Development of Android-Based Learning Media Using Adobe Flash Professional Cs6 in the Form of a Digital Pocket Book in the Basics of Accounting Course to Improve Concept Understanding of Students of the Accounting Education

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Abstract. The research objectives are to develop Android-based learning media using Adobe Flash Professional CS6 in the form of a book in the Basics of Accounting course- To determine the feasibility of Android-based learning media using Adobe Flash Professional CS6 in the form of an accounting course. To find out the effectiveness of Android-based learning media using Adobe Flash Professional CS6 as a pocketbook on the basics of accounting courses. and To find out the improvement of students understanding of accounting concepts. Individual, small group, and main trials were conducted, and the effectiveness of the learning model was tested by comparing the results of the experimental and control groups. Descriptive analysis was performed at each stage of development and continued with t-test statistical analysis to determine the effectiveness of Android-based learning media using Adobe Flash Professional CS6 in the form of a pocketbook developed to improve students understanding of accounting concepts.

Keywords: Android-based learning media, Adobe Flash Professional CS6, pocketbook, understanding of Accounting concepts.

1 Introduction

Higher education is part of the national education system that has a strategic role in the intellectual life of the nation. Students are one of the main components in higher education. Based on this statement, it can be said that students are one of the important pillars of the next generation, so in the learning process they must be able to increase student creativity so that their skills are more focused and produce outputs that are ready to face challenges in the Distraction Era (revolution 4.0). Era of Distraction (revolution 4.0). Partnership for 21st Century Skill formulates revolution 4.0 skills into three general skills, namely 1) skills related to information and communication; 2) thinking and problem solving skills; and 3) interpersonal

ICIESC 2022, October 11, Medan, Indonesia

DOI 10.4108/eai.11-10-2022.2325295

skills and self-regulation skills. According to the National Education Standards Agency one of the most prominent characteristics in the Era of Distraction (revolution 4.0). is the increasingly interconnected world of science, so that the synergy between them becomes faster.

The limitations of space and time have always been an obstacle in the implementation of learning. The presence of technology that presents mobile devices such as smartphones, tablets and laptops/PCs can be a solution to these obstacles. This is because mobile devices have high flexibility, connectivity and portability that allow students to access learning materials anywhere and anytime. [1] In addition, mobile devices are also equipped with features in the form of multimedia so that abstract material becomes more concrete because it is presented in the form of images, videos or animations equipped with sound. [2]

The indicator of student success in understanding and capturing learning material is the learning outcomes achieved by students at the end of the learning process. However, the reality in the field is currently not as expected, namely the learning and understanding of student concepts in learning shows that the results are still not good. This can be seen from the achievement of student learning outcomes of the FE UNIMED accounting education program in general journals, ledgers, and balance sheets, about 58.6% of students' scores are in the low category.

In connection with the background of the problem, it is necessary to develop an instrument product in the form of an Android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book in introductory accounting courses for students that can improve the understanding of accounting concepts for students in the accounting education study program at the State University of Medan.

A digital pocket book is an educational application or application that contains teaching materials and materials that can be used in the Android system. With a good screen design, buttons, icons, images, text, and all visual elements (User Interface), Android-based digital pocket books provide users with opportunities to learn in a practical and fun way. The use of this Android-based digital pocket book media makes the subject matter more interesting and easy to understand. Digital pocket books are books that are displayed on a smartphone screen in the form of an application that can be used as a substitute for learning media in the classroom. [3] Furthermore, digital pocket books as practical learning media and can display animation, audio, and video for learning anywhere and anytime. [4]

The presence of E-books is starting to be felt important because it not only reduces the need for storage of printed books, but also streamlines costs for physical repair of printed books, makes it easier to use books, and is very suitable for distance learning systems. So that electronic books become one of the alternative media that can be used when conditions do not allow for face-to-face learning

2 Method

The research was conducted at the FE UNIMED Accounting Education Study Program. With trials on first semester students in the Introduction to Accounting course. The time of this research was carried out in the odd semester of T.P. 2022/2023. The subjects of this research are lecturers who teach introductory accounting courses and first semester students who are

currently taking Introductory Accounting courses at the Accounting Education Study Program, FE- Unimed. The instruments used to collect data in this study are:

1. Learning media validation sheets from material experts, media experts, practitioners (lecturers who teach in the class), and students
2. Concept understanding test questions.

The procedure for developing Android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book is as follows:

a) Define Phase (Defining)

The definition stage is the initial stage in the development procedure which includes all data collection activities for needs analysis.

b) Design Phase (Design)

The design stage is carried out by designing android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book. there is

c) Development Stage (Development)

The development of android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book at the develop stage is carried out according to the results of the design at the design stage.

d) Disseminate Stage (Spreading)

The deployment stage is the stage of disseminating a product that has been feasible for all users. This stage is the stage of using the device on a wider scale. The purpose of the deployment phase is to test the effectiveness of device users in learning.

The data obtained in the form of qualitative and quantitative data. In this study, a qualitative descriptive analysis technique was used. Qualitative descriptive based on data scores from the validation of accounting material experts, individual tests, media experts, and field tests. The percentage technique is used to present data in the form of the frequency of the test subject's responses to learning media products

The analysis technique is used to process the data obtained through a questionnaire in the form of a percentage of each subject with the formula:

$$P = \sum \frac{xi\ x\ 100\%}{\sum x} \quad (1)$$

where:

P = Rating Percentage

xi = Number of Answers from Validator

x = Highest Number of Answers

Furthermore, to calculate the percentage of the overall subject/component used the formula:

$$P = (\sum P)/n \tag{2}$$

where:

P = Total percentage of all components

N = number of components

Quantitative descriptive analysis was used to calculate the data on student responses to learning using Android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book with the formula:

$$X = \frac{\epsilon x}{N} \tag{3}$$

where

X = average score

x = total score

N = number of test subjects

The results of the average score are adjusted to the level of achievement so that the media qualifications that will be applied can be determined.

Table 1. The results of the average score.

No.	Score Range	Score Range	Category
4	X > Mi + 1,5 Sdi	X > 4,2	Very good
3	*Mi + 1,5 SDi > x ≥ Mi*	3,4 < X ≤ 4,2	Good
2	*Mi > x ≥ Mi – 1,5 Sdi*	2,6 < X ≤ 3,4	Not good
1	*x≤ Mi – 1,5 Sdi*	1,8 < X ≤ 2,6	Very Not Good

In addition to the above criteria, the overall product eligibility criteria can be determined by multiplying the assessment score by the number of indicators measured in each assessed aspect. For the purposes of further analysis, such as comparing the results of the assessment of each aspect with the expected level of feasibility, the percentage technique is used in analyzing the data with the formula:

Percentage of eligibility for each aspect (%)

= (∑mean score obtained)/(∑ideal average score) x 100% (4)

The collected data were analyzed by quantitative descriptive analysis presented in the distribution of scores and percentages against categories with a predetermined rating scale. The percentage of feasibility assessment can be seen in the table below:

Table 2. Feasibility Assessment

Percentage of assessment	Interpretation
76 - 100%	Very Eligible
51 - 75%	Eligible
26 - 50%	Not Eligible
<25%	Very Inappropriate

In addition to descriptive analysis, this study also uses quantitative analysis as a form of testing the effectiveness of Android-based learning media using Adobe Flash Professional CS6 in empowering students understanding of accounting concepts. Statistical analysis techniques. Test the effectiveness of the learning media by comparing the results of the pre-test and post-test. To analyze the difference in the pretest and posttest scores of the two classes, a sample t test (one sample t test) was used. The results obtained from the sample t test were then used to determine the increase in student understanding by using the gain-test data analysis technique in calculating the gain value (g) as follows:

= (posttest score - pretest score)/(ideal score - pretest score) [5]

The gain value that has been obtained is then categorized according to the assessment in the following table.

Table 3. Criteria for Gain Value

g value	Criteria
$g > 0,7$	Height
$0,7 \geq g > 0,3$	Medium
$g \leq 0,3$	Low

3 Results and Discussion

The development of learning media developed refers to the development of 4-D learning media models. According to Thiagarajan[6] called the 4D model (Define-Design-Develop-Disseminate). The product developed is an Android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book for introductory accounting courses. The

final media of this research is an Accounting Pocket Book application that is used for Android smartphones, and is the latest innovation of Accounting learning media with the material for the accounting recording stage of service companies. This application is a learning media that contains material and practice questions named "Accounting Pocket Book". The material is made in accordance with Competency Standards (SK) Understanding the Preparation of the Service Company's Accounting Cycle and Basic Competence (KD) Making an Overview of the Service Company's Accounting Cycle. This application is presented with an attractive appearance with a blue background display as the main color and added interesting pictures.

The "Accounting Pocket Book" application is an Accounting learning media that is presented on an Android smartphone with a fairly easy to use with an attractive image display, easy to carry, can be used anytime and also is the latest innovation of Accounting learning media using smartphone technology with the latest generation. This application has the opportunity to be developed in accordance with the development of science and technology, so that it can improve students' understanding of accounting concepts.

Overall, the design of the learning media developed is very good/appropriate/appropriate /appropriate to be used in the learning process with the same setting or background in order to improve students' understanding of accounting concepts.

Based on assessments and input from media design experts, materials experts and students

Table 4. Material Expert Validation Results

No.	Indicator	Value		Criteria
		Average	Percentage (%)	
1.	Overall aspect	3,57	98	Very good/ Very Eligible
2.	Aspects of material relevance	4,00	100	Very good/ Very Eligible
3.	Aspects of Organizing Materials	4,00	100	Very good/ Very Eligible
4.	Aspects of Evaluation / Practice questions	3,83	95,83	Very good/ Very Eligible
5.	Language Aspect	4,00	100	Very good/ Very Eligible
6.	Aspects of Effects for Learning Strategies	3,80	95	Very good/ Very Eligible

Table 5. Media Expert Validation Results.

No.	Indicator	Value Average	Percentage (%)	Criteria
1.	Overall Media Aspect	3,0	88	Very good/ Very Eligible
2	Language Aspect	4	100	Very good/ Very Eligible
3.	Aspects of effects for learning strategies	3,60	90	Very good/ Very Eligible
4	Software engineering aspects	3,50	88	Very good/ Very Eligible

No.	Indicator	Value Average	Percentage (%)	Criteria
5.	Visual Display Aspect	3,50	83,5	Very good/ Very Eligible

Table 6. Results of Validation of Practitioners (Lecturers).

No.	Indicator	Value Average	Percentage (%)	Criteria
1.	Overall Aspect Assessment	3,79	95	Very good/ Very Eligible
2.	Aspects of Material Relevance	3,80	95	Very good/ Very Eligible
3.	Aspects of Organizing Materials	3,80	93	Very good/ Very Eligible
4.	Aspects of Evaluation/Questions	3,83	93	Very good/ Very Eligible
5.	Language Aspect	4,00	100	Very good/ Very Eligible
6.	Aspects of Effects for Learning Strategies	3,80	95	Very good/ Very Eligible
7.	Software Engineering Aspect	4,00	100	Very good/ Very Eligible
8.	Visual Display Aspect	4,00	100	Very good/ Very Eligible

Table 7. Recapitulation of Student Opinions Regarding Media.

No.	Indicator	Answer		Amount	Percentage of answers
		Yes	No		
1	Easy to understand learning	18	6	28	81%
2	Explanation of the examples provided	20	4	28	88%
3	Clarity of question formulation	19	5	28	84%
4	Material completeness	18	6	28	81%
5	media's ability to improve understanding	21	3	28	91%

Overall, the design of the learning media developed is very good/appropriate/appropriate /appropriate to be used in the learning process with the same setting or background in order to improve students' understanding of accounting concepts. Based on the assessment and input from the media design expert, material expert and student, the development of the learning media design was carried out in a wider trial. The value of the effectiveness of android-based learning media using Adobe Flash Professional CS6 in the form of a pocket book is obtained a value of 8.158 %, this is classified as very good category, in other words the learning media developed is effective.

Table 8. Effectiveness Assessment Criteria.

Value	Criteria	Percentage
A	Very Effective	80% ≤ X ≤ !00%
B	Effective	60% ≤ X ≤ 80%
C	Medium	40% ≤ X ≤ 60%
D	Less Effective	20% ≤ X ≤ 40%
E	Very Less Effective	0% ≤ X ≤ 20%

Table 9. Gain Value Aspects of Concept Understanding

Aspects	Pre-test	Post-test	Value Gain
Smoothness	44	66	0,423
Dexterity	31	66	0,538
Originality	38	62	0,414

From the results of the pre-test and post-test obtained as a whole, the Gain value of student concept understanding reached 0.463. This increase is included in the category of moderate increase. The results of the Gain value for each aspect of understanding the concept are represented in a diagram image as follows:

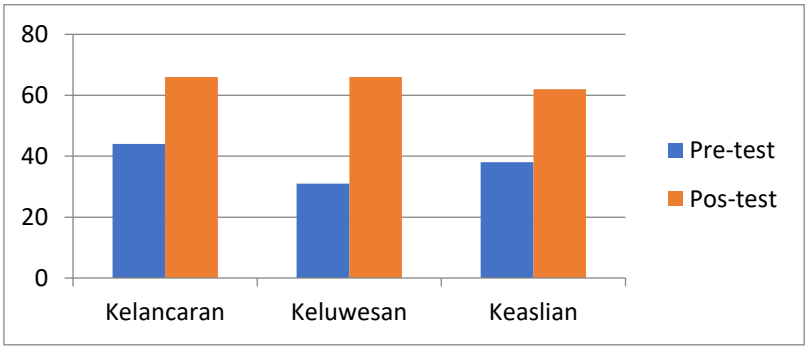

Fig. 1. Concept Understanding Gain Value Chart

The Gain value of the smoothness aspect reached 0.423, the value of the flexibility aspect reached 0.538 and the gain value of the authenticity aspect reached 0.414. If referring to the established criteria, namely the Gain value which is between 0.31 and 0.71, the improvement in aspects of fluency, flexibility, and authenticity is included in the medium category. Therefore, the android-based learning media using Adobe Flash Professional CS6 which was developed effectively to improve students' understanding of concepts.

4 Conclusion

The feasibility of Android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book in the introductory accounting course is categorized as very good/feasible after field trials. Android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book is effective in improving students' understanding of accounting concepts seen from the ability of students to solve problems, can build their own concepts in the learning process, and be able to present their work in the form of financial reports. The increase in understanding of accounting concepts and student learning outcomes is quite significant but in the moderate category after the implementation of android-based learning media using Adobe Flash Professional CS6 in the form of a digital pocket book.

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