

Mobile Learning: Implementation on Mathematics Learning

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Abstract. The Development of technology that is increasingly advanced encourages the creation of innovation in learning. These forms of innovation that like learning media, one of that is mobile learning application. This application can used as a support in the learning process. In this research aims to show at respon of students on used mobile learning application in mathematics learning on material of calculus II in mathematics education departement FKIP Islamic University of Riau. Forms of this research is descriptive research that doing on even semester on learning year 2017/2018. Instrument of this research is questionnaire sheet, with data collection technique used sheet of respon use mobile learning application. Analysis of data in this research was carried out by analysis descriptive of questionnaire given. Result of this research showed good respon because based of result of questionnaire given obtained 75,10% give positive respon. This mobile learning application still needs more development based respon given of students.

Keyword: *mobile learning, mathematics, questionnaire sheet*

1. INTRODUCTION

In the midst of current technological developments, learners directly interact with mobile communication technology devices with internet technology have become a wave of new trends that enable mobile learning or better known as mobile learning (m-learning) [1]. Thus, utilizing mobile learning can make it easier for learners to study wherever and whenever and can get information more quickly and practically.

In education world, the use of mobile learning applications is not yet familiar in learning even though there are already several parties who try to develop it like a “ruang guru” application for students. In learning needs at university level, it is still very rare to use mobile applications developed by lecturers in learning, generally mobile devices are often used by students to find their lecture materials.

Based on the survey results of the Indonesian Internet Service Entrepreneurs Association (APJII), the profile of internet usage in Indonesia in 2014 was 34,9% and 78,5% of the total internet users living in the western regions of Indonesia. Regarding internet-based technology, 85% of the total users in Indonesia access the internet using mobile phones [2]. Based on the age of users the majority of internet users are aged 18-25 years, which is almost half of the total internet users in Indonesia, namely 49% and 60% who use mobile phones in accessing the internet. This shows that internet users in Indonesia are still in the productive age and become a challenge for educators to take advantage sophistication of current technological.

From the results of a questionnaire about the use of computers and mobile phones distributed to 50 students of FKIP UIR mathematics education students, there were 3 people who did not have a computer/laptop all students had a handphone. Of the 50 students who have mobile phones 48 of them have smartphone types, only 2 people who do not have a Smartphone type. Most of the use of smartphone phones as learning material (47 people), with an average of 45 people they use mobile phones for the internet, open social media, and entertainment. To access the internet, 26 of 50 people accessed the personal data package and 6 others used the wifi facilities provided by the campus, and the rest used both facilities [3]. This shows that computers/laptops are items that are needed in the world of education, while HP is an item that is needed in everyday life today.

From the survey data and the results of questionnaires on the use of computers and mobile phones above, this shows that mobile phone technology has developed rapidly, but has not been maximally used in the learning process, especially learning mathematics. Thus, researchers are interested in making mobile learning applications in material calculus II.

2. RESEACRH METHOD

Form of this research is deskriptive research [4]. Research did on even semester in learning year 2017/2018 on subject kalkulus II. Subject of research are students of mathematics education in FKIP Islamic University of Riau with 46 students.

Instrument of research is quetionnaire respon sheet to look respon of student used mobile learning aplication. This quetionnaire have there aspect that are media aspect; subject aspect; and interest aspect. Data collection technique used quetionnaire technique with likert scale. Analysis of data on this research was carried out by analysis deskriptive with there part, that are:

- a. Analysis every assesment aspect of questionnaire response
- b. Analysis of students response in using mobile learning aplication
- c. Analysis of comment/suggestion from students

3. FINDING AND DISCUSSION

1. Result of Research

In this research was carried out by analysis deskriptive to quetionnaire of student's response in using mobile learning aplication in mathematics learning. Result of research can showed in following.

- a. Analysis every assesment aspect of questionnaire respons

Respon in using mobile learning aplication devided in there aspect, that are media aspect, material aspect, and aspect of interest. Based questionnaire response sheet in using mobile learning aplication which fill by 46 student of mathematics education, result of answered can show in following table:

Table 1. Assessment of Media Aspect

No of Questionnaire	Statement	Percentage (%)
1	Mobile learning application in mathematics learning on material of calculus integral is easy to used.	76, 63
2	Intruccion of utilizing mobile learning application is easy to understanding.	79, 89
3	Buttons have link to direct to page in this application is easy to understanding.	82, 61
10	This menu diplay on mobile application can attracted my interest to learning	74, 46
11	The writing in this mobile learning application is clear and interesting	75, 54
12	Language which used in mobile leraning application is easy to understanding	77, 17
14	Learning using mobile leraning application can be used to learn anywhere, both at home or in campus	81,52
Total		78,26

Assessment on the media aspect is outperformed by questionnaire numbers 3 and 14. This means that the buttons on the Mobile Learning application are easy to understand and can be used by students anywhere. Thus the Mobile Learning application can encourage students to learn independently and study with their friends without being accompanied by a lecturer.

Meanwhile, for language aspect, writing in the menu display, instructions for use and material displayed on the Mobile Learning application are still considered to be of less interest of students. So that, it needs to be improved or further developed.

Table 2. Assessment of Material Aspects

No of Questionnaire	Statement	Persentase (%)
4	The integral calculus material presented in the mobile learning application is easy to understand	72, 83
5	Learning integral calculus materials using mobile learning applications is more fun	72, 28
13	I can remember the integral calculus material presented in the mobile learning application in a longer time	70, 65
17	The menu in the mobile learning application is in accordance with the competencies provided	77,72
18	The evaluation section on mobile learning applications can improve critical thinking matematis ability	75,00
Total		73,70

Student responses to the material presented in this mobile learning application are still standard even though the menu presented is in accordance with competence of material calculus 2. With this response, researchers need to improve the standards and quality of the material presented in the mobile learning application, such as: adding material more detail, adding problem examples, and varied evaluations are more challenging.

Table 3. Assessment of Aspects of Interest in Using Applications

No of Questionnaire	Statement	Percentage (%)
6	I feel more serious about learning integral calculus after using the Mobile Learning application	68,48
7	I tried to work on the questions on the Mobile Learning application despite difficult answers	71,20
8	I am more happy and interested in learning integral calculus by using a mobile learning application	71,74
9	I feel interested in the appearance of this Mobile Learning application	76,09
15	Learning using Mobile Learning applications can increase my learning motivation.	76,09
16	Learning using the Mobile Learning application is in accordance with the competencies provided.	74,46
Total		73,34

Student interest in mobile learning applications is good response. This means that students have a positive attitude towards mobile learning applications. Even though, researchers must improve the quality of this application.

b. Student Response Analysis to the use of Mobile Learning Applications

Analysis of student responses to the use of mobile learning applications is presented in the following table:

Table 4. Student Response to the Use of Mobile Learning Applications

Observed aspects	Respondents	Percentage (%)
Media Aspects	46	78,26
Material Aspects		73,70
Aspects of Interest		73,34
Total		75,10

Based on the table above, the aspect that has the highest percentage of response is the media aspect, but all aspects have not reached above 80%. This shows that there still needs to be a lot of improvement in all aspects.

c. Analysis of Student Comment/Suggestion

In the student response questionnaire on the use of mobile learning, this questionnaire give a place to provide comments/suggestions by students toward the use mobile learning application. Some comments/suggestions given are as follows:

Table 5. Comments / Suggestions from Students

No.	Comments/Suggestions
1	In the application added audiovisual to be able to remember more material
2	This application is good. So, i hope any new create on other material like this application
3	Create another application on a different subject so that learning is more enjoyable
4	In the application, use a softer color, not dark colors (less coherent), so that will can reading interest.
5	This application is good because it can present different themes on each menu and can attract reading interest

6	Hope in this application have questioning from easy to difficult
7	In the application, added calculus games, so that they are not saturated in working on the questions
8	This application is very good because sometimes students are lazy to carry books and prefer to carry HP.
9	This application has explained in more details so learning calculus is more fun
10	Evaluation questions must be more varied
11	Evaluation questions are challenging to do
12	Explanation of application usage is clearer

Based on comments/suggestions given some weaknesses and improvements that must be corrected are as follows:

Table 6. Weaknesses of Mobile Learning Applications

No.	Weaknesses found in the Mobile Learning Application
1	This application can only be downloaded on the Android Application, the IOS application still cannot be used
2	The material provided still needs to be added
3	The formula must be more detailed
4	The writing on the material is still small
5	Display applications are more motivated or varied, not just plain
6	The practice questions are expected to be upgraded
7	Some phones cannot download this application perfectly so there are some menu that don't appear

From suggestions or comments given by students, it becomes a guideline for researchers to make improvements to weaknesses in the Mobile Learning application. It is expected that the improvement and development of comments or suggestions can create an ideal mobile learning application.

2. Discussion

The results showed a positive response from students with a large percentage of 75,10%. This is in line with the assessment of each aspect, from the three aspects of assessment that are given the largest percentage of media aspects of 78,26%, while the material aspects and aspects of interest have almost the same percentage of 73,70% and 73,34%.

Based on the data we have found that some students say that this mobile learning application was interesting from various aspects but some of them say that it was not interesting because it looked monotonous. This is a contradictory response. Besides that the material presented give different responses too. This encourages researchers to be able to improve the Mobile Learning application based on some suggestions or comments from students so that a perception can be obtained.

The advantages of the Mobile Learning application can facilitate students in learning integral calculus. Can be used anywhere and anytime. The application is easy to download on PlayStore, but not yet on mobile phones other than Android. In the learning process the use of mobile learning can be an innovative learning method that utilizes the latest technology. This is in line with the opinion of [5] that Mobile Learning can be used as a support in collaboration in learning and change the paradigm of conventional learning into e-learning.

The constraints that researchers face are still needed improvements based on the findings of the responses given by students. This mobile learning application still needs further development so that it can be used optimally, especially for material parts that can develop higher-order thinking skills for students. Further development will be carried out for further research.

Therefore, mobile learning is an innovative medium in education today. Mobile Learning deserves to be developed in the world of education. The sustainability of the development of this mobile application can improve the quality of education and the quality of students, especially in higher education, in general, students already have smartphones and are supported by adequate campus facilities such as the provision of wifi networks.

4. CONCLUSIONS

Based result of this research, implementation of mobile learning application on mathematics learning show positive respon from students. This is can look from data which obtained 75,10% given positive respon that are devided there part, that are 78,26% to media aspect; 73,70% to subject aspect, and 73,73% to interest aspect. That data research used aplications mobile learning in mathematics learning can support learning procces based student centered learning. Aplication mobile learning is media learning which innovative and have good prospective to future learning because this application can used anywhere and any time. Any else, mobile learning application can as give facilities to student to self learn and can learn collaboration with them friend.

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