Demirel (as cited in Epçaçan, 2014, p. 5106) argued that constructivism is not related to teaching but is more inclined towards and related with information and learning. As further explained by Sjøberg (2010, p.3), "learners construct their knowledge through their interaction with the physical world, collaboratively in social settings in a cultural and linguistic environment". In short, constructivism is a learning theory that is student-centered and applied by putting the learners in the right learning environment to complete specific tasks through social and environmental interaction.

It is due to this "learning empowerment" concept that this learning theory was applied to the mobile app. It is hoped that the theory integration would overcome the challenges faced by the international students. By giving them specific tasks to accomplish and understand the topic, the learners will be able to construct their understanding and ultimately, master the topic. This learning theory provides the theoretical basis for the use of the app, and which drives the app's objective.

The Learners

There were 11 students in this class. The students were all undergraduates taking their Bachelor's Degree program. The students took the Malaysian Studies course during the May-August 2015 semester. The students were from Bangladesh, China, Indonesia, Korea, Pakistan, the Philippines and Uzbekistan.

The students were between 18 to 27 years old and were from Semesters Two and Three. There were 5 male and 6 female students. The levels of understanding on basic governance systems, including those from their respective countries, vary from being knowledgeable to no knowledge at all. This is an important aspect as a good foundation here would provide the basics for their learning on Malaysia's governance system.

MOBILE APPLICATION DESIGN

Learning Theory Integration

To integrate the learning theories mentioned, the mobile app has to be able to include activities which guide the students to create their own knowledge and be able to recreate the bigger picture of the key concepts.

The learners must be guided to seek and form their own understanding about the Malaysian government system. And to be able to do that, the responsibility to produce their notes is now given to the learners. The app guides the international students by first giving them the brief information on the matter and following up with specific questions for the student to answer. The ultimate goal is for them to be able to visualize and create the bigger picture of Malaysia's administrative structure and link the main components in a visual diagram.

App Flowchart
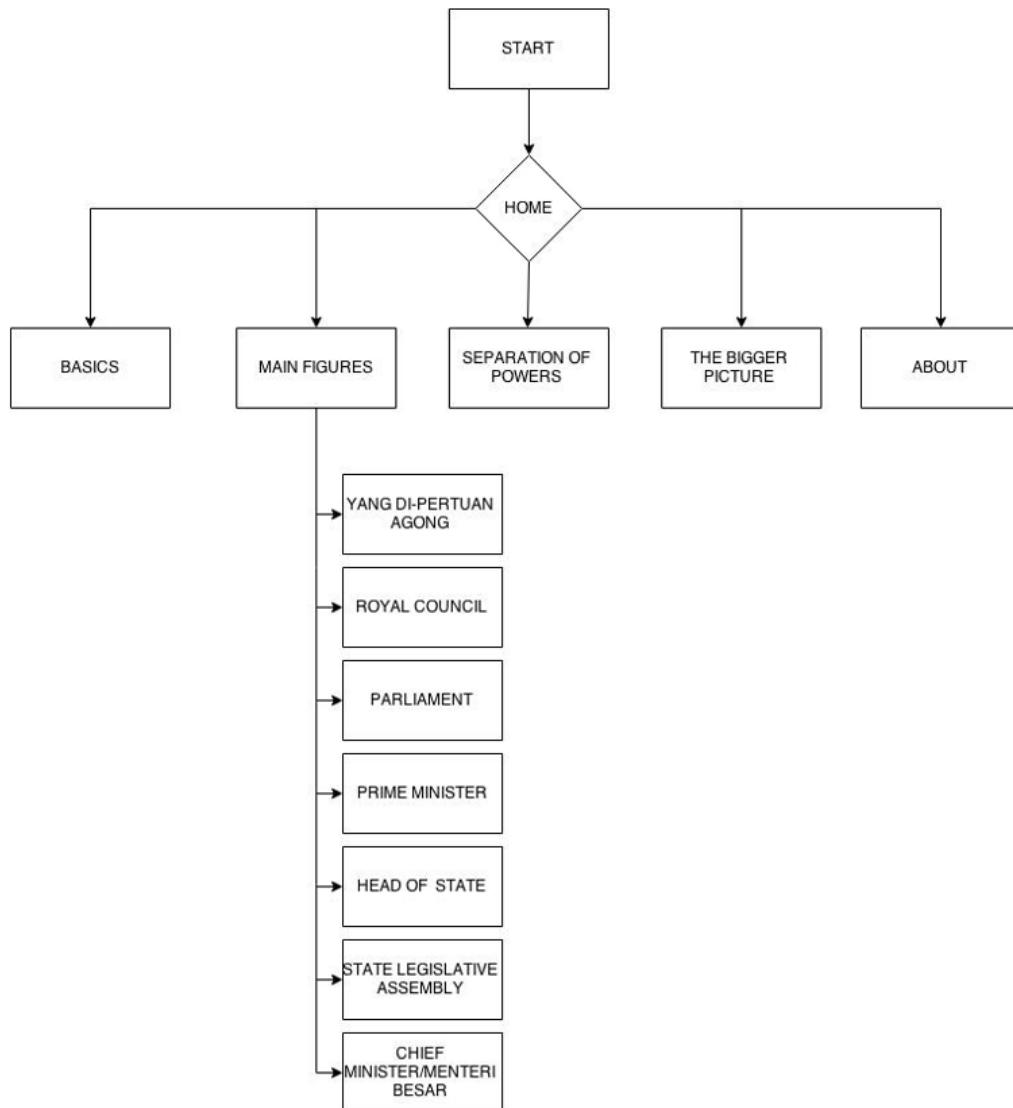
Figure 1 below outlines the app's overall layout.

Figure 1. Flowchart of the App's overall layout

Design Process

The design process for the mobile app took into account factors such as content, layout and color that would help with maximizing the learner's usage and experience. Ideas were initially drawn on paper until a practical but user friendly layout was finalized. The ideas were put in appnotch and the completed product proceeded to troubleshooting and beta testing before the implementation. The beta testing was implemented by letting other students and non-students (working adults) try out the app to assess its usability.

The Methodology

The app was used for the Malaysian Studies class. The class was conducted in week two of the semester (12 May 2015) in one of the university's classrooms from 2pm to 5pm.

The students were briefed about the project, which was made part of the class activity. The flow of the class on that day was explained and the activities are listed in Table 1.

The students were given the link to the mobile app for their study, observations were then made by the course instructor, particularly on how they used the app and interactions they made with their peers during the activity. Questions that were asked by the students were also noted to better understand how they had used the mobile app. Instrument-wise; the observations were made using a camera (the students were asked for consent beforehand and their anonymity and privacy were assured) and notes were taken using a notebook.

The class activity was completed when students successfully created the "Visual Note" (seen in Figure 2) and are able to explain the key concepts and components in their own words. The instructor gave some scaffolding to help with the articulation of ideas and correct any misconceptions, as necessary.

Consequently, the students were asked to complete two separate evaluation forms online via the university's Learning Management System (LMS). The first evaluation utilized the 10 item SUS scale instrument, developed by Brooke (1996). The SUS evaluation was utilized for its simple and easy to interpret instrument items and the average score were compared to a score table proposed by Sorflaten (2010). In the second evaluation, the students were given 6 questions (5 multiple choice and 1 open-ended) for some general feedback.

OBSERVATIONS OF THE STUDENTS' APP USAGE

It was found that students used the mobile app in a different manner. Three groups of students worked in groups while three remaining students worked individually. It was observed that the group of three students used the class' main textbooks to get the information and answer the questions posed in the app whilst the other groups used the computer laboratory and even asked some of the senior students (who had completed the subject) for clarifications and explanations.

All of the students used their laptops to search for the answers online. There was active classroom discussion and some interaction with the instructor for some clarification on some of the terms.

No problems emerged with the app use except in one instance. In the first few minutes of the app use, a student had problems with the app layout –but after the explanations were given, the student continued to use the app without any problems.

Table 1
Flow of class activities

Activity	Details
Briefing	Students were briefed on the project and what is to be expected for the class on that day.
App Usage & Class Session	The students are given the link to the mobile app and to go through the activities that is in the app. They are expected to come up with their own visual notes/mind map on the topic (see: "The Bigger Picture" page of the app)
Break	Class Break – 15 minutes
Evaluation	The students went to complete two evaluation using their LMS page: The System Usability Scale (SUS) Evaluation General Feedback
Class Discussion	The instructor discussed the students' findings and they all came up with the bigger picture of the topic.

The Visual Note

At the end of the session, the students discussed their findings with the instructor and together, they constructed their understanding of the topic. Figure 2 below shows the overall lesson and how the main components are linked to each other.
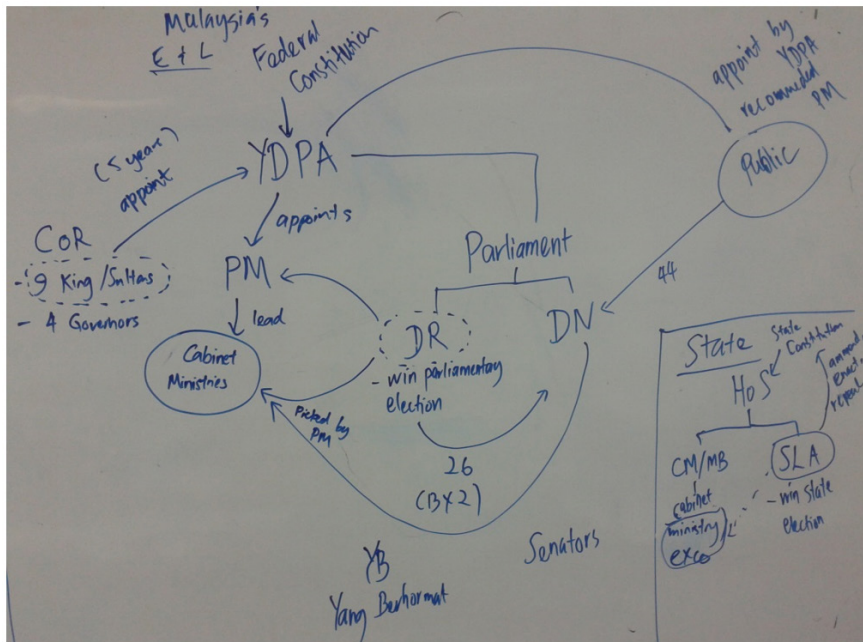

Figure 2. The Class' Mind Map

EVALUATION AND FINDINGS

System Measurement (SUS Evaluation)

To evaluate the app, the SUS Evaluation was used. The results of the SUS measurements are seen in the following table. From the data, the minimum was 47.5 and maximum was 92.5. The average mean for the evaluation was 61.8, which is a D and is marginally acceptable. The SUS Score was obtained drawing from a table by Sorflaten (2010).

It was discovered later that the difference between the min and max score for the SUS evaluation was attributed to two of the students' limited understanding of what was asked in the SUS' 10 item questions. The students shared that though the language was simplified, they couldn't understand the exact context of what was written and in the end, they simply randomly picked the rating for the item.

General Feedback

The students were also given the chance to give their feedback about using the app for the topic. The general feedback was given via the Learning Management System. There were 6 questions for them to answer, 5 multiple choice and 1 open ended.

The feedback was generally positive. 72% of the students saw the app as useful to the class session with 81% finding it as easy to use. 8 students agreed that the app forces them to find information. In terms of app layout, 9 students gave 'Good' and 'Very Good' rating for the app with 2 being neutral, whilst in the context of design and aesthetics, almost 90% of the students gave 'Good' and 'Very Good' ratings whilst only one student gave a 'Neutral' rating. For the open-ended question, the students were asked to provide feedback on the app and only 8 gave their feedback. The feedback, in verbatim, can be seen in Table 2.

Table 2
Student's General Feedback

Student's Feedback	
good enough	It is extremely helpful. It makes understanding easier and learning much more effective.
So far, I think it's very useful for me, can let I am interested in Malaysian studies!	app is convenient, but real lectures are the best!
good	N/a
Nice app...	This app i think is useful somewhat but i think you need to provide more guide line and information for the users. One more thing is good to use this app in laptop or computer because is easy to see and clear...

From the feedback and SUS evaluation, it is clear that there is room for improvement for the ap. These include providing clearer guidelines and information on the usage of the app. The benefits from the students' perspective was the ease of understanding and learning and the increased interest in the subject. Furthermore, the apps' convenience and ability to be used

in laptops and desktop computers was an advantage to the students. For future research, more data need to be collected (especially student's qualitative feedback) to improve the application.

CONCLUSION

The objective of this project was to develop a mobile app that would guide the intended learners (international students) to learn the fundamentals of the Malaysian system of government. As this is a complex topic, even for Malaysian students, the content was made more accessible by utilizing the constructivist learning approach. In addition to that, the app was intended to create variety in learning for the learners, and which would alleviate boredom, at least to some degree.

Based on the results of the SUS evaluation and general feedback, this app does demonstrate the potential to be used for other learning purposes and course evaluation. To conclude, the app did achieve some of its intended objectives and the project could be successful in the future, provided some refinements and tweaks are made in terms of simplifying the layout. Due to the small number of students (a normal occurrence for the course) and considering that this is the first iteration of the research, improvements, better idea implementation, and approaches could be further unearthed with further research on a bigger scale down the line.

REFERENCES

Alavi, M., & Mansor, S. M. S. (2011). Categories of problems among international students in Universiti Teknologi Malaysia. *Procedia - Social and Behavioral Sciences*, *30*, 1581–1587. doi:10.1016/j.sbspro.2011.10.307

Alioon, Y., & Delialioglu, O. (2015). A Frame for the Literature on M-learning. *Procedia - Social and Behavioral Sciences*, *182*, 127–135. doi:10.1016/j.sbspro.2015.04.747

Ally, M. (Ed.). (2012). *Mobile Learning - Transforming the Delivery of Education and Training*. Edmonton: AU PressAtkinson, R., & Shiffrin, R. (1968). Human Memory: A Proposed System and Its Control Processes. In K. Spence & J. Spence (Eds.), *The Psychology of Learning and Motivation (Volume 2)* (pp. 89–195). New York: Academic Press.

Brooke, J. (1996). *SUS: A "Quick And Dirty" Usability Scale*. In P. W. Jordan, B. Thomas, B. A. Weerdmeester, & A. L. McClelland. Usability Evaluation in Industry. London: Taylor and Francis.

Driscoll, M. (2001). *Psychology of Learning for Assessment* (2nd ed.). Boston: Allyn and Bacon.

Epçaçan, C. (2014). Examination of Texts of Secondary School Turkish Schoolbooks in Terms of Constructivism Approach. *Procedia - Social and Behavioral Sciences*, *116*, 5105–5114. doi:10.1016/j.sbspro.2014.01.1082

Ferdousi, B., & Bari, J. (2015). Infusing mobile technology into undergraduate courses for effective learning. *Procedia - Social and Behavioral Sciences*, *176*, 307–311. doi:10.1016/j.sbspro.2015.01.476

Forest, E. (2014). The ADDIE Model: Instructional Design. Retrieved May 15, 2015, from http://educationaltechnology.net/the-addie-model-instructional-design/

Georgiev, T., Georgieva, E., & Smrikarov, A. (2004). M-learning - a New Stage of E-Learning. *International Conference on Computer Systems and Technologies - CompSysTech'2004*, *17*, 1–5. doi:10.1145/1050330.1050437

Hannafin, M., & Land, S. (1997). The foundations and assumptions of technology-enhanced student-centered learning environments. *Instructional Science*, *25*(3), 167–202. Retrieved December 10, 2014, from http://link.springer.com/article/10.1023/A:1002997414652

Lutz, S., & Huitt, W. (2003). Information processing and memory: Theory and applications. *Educational Psychology Interactive*, 1–17. Retrieved October 24, 2014, from http://www.edpsychinteractive.org/papers/infoproc.pdf

Mahmud, Z., Amat, S., Rahman, S., & Ishak, N. M. (2010). Challenges for international students in Malaysia: Culture, climate and care. *Procedia - Social and Behavioral Sciences*, *7*(2), 289–293. doi:10.1016/j.sbspro.2010.10.040

Malaklolunthu, S., & Selan, P. S. (2011). Adjustment problems among international students in Malaysian private higher education institutions. *Procedia - Social and Behavioral Sciences*, *15*, 833–837. doi:10.1016/j.sbspro.2011.03.194

Motiwalla, L. F. (2007). Mobile learning: A framework and evaluation. *Computers & Education*, *49*(3), 581–596. doi:10.1016/j.compedu.2005.10.011

Sharples, M., Taylor, J., & Vavoula, G. (2005). Towards a Theory of Mobile Learning. *Proceedings of mLearn*, *1*(1), 1–9. doi:citeulike-article-id:6652555

Sjøberg, S. (2010). Constructivism and learning. *International Encyclopedia of Education*, 485–490. doi:10.1016/B978-0-08-044894-7.00467-X

Sorflaten, J. (2010). Clean Metrics from Quick and Dirty Assessment: "The SUS." Retrieved May 26, 2015, from http://www.humanfactors.com/newsletters/clean_metrics_from_quick_and_dirty_assessment.asp