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Sekar Indonesia: Interactive Android-Based Learning Media For History Learning

Muhammad Hassan Massaty
Educational Informatics and Computer Engineering
Faculty of Teacher Training and Education
Universitas Sebelas Maret
Email: hassanmantaro@gmail.com
Indonesia

Yudianto Sujana
Educational Informatics and Computer Engineering
Faculty of Teacher Training and Education
Universitas Sebelas Maret

Aris Budianto
Educational Informatics and Computer Engineering,
Faculty of Teacher Training and Education
Universitas Sebelas Maret

Abstract:

Due to the lack of innovation from year to year emerged various problems in historical learning activities such as monotonous, boring and uninteresting. The variety of learning media will be able to increase interest of learners in the learning process. The result of this research is an interesting and non-boring Android-based history learning media that is called Sekar Indonesia and worthy of being used as a learning media. This research method is research and development (R & D). This study was conducted using a research model developed by Borg & Gall. The research model consists of five steps: research and data collection, planning, product drafting, preliminary field testing and main product revision. Applications Sekar Indonesia tested by material experts, media experts and users. Expert testing results obtained percentage of 86.1% from material experts, 92.85% from media experts, and 97.7% form users. From the test results obtained the conclusion that the application Sekar Indonesia that has been developed can be used as a learning media.

Keywords: Learning-Media, Kingdom History, Android

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Introduction

History is the result of the reconstruction of the past. The reconstruction contained in history is anything that has been done, said, experienced and felt by people. History is also a knowledge that studies the events in human life in the past (Kuntowijoyo, 1995: 18). Learning history in school today is still one of the topics that became the focus of attention of history education specialists. This is because there are still many problems in learning history in school. The number of problems, among others, is that the learning method used is considered not suitable to be applied to the learning process. In terms of learning, which is often recorded by students, even until they are married is a historical learning process is not fun. Boring impresssion, rote, "unpalatable", has become a typical label of history learning. The media used in the learning does not support the learning process or not in accordance with the learning method used (Andryani, 2015: 3).

Learning media are the physical tools used to communicate instructional messages (Gagne and Reiser, 1983: 5). Learning media include printed books, films, physical equipment and an instructor who delivers instructional messages. One of the innovations in learning media is interactive learning media. Communication can be regarded as an interactive process when between two parties occurs exchanging information and developing or changing as a result (Deliyannis, 2012: 5). Advantages derived from the use of interactive learning media are (1) Messages delivered in the material more felt real. (2) Stimulate the various senses so that interactions between senses occur (3) Visualization in the form of text, images, audio, video and animation will be more memorable and captured (4) The learning process is more practical and controllable (5) Save more time, cost and energy (Munir, 2012: 114).

Similar research had been done by Andryani (2015). Aim of this research was to develop CTL-based interactive instructional media in historical learning. The result of this research show that the effectivity-level of interactive instructional media implementation was 63,44%. From that result, It is advisable to use interactive instructional media in historical learning. Besides, the similar research done by Hssina, Erritali, Bouikhalene, & Merbouha (2014). This research was aimed to provide an educational game which introduces a series of activities. This allowed to make available to children of 3 to 7 years an interactive game for independent learning. From the results known that the application increase motivation and encouragement of children to improve their knowledge. Duveskog, et al., (2013) also had been develop instuctional media in form android-based application to increase the awareness and interest for forestry among school going children in Kenya. The response from preliminary tests at primary school was very positive. Judging from the students' engagement and excitement, they preferred the learning experience compared to how teaching is traditionally delivered at the school. They also indicated they learnt a lot about forestry from playing the game. The majority of the results of the literature reveal that the use of android-based interactive learning media using a smartphone can increase the interest and motivation of students in learning This research was conducted to arouse the desire and interest of students in studying history from the history of the kingdom in Indonesia through the application of Sekar Indonesia. This application can be used as a companion historical instructional media or instructional media that can be used individually especially for children. This paper contributes konwloedges to teacher to find a new way in historical learning in a fun way without boredom. In additionally, this paper contributes as a reference for creating android-based instructional media.

Research Method

Development model used in this research was development model developed by Borg and Gall. Research development is the use of research results to design new products and procedures, followed by the application of research methods for field testing, evaluation, and improvement of products and procedures to meet certain criteria in terms of effectiveness, quality, or the same standard (Borg & Gall, 2003). In this model there are several stages of development which include: (1) Research and Information Collection, (2) Planning, (3) Develop Prelimetery Form of Product, (4) Preliminary Field Testing, (5) Main Product Revision, (6) Main Field Testing, (7) Operational Product Revision, (8) Operational Field Testing, (9) Final Product Revision, (10) Dissemination and Implementation. Development stages used in this research were limited until the feasibility testing. The development stages used in this research were:

1. Research and Information Collection

   Research and information collection was done by measuring the application requirement based the literature review result and observation. Literature review was used to find the theories which support the development of interactive learning media named Sekar Indonesia. Observation was used to know the weakness of the current learning media.

2. Planning

   Activities were done in this stage were designing, and defining the testing design. Designing consist of two activities, they were navigation designing and develop the navigation designing into storyboard. Navigation design was used to define the application usage flow and storyboard was used as the framework for the development stage. Testing Design consist of defining the testing model, testing subject, data collecting method, defining the data and data analyzing method.

3. Develop prelimetery form of product

   There were two main activities in this stage, they were developing learning media and developing validation instruments will be used for the testing. Each validation instrument item had its own score. The scoring used Likert scale, the range of scores between 1 to 5 from strongly disagree, disagree, neither/nor agree, agree, strongly agree. Data from the material expert, media expert, and user will be converted to percentage with the formulas assessment results obtained divide total score multiple by 100%. Finaly the result was categorized into 5 different criteria, which include very inappropriate, not feasible, neutral, feasible, very feasible.

4. Preliminary Field Testing

   In this stage, Sekar Indonesia was tested by small group user. The user was requested to try learning and playing the game then the researcher gave the questionnaire. User was requested to fill the questionnaire based their opinion. The result of this small group testing was quantitative data in value form, and qualitative data from the user suggestions which will be used in next stages.

5. Main Product Revision

   In this stage, researcher improved and refined based the suggestions given by the material expert, media expert and small group testing.

Result and Discussion

Result

Research and Information Collecting

Preliminary research was done using literature review and observation. Based the observation result to primary schools and information from the teachers known that history course especially about the kingdom history of Indonesia was mostly consist of theorical course. This course made students bored quickly and lack attention to the lesson. New media was needed so students can independently learn about the history of the kingdoms in Indonesia. The learning media development must adjust with the type of learner character. Primary school students have a playful character. It need learning media which makes students learning and playing in one place. The game must be adjusted with the thinking ability of the learners. Current media mostly used by learner was smartphone.

Planning

1. Designing Navigation Structure

   Navigation structure used in this research was hierarchical navigation. Navigation structure used as the framework to develop the buttons. Navigation Design can be seen in Figure 1

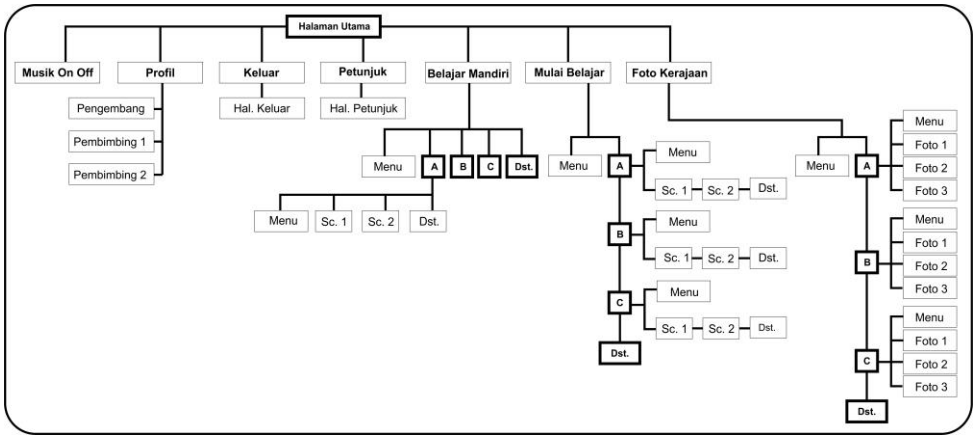

Figure 1.Navigation design

"Halaman Utama" consist of "Musik" menu, "Profil" menu, "Keluar" menu, "Petunjuk" menu, "Belajar Mandiri" menu, "Mulai Belajar" menu, "Foto Kerajaan" menu. "Musik" menu used to turn off and turn on the music background, "Profil" menu used to see the information about the developer of application, "Keluar" menu used to exit from the application, "Petunjuk" menu contain user tutorial, "Belajar Mandiri" menu used to read the story without order, "Mulai Belajar" menu used to read the story in order and "Foto Kerajaan" menu contain the real photo of relics from the kingdom.

2. Creating Storyboard

Storyboard used as the reference to put the components such as text, button, picture and animation in the workspace. Storyboard was made based the navigation design made in the previous stage. In this research, the components used in the storyboard were adjusted with the development requirement. The components used in the storyboard were scene name, button, sound effect, description and narration if needed. The main page storyboard of sekar indonesia can be seen at Figure 2

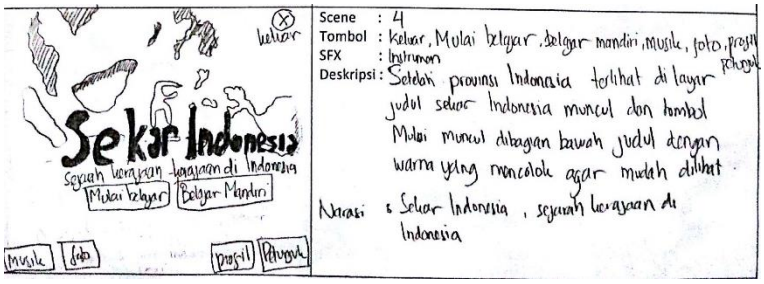

Figure 2. Storyboard

On the main page of the application there is the main navigation menu as in the navigation design such as learning start menu, self-learning, music, photos, profile, directions and exit. The learning start menu is used for users who want to learn in a linear fashion according to the order of the story. The self-learning menu is used for users who want to learn at random. In the self-learning menu the user can decide which part of the story to read first.

Develop Preliminary Form of Product

Performed the process of making media, product functional test, evaluation instrument development and expert feasibility test

3. Making of media

Figure 3. Main Page

The main page can be seen in Figure 3 which consists of several components ie background animation, application title animation, start learning button, self study, music keys, profiles, hints and exit buttons. On this page, the animation used on the background and the title of the app is tween animation. In the app title, the animation is changed to a button so that an effect occurs when the application title is clicked. The learning-start button is used to go to the learning-start kingdom menu where the user must learn according to the sequence. The self-learning button is used to navigate to the self-learning kingdom menu where users can choose stories without sequence. The music button used to turn the music instrument on and off.

Figure 4 Instructions Page

The instructions page can be seen in Figure 4. The instructions page is used to convey how the application usage and the buttons used in the Sekar Indonesia application.

Figure 5 Interaktive Story Page

The interactive story page can be seen in Figure 5 which consists of text, narration, illustrations and some navigation buttons.

Figure 6. Game Page

The educational game page can be seen in Figure 6. Game Education in Sekar Indonesia consists of several variations of game, one of the most widely used game is the drag and drop model.

Figure 7. Quis Page

The quiz page can be seen in Figure 7 which contains questions about the kingdom that being studied. The quiz page lies at the end of each kingdom interactive story.

4. Product Functional Test

In this research, product functional tests are conducted using Blackbox. Black Box is testing based on requirements specification and it is not necessary to check the code that is in the application in testing. Only done based on the user's point of view associated with the application input and output, so the developer can know the function that has not worked as expected efficiently. Black box testing is done when the product has been completed. Product functional testing is done by testing each navigation key, interactive story and educational game in Sekar Indonesia application. Test results will be declared valid if the test results in accordance with the expected results. The results of product functional testing on the application Sekar Indonesia can be seen in Table 1.

Table 1. Product Functionality

Scenario	Test Case	Expected results	Test result	Conclusion
Pressing the Music button		The Music button changes and the music stops / plays		Valid

Pressing the Help button		The media will display the Help page		Valid
Pressing the Continue button		Go to the instructions page		Valid
Menekan tombol menu Kerajaan		Pressing the Kingdom menu button		Valid
Hitting the narration box after the indicator appears		The media will go to the next interactive story page		Valid
Pressing the Back button		The media will go to the Kingdom Menu page		Valid
Push and pull the puzzle pieces and place them to the appropriate place		The puzzle pieces will remain in the right place		Valid
Pressing one of the answers		The selected answer will change color		Valid
Pressing the button is complete		The media will display the result according to the number of correct answers		Valid

5. Evaluation Instrument Development

The feasibility level of Sekar Indonesia was rated based on the learning media selection criteria. Each criteria was develop into items of instrument to measure the feasibility level of media, material and small group testing. Core of the media feasibility instruments, material and small group feasibility instruments can be seen in table 2, table 3 and table 4.

Tabel 2. Core of Material Feasibility Instruments

Variable	Aspect	Statement Number
Interactive Learning Media Sekar Indonesia	Accuracy	1 – 4
	Completeness	5 – 6
	Interest or Attention	7 – 9
	Conformity	10 – 11
	Benefit	12 – 14
	Motivation	15 – 16
	Flexibility	17 – 20

Tabel 3. Core of Media Feasibility Instruments

Variable	Aspect	Statement Number
Interactive Learning Media Sekar Indonesia	Functionality	1 – 5
	Legibility	6 – 9
	Convenience	10 – 16
	Display	17 – 24

Tabel 4. Core of User Feasibility Instrumets

Variable	Aspect	Statement Number
Interactive Learning Media Sekar Indonesia	Materials and Games	1 – 6
	Display, Audio and Visual	7 – 13

6. Expert feasibility test

Output of this research is a learning media, so it needs to test the quality of material and media. Material aspects were tested by material expert which was teacher of primary school. Media aspects tested by media expert which was lecturer of Informatics and Computer Education Program, Universitas Sebelas Maret. Each items of instruments measured by like scale. The diagram of media feasibility testing result can be seen in Figure 8 and Figure 9

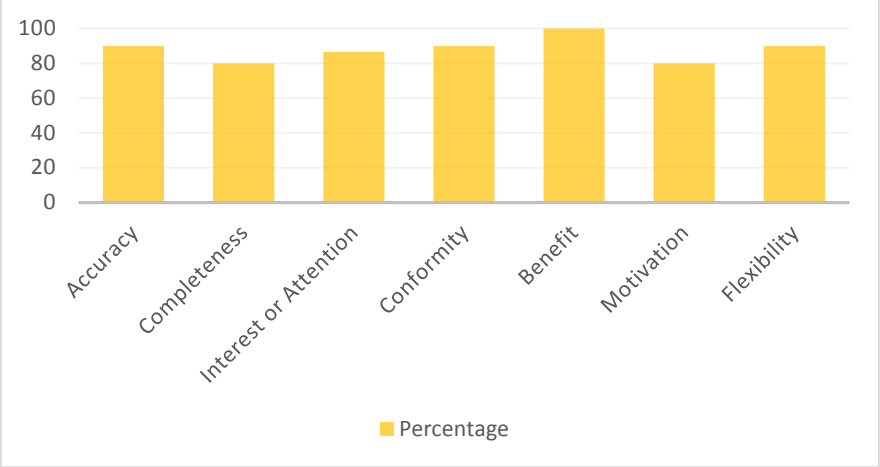

Figure 8. Material Expert Testing Result Diagram

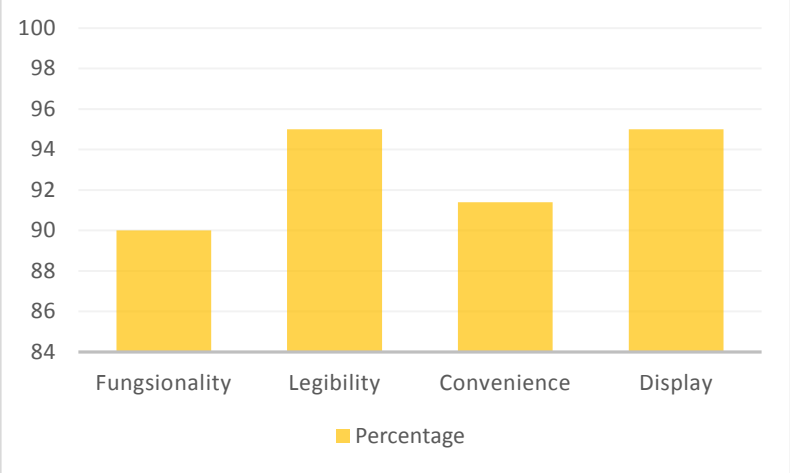

Figure 9, Media Expert Testing Result Diagram

Preliminary Field Testing

In this small group, 10 students were sampled. This test is intended to determine the level of student acceptance of Sekar Indonesia application seen from several aspects such as material and games, display, audio and visual. Data collection of user feasibility test result using likert scale assessment. Diagram of small group application results Sekar Indonesia application can be seen in Figure 10.

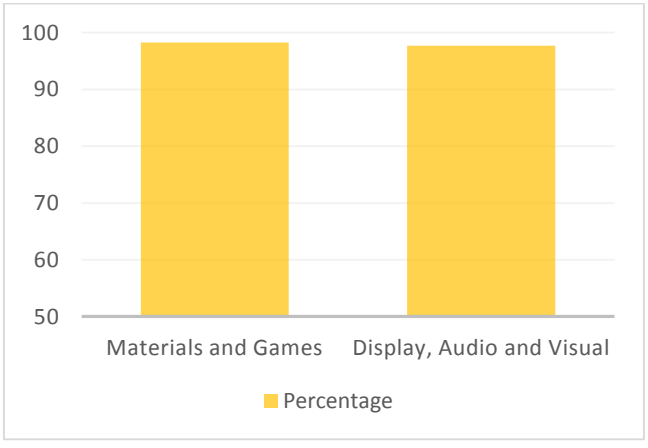

Figure 10. Users Testing Result Diagram

Main Product Revision

In addition to quantitative data, from media feasibility testing also obtained qualitative data in the form of improvement suggestions for Sekar Indonesia applications. Suggestions for media aspects include the following:

1. The game instructions are more clarified
2. Need to add original photo from each kingdom

Based on the suggestion of improvement from media expert, then sekar Indonesia refined in the following sections:

a. On the game page added game guide button. Views of the game guide page can be seen in Figure 11.

Figure 11. Guide of The Game Page

b. On the main page are added kingdom photo button. If the button is clicked it will go to the menu that contains the button of each kingdom. If the button is pressed it will lead to the photo of the kingdom relics. Photo of the kingdom page can be seen in Figure 12.

Figure 12. Photo of The Kingdom Page

Discussion

The results of product functional trials at the development stage show that the expected results in accordance with the function of each element and the conclusion of the test indicate that all test results have been valid. The feasibility of Sekar Indonesia's application material is assessed from several aspects such as material accuracy, material completeness, interest / attention, material suitability, motivation and material flexibility. The average of all aspects of the assessment is 86.1%. From the average percentage can be concluded that the application of Sekar Indonesia included in the category is very feasible to serve as a learning media. The feasibility of Sekar Indonesia's application media is judged from several aspects namely functionality, readability, ease and appearance. Of the four aspects of media assessment above obtained an average of 92.85%. The percentage indicates that the application of Sekar Indonesia is very appropriate to be used as a companion learning media for students. In early product testing the aspects tested were material and games, display, audio and visual. The calculation results show that the material and game aspects earn a percentage of 98.3%.

The display, audio and visual aspects earn a percentage of 97.7%. From both aspects of the assessment can be concluded that the overall user declared application Sekar Indonesia included in the category very feasible.

Sekar Indonesia applications have advantages in interactive story pages that require users to complete the narration before they can move to the next page. This concept makes the user read or listen to narration so that indirectly users learn through interactive stories. Laying a game that is not separate from the story is also one of the advantages of Sekar Indonesia applications. Games placed in the middle of the story make the user more enthusiastic with the next stories. Educative games in this application is also designed always related to the interactive story so that even just play the game, indirectly users still learn. One of the shortcomings of Sekar Indonesia application lies in educational story material. In this application, the interactive story only takes the story of 8 big kingdoms that exist in Indonesia, so the material presented is less extensive and too crowded. It would be better if the material on the educational story is expanded and the number of kingdoms narrated. The over-compressed interactive story material makes the interactive story less continuous between one story and another, and there is important information from the kingdom story that has not been conveyed in the story.

Conclusion

Sekar Indonesia had been tested its performance and its feasibility. From the performance test was known all function worked properly for each smarthphone with different specification. The result of feasibility test of Sekar Indonesia learning media is done by material experts, media experts and users. The average of the overall aspects of the feasibility of materials experts, media experts and users is 86.1%, 92.85% and 98%. From these results indicate that the application of Sekar Indonesia is very appropriate to serve as a companion learning media for students.

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