The Application of Bonang Gamelan Music Based on Mobile Application

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Abstract: *The application of bonang gamelan music based on mobile application was developed with the aim of maintaining the tradition of traditional musical instruments in the society of this modern day. Users can recognise and learn how to play the traditional musical instruments, especially bonang gamelan by using mobile phone technology. This application provides convenience for users without spending time and money and they can also access it anywhere. The development of this animated application is based on the ADDIE methodology and uses Adobe Flash software as a platform to develop this music app. The respondents involved in the development of this music app consist of six (6) specialists in bonang gamelan music and IT professionals. The user respondents were ten (10) students of the Faculty of Technical and Vocational Education (FPTV). The evaluation of this application was carried out using questionnaires. Overall, this application succeeds in meeting the objectives and goals set out in the analysis phase although it still has its own weaknesses. It is hoped that the development of bonang gamelan music application based on mobile application will benefit all societies.*

Keywords: Gamelan Music, Application, Teaching and Learning

I. INTRODUCTION

In line with the world's growth in information and communication technology, education is seen as one of the most impactful aspects of this wave of globalisation. Formerly the Teaching and Learning (T&L) process only took place in the classroom and used materials such as books. However, according to Chabra and Figueiredo (2002) the existence and convenience of the internet makes all information and knowledge accessible anywhere without the constraints of time and place. Then, the term e-learning came up, which is the process of learning online through the internet such as forums, emails, blogs, websites and so on.

In general, m-learning is the delivery of education through the internet using smartphones. Its scope extends beyond the concept of computer or multimedia learning. This teaching approach is also cultured and applied throughout the institution to meet the needs of lifelong learning. This situation then created new opportunities, namely distance learning which was practiced at local institutions of higher learning such as Malaysian Open University (OUM) (Zoraini, 2010). This aspect will indirectly increase the productivity of individual skills in daily life as well as foster continuous learning practices. Striking from the use of distance learning and e-learning methods, the education world strives to explore the dimensions of learning for users who want to learn anytime and anywhere. Then, the term learning method is mobile or is called m-learning (Brown, 2005). This m-learning method is akin to self-learning using mobile devices such as mobile telephony, personal digital assistant (PDA), Palm Talk and others as learning tools (Wagner, 2005).

Through the use of m-learning methods, the learning process is no longer focused on a single platform or confined to a classroom but m-learning is more just-in-time, just-in-case, on-the-move and on-demand (Traxler, 2007). This indicates that the use of mobile devices makes learning easier anytime and anywhere compared to using notebooks that are easily damaged and durable (Ahmad Sobri Shuib, 2010). This situation indicates that mobile devices such as mobile phones, Pocket PCs and others have the advantage of conventional materials. To date, this method of m-learning has been widely applied in school subjects such as cience, mathematics, English and music.

II. PROBLEM STATEMENT

Traditional musical instruments are less popular than the modern ones because they are considered outdated (Sutrisno Hartana, 2007). Also, the cost of owning traditional musical instrument is also considered as the production is quite complex and this can be said to be the main factor in the problem of lack of response in traditional musical instrument. In addition, efforts to promote traditional musical instruments are futile as some societies consider things related to traditional musical instrumentsto be old fashioned The younger generation today is also more interested in learning modern instruments due to the growing influence of Western music. Therefore, there is a need to encourage young people to learn traditional musical instruments .

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The introduction of traditional musical instruments is important as it helps young people to understand the origins of the instruments.

Therefore, the introduction of the best-selling traditional musical instrument is if the user can continue playing the instrument as it involves all sensory organs. Therefore the development of interactive marketing in the application system can emphasise the user's experience, which means that the user has the flexibility to operate the system. The process of learning to teach using multimedia interactive learning can also enhance the user's understanding of the subject matter as the users are assessed to be more understanding (Rasmiadi, 2014). This interactive learning is also not boring to the user as this learning is not confined to text (Elfika, 2014). Therefore, an application of a loose-fitting musical instrument will be developed an interest among the youth.

The objectives of the research are as follows:

i. To design a Mobile Application-based Gamelan Application for learning purposes.
ii. To developing a Gamelan-Free Music-based Musical Instrument Application for learning purposes.
iii. To evaluate application functionality based on the content, interaction and interface of the Mobile Application-based Gamelan smooth Musical Tool Application.

III. METHODOLOGY

The study conducted was descriptive, whereby the data analysed were obtained from the questionnaire form distributed to the respondents. This method is used because it is easy to collect, effective, economical and practical data which can save cost, energy and time (Adam, 2011).

A. Population Sample

The study samples involved in this study were randomly selected for the purpose of testing the functionality and evaluating the design of the developed application interface. The study respondents consisted of ten (10) Year 3 Semester 1 students for the 2017/2018 session as well as six (6) specialists consisting of experts in the field of advanced gamelan music and Information Technology specialists.

B. Instrument

The research instrument used by the developer is through questionnaire. There are two types of questionnaires used, namely, experts and students. All selected intrusions will be implemented based on the objectives set. The purpose of the survey instrument is to obtain user authentication and needs once the user has tested the application. The expert questionnaire is used to get the confirmation and feedback from the experts on the application being developed.

C. Student

The main purpose of this questionnaire is to find out if the app developed helps users to learn to identify the instruments of the music. The questionnaire was used using the Likert scale in the questionnaire to measure student consent in relation to the application developed. The developer forms a questionnaire containing five (5) sections, as shown in table 1.

Table 1 Student Questionnaire

Section	Aspect	Number of question
A	Respondent's information	5
B	Content design	6
C	Interaction design	8
D	Interface design	9
E	Comments and suggestions	1

D. Lecturer

The expert questionnaire is used to obtain expert confirmation. In the development of this application, the developer uses a specialist verification form to provide to the expert as an assessment instrument. This expert verification form is divided into five (5) sections as shown in table 2.

Table 2 Lecturer Questionnaire

Section	Aspect	Number of question
A	Respondent's information	5
B	Content design	8
C	Interaction design	8
D	Interface design	6
E	Comments and suggestion	1

E. Application development

The ADDIE model is based on behaviourism, a set of ideas developed to design the learning system. The term ADDIE is an acronym for Analysis (Design), Design (Development), Development (Implementation), and Evaluation. From the ADDIE acronym, it can be seen that ADDIE applies five stages or elements to interrelated activities that guide the practice of teaching programs or learning modules. Each of these elements or stages does not necessarily follow a sequential pattern, but informs each other in a design system, where the output of one stage becomes the input to the next (Steven McGriff, 2000). Figure 1 shows the process of designing a learning module based on ADDIE theory.

Figure 1 process of designing a learning module based on ADDIE theory (Steven McGriff, 2000)

Therefore, the choice of the ADDIE model is very suitable as it is for the development of mobile application that is compatible with the quality of education in this regard is very relevant to the learning process that will determine learning outcomes. All citizens of the world are certain that education is a very important part of the humanitarian process in a cultured society (Agung, 2009). Therefore, if the learning process is still weak, it will also indirectly affect the quality of education. Figure 2 shows Partially Content The Application Of Bonang Gamelan Music Based On Mobile Application.

(a)Montage

(b) Menu Option

(c) Note Of Bonang

(d) Play bonang

(e) Puzzles

Figure 1: Partially Content The Application Of Bonang Gamelan Music Based On Mobile Application

IV. RESULTS AND DISCUSSION

Descriptive statistical methods were used by researchers to describe the information obtained from the respondents and will be processed, analysed and evaluated by the percentage and frequency of the method used. The data obtained were analysed using SPSS version 22.0 software.

A. Content design analysis

This section discusses the content of the gamelan application whether or not the content included in the application is relevant to the learning of the gamelan to the user or not. A total of 97.22% of experts have agreed that the content design contained in the pet application is perfect for learning the instrument. The content of learning is easy to understand because developers deliver simple and clear content and the language used is easy to understand. For the use of audio and learning methods applied. Experts have agreed that the audio used is compatible with music applications. The use of appropriate sound elements makes a software more attractive (Wan Ahmad, 2013). The learning implemented in this application is also suitable as the developer provides a user-friendly play interface. For the quiz questions provided, experts have agreed that the answer choice quiz is compatible with the target user but needs to be improved in terms of time to answer the quiz. However, 2.78% of the experts disagreed because the information provided was insufficient to recognise and learn the advanced musical instruments. Table 3 shows the overall analysis of content design for experts.

Table 3 Content design analysis of experts

Bil	Item	Disagree		Agree	
		(F)	(%)	(F)	(%)
1.	The content of the application complements the traditional guidance of the traditional musical instrument.	1	16.67	5	83.33
2.	The learning content is easy to understand	0	0	6	100
3.	The language used in each content is easy to understand.	0	0	6	100
4.	Use of in-app audio is appropriate.	0	0	6	100
5.	The questions in the quiz section correspond to the content in the application	0	0	6	100
6.	The advanced learning methods implemented in this application are easy to learn	0	0	6	100
Total average		0.17	2.78	5.83	97.22

Table 4 shows the data obtained from the checklist for content design from users. Overall, 98.75% of students agreed to the content design developed in the application to suit their learning needs. According to Anwar (2010), a systematic and engaging arrangement of content can influence learning efficiency and objectives. However, 1.25% of students disagreed about the scope of content in the application. In addition, for the next three items, the orderly and interesting content delivery rate, the resulting quizzes enhance the understanding, the quizzes provided in accordance with this content indicate that all students agree with the three items. Ten (10) students chose to agree and 100% vote. According to Ahmad (2010), well-structured content and engaging learning activities can make it a good source of reference for users.

Table 4 Content design analysis for students

Bil	Item	Disagree		Agree	
		(F)	(%)	(F)	(%)
1.	The information layout in the app is easy to understand	0	0	10	100
2.	The content of the application meets the learning needs.	0	0	10	100
3.	The image displayed is clear	0	0	10	100
4.	The scope of content meets the learning requirements.	1	10	9	90
5.	The description of the note provided is clear	0	0	10	100

6.	The delivery of content is organized and interesting.	0	0	10	100
7.	The resulting quiz can enhance your understanding.	0	0	10	100
8.	The quiz provided is based on the content of the study.	0	0	10	100
	Total average	0.13	1.25	9.88	98.75

B. Interaction Design Analysis

This section focuses on the functionality, position, shape, size of buttons, and button links used by developers in this application. Table 5 shows the eight (8) items presented in this section. The neat and organised buttons will make the presentation of mobile app based on mobile gamelan gameplay more appealing. Overall, 93.75% of experts agreed that the interaction elements used in this application are appropriate because the interaction buttons provided in the application are appropriate and work well. For the use of button size, button arrangement, use of buttons on the main menu, use of button animations and easy-to-use user buttons on the buttons have been agreed upon by the six experts as the buttons used are in accordance with the application developed. This interaction button is very important in applications as interactive software will make exploration more attractive and will encourage users to be bored (Jantan, 2007). In terms of the appropriateness of using icons, an expert disagreed because the use of icons in the menu interface is incompatible with content. However, 6.25% of experts disagreed, in terms of the appropriateness of using icons, an expert disagrees because the use of icons in the menu interface is incompatible with the content. An expert also disagreed with the buttons used are linked to the correct interface because some buttons are not linked to the correct page.

Table 5 Analysis of expert interaction design

Bil	Item	Disagree		Agree	
		(F)	(%)	(F)	(%)
1.	Button used appropriately	1	16.67	5	83.33
2.	The size of the button displayed is appropriate	0	0	6	100
3.	The order of the buttons makes it easy for users to navigate..	0	0	6	100
4.	The exit button makes it easy for users to sign out at any time	1	16.67	5	83.33
5.	Using the button on the main menu makes it easier for users to make choices.	0	0	6	100
6.	The buttons used are linked to the correct interface	1	16.67	5	83.33
7.	Use of animations on users' buttons	0	0	6	100
8.	The user is easy to press on the button	0	0	6	100
	Total Average	0.375	6.25	5.63	93.75

Table 6 shows the results obtained for 10 students for interaction design. Based on table 6, it can be seen that eight (8) items are provided. 98.75% of the students agreed that interaction elements like buttons, button size icons fit and work well. However, 1.25% of students disagreed because every navigation menu on the app is not working properly.

Table 6 Analysis of interaction design for students

Bil	Item	Disagree		Agree	
		(F)	(%)	(F)	(%)
1.	Use of custom buttons or	0	0	10	100

	icons.				
2.	the size of the button used is appropriate	0	0	10	100
3.	The order of the buttons is consistent.	0	0	10	100
4.	Every navigation menu in the app works well.	1	10	9	90
5.	Using the exit button can make it easier for users to sign out at any time.	0	0	10	100
6.	Using the link button to the main menu makes it easier for users to make choices.	0	0	10	100
7.	The use of 3D button effects is of great interest to users	0	0	10	100
8.	Easy user to click on button (Clickable) ?	0	0	10	100
	Total average	0.13	1.25	9.88	98.75

C. Interface design analysis

Each item contained in this section deals with text, graphics, animations, audio, screens and a combination of multimedia elements that give a clear picture. The development has designated Nine (9) items to be analysed this section. This section discusses graphics, buttons, and text displays that come out when a user clicks a button. It is an element that helps the user to facilitate the learning session and additionally the process for exploring the application to run smoothly. The items in question are as per Table 7. The results of this checklist show that all experts agreed that the graphics for the background of this application are interesting and appropriate to the use of text colours. This is supported by Md salleh and Mat Ali (2011) who stated that design and counter-design can attract students to continue through the learning process as students will not be easily bored. In addition, the type of writing used was also appropriate, the content arrangement is consistent and agreed upon by all experts. However, one expert disagreed with the use of content text size because it was too small and difficult for users to read. Additionally, an expert also disagreed with the use of background music used and recommends setting the on / off button for sound. The jigsaw game provided is also not approved by an expert as the developer does not provide hints to the user and suggests the developer add the hint so that the user can imagine a combination of puzzles. Overall, 94.44% of the students agreed that the presentation design elements used in the application were appropriate.

Table 7 Analysis of expert presentation design

Bil	Item	Disagree		Agree	
		(F)	(%)	(F)	(%)
1.	The interface background on each display is interesting and appropriate	0	0	6	100
2.	The use of text colors to match the background	0	0	6	100
3.	The type of writing used is appropriate	0	0	6	100
4.	The use of content text size makes it easy for users to read	1	16.67	5	83.33
5.	The order of content is consistently set	0	0	6	100
6.	The graph of the shadow used corresponds to the application	0	0	6	100

7.	Use background music of appropriate applications	1	16.67	5	83.33
8.	When users use this application, the display is displayed in full screen	0	0	6	100
9.	The jigsaw game found in the app is interesting	1	16.67	5	83.33
Total Average		0.33	5.56	5.67	94.44

The results of the consumer design analysis are shown in table 8. Based on table 8, it can be seen that there are six (6) items showing 100% percentage with frequency of ten (10) students. For item one (1) is the use of the background of the interface in each attractive and appropriate display. Ten (10) students choose to agree. The use of text colour to match the background shows that all students choose to agree 100%. The background colours used in this application are of interest to students in line with Wahab (2008) who opines that a combination of text, colour, images, graphics, animations and sounds can attract and enhance students' learning. The appropriate type of writing item also has a 100% decision on the choice of consent. Researchers using Arial writing can easily be read by users or students. This is supported by Harun and Tasir (2003) that Arial writing is a commonly used text in software development. The use of the shadow graph used in accordance with the application. All students chose to agree with the frequency of ten (10) people. Subsequently, all students chose to agree on the sixth item, which is the use of background music in 100% customisable application music.

Table 8 Analysis of student presentation design

Bil	Item	Disagree		Agree	
		(F)	(%)	(F)	(%)
1.	Use the background of the interface in each display to be interesting and appropriate	0	0	10	100
2.	The use of text colors to match the background	0	0	10	100
3.	The type of writing used is appropriate	0	0	10	100
4.	The order of content is organized in a regular way	0	0	10	100
5.	The use of the shadow graph used in accordance with the application	0	0	10	100
6.	Application background music user appropriate.	0	0	10	100
	Total average	0	0	10	100

V. CONCLUSION

In conclusion, the development of an application requires detailed planning and requires sufficient programming language to ensure that the application developed works well. For the development of this Mobile Application-based Gamelan Smooth Musical Application, it has been successfully developed based on the objectives and research questions set. These developed applications have their own advantages, but they still have some drawbacks that still require improvement. To address these weaknesses, suggestions are being made to improve the quality and functionality of future applications.

REFERENCES

1. Adam, A., Abdul Razak, S. & Abu Bakar, M. H. (2011). Kecenderungan Pelajar-Pelajar Semester Akhir Kolej Komuniti Jasin Terhadap Keusahawanan. Mini Seminar Pendidikan Kolej Komuniti Jasin.
2. Ahmad Sobri Shuib. (2010). Reka bentuk kurikulum M-Pembelajaran Sekolah Menengah: Teknik Delphi. Proceedings of Regional Conference on Knowledge Integration in Information and Communication Technology 2010, pp. 652-665
3. Ahmad, N. A. (2010). Pedagogi : Dari Sekolah Ke Institusi Pendidikan Tinggi. Cetakan pertama. Universiti Utara Malaysia : UUM Press.
4. Anwar, Ilham. (2010). Pengembangan Bahan Ajar. Bahan Kuliah Online. Direktori UPI. Bandung.x
5. Agung. (2009). Evaluasi Pendidikan. Singaraja: Undiksha.
6. Brown. (2005). Towards a model for m-learning in Africa. International journal on E-learning,4(3):299-315
7. Chabra & Figueiredo. (2002). How to design and deploy handheld learning. Dimuatturun pada 26 Jun 2017, daripada http://www.empoweringtechnologies .net/eLeaming/el.earning , expov5 _files/ frame.htm
8. Elfika. (2014). Penggunaan Buku Paket Terhadap Presntasi Belajar Siswa Kelas IV SDN Inpres I Tondo. Elementary School of Education, E-Journal Media Publikasi Ilmiah Prodi PGSD (Vol 2, Nomor 2, Jun 2014).
9. Harun, J., & Tasir, Z. (2003). Multimedia dalam pendidikan. PTS Publications: Bentong.
10. Jantan, R. A (2007). Pembangunan dan Penilaian Perisian Pengajaran dan Pembelajaran Berbantukan Komputer bagi Tajuk Cerpen Dugong dalam Komponen Sastera Bahasa Melayu. Tesis Sarjana Pendidikan. Fakulti Pendidikan, Universiti Kebangsaan Malaysia.
11. Md Salleh, S., & Mat Ali, M. K. (2011). Pembangunan Web e-Pembelajaran Menggunakan Elemen Video Dalam Topik "Work And Energy" Berasaskan Teori Konstruktivisme Sosial. ms 1–9.
12. Rasmiadi. (2014). Pengembangan Multimedia Pembelajaran Interaktif dangan Menggunakan Model Degeng pada Pembelajaran IPA Kelas V SD. e-Jurnal Edutech Universitas Pendidikan Ganesha Jurusan Teknologi Pendidikan (Vol: 2 No: 1 Tahun: 2014).
13. Sutrisno Hartana. (2007). Notes, Concern, and hopes about Javanese Gamelan.
14. Steven McGriff. (2000).Instructional system design : using the ADDIE model. College of Education, Penn State University
15. Traxler. (2007). Defining, Discussing and evaluating mobile learning: the moving writes and having writ. International Review of Research in Open and Distance Learning, 8(2):1492-3831
16. Tegeh & Kirna. (2010). Metode Penelitian Pengembangan Pendidikan. Singaraja: Undiksha
17. Wagner. (2005). Enabling mobilelearning. Educause Riview, 40(3): 40-53
18. Wahab.B (2008). Pembangunan dan Penilaian Perisian "Tokoh Khulafa" al-Rasyidin Berasaskan Web. Laporan Projek Sarjana. Universiti Kebangsaan Malaysia.
19. Wan Ahmad, M. Z. (2013). Pembangunan perisian kursus teknologi binaan modul bumbung sebagai ABBM. Laporan Projek Sarjana Muda. Universiti Tun Hussien Onn Malaysia.
20. Zoraini. (2010). Engaging ODL Learners through Mobile Learning at Open University Malaysia. Retrieved April 15, 2017, from http://eprints.oum.edu.my/482/1/formal_zoraini.pdf

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