The 3rd International Conference on Education Innovation and Social Science, August 2024
ISSN (Online): 2961-9602

Development of Android-Based Learning Media Using Articulate Storyline 3 in Service Company Financial Report Material

Adif Akbar Sejati[1], Ahmad Nurkhin[2], Jarot Tri Bowo Santoso[3], Satsya Yoga Baswara[4]
[1,2,3,4]Economic Education, Faculty of Economics and Business, Universitas Negeri Semarang
50229 Kampus Sekaran, Gunungpati, Semarang, Indonesia.
adifakbarsejati15@students.unnes.ac.id

Keyword

Android Based Learning Media, Articulate Storyline 3, Financial Reports of Services Company, Learning Outcomes

Abstract

The research carried out aims to develop Android-based learning media using Articulate Storyline 3 to improve student learning outcomes on service company financial report material. The type of research used is research and development (R&D) using the ADDIE development model (Analyze, Design, Development, Implementation, and Evaluation). The object of this research is students in class X AKL 2 of SMK Negeri 4 Klaten for the 2023–2024 academic year. Data collection was carried out through observation, interviews, tests, and validation questionnaires. Data analysis uses quantitative descriptive to describe the suitability of learning media, while the effectiveness of learning media uses paired sample t tests and N-tests. The results of the data analysis show that the Android-based learning media with articulate storyline 3 obtained a material feasibility score of 75%, a media feasibility score of 57%, a practitioner-teacher feasibility score of 96%, small-scale test student response questionnaires of 88%, and in a large-scale test, students obtained a score of 87%, so theoretically, they were declared suitable for use in learning. The results of the effectiveness of learning media obtained a significance value of 0.00 < 0.05 and an N-test value of 0.47 in the medium category. Based on the results of the data analysis, it can be concluded that Android-based learning media with articulate storyline 3 in service company financial report material is declared suitable for application in accounting learning and effective in improving student learning outcomes.

INTRODUCTION

Education is a means of achieving quality human resources. Basically, education is a learning process which contains changes in knowledge, values and skills. Learning does not mean transferring knowledge or knowledge from teachers to students, but rather searching for and constructing information into active knowledge. Education which includes a quality learning process is expected to be able to form superior people with good character.

The objectives of national education are stated in Republic of Indonesia Law no. 20 of 2003 concerning the National Education System states that national education aims to brighten the nation's life and develop the Indonesian human as a whole, namely a human being who has faith and is devoted to God Almighty and has noble character, has knowledge and skills, physical and spiritual health, a stable and independent personality. as well as social and national responsibilities. Part of a form of national intelligence is being able to keep up with technological developments, which is one form of development in the field of knowledge to fulfill the requirements to become an advanced nation.

ISSN (Online): 2961-9602

Technological developments are currently developing very rapidly. All areas of life today require technology which makes humans very dependent. One of them is the education sector which also requires technology in the learning process. The learning process with the help of technology becomes more effective, efficient and interesting. The tools and learning media used become more varied so that learning becomes fun and not boring.

Learning media is defined as a means of conveying subject matter in order to channel messages, stimulate thoughts and feelings as well as a person's willingness to learn. The use of good learning media makes students more interested in participating in learning (Khoir & Aghni, 2021). An educator must be able to choose and use appropriate learning media so that learning can be followed well by students.

The use of appropriate learning media really supports active learning. Teachers need learning media that attract students to be more enthusiastic in learning to teach in class. The development of more varied learning media is really needed so that the teaching and learning process becomes better and less boring. The lack of learning media that supports active learning in class means that students tend to get bored more easily and their attention will be diverted to other, more interesting things outside the learning context (Utami & Rahmawati, 2018).

The rapid development of technology has an impact on the variety of learning sources and media. Nowadays students can easily learn from various sources and media such as newspapers, television, social media, films, and so on. This is due to the innovations made in the field of educational technology which are developing rapidly. One thing that is developing is mobile phones or smartphones. Smartphone or smart phone is a mobile phone device that is usually used for communication and also contains functions Personal Digital Assistant (PDA) which can work like a mini computer. In the world of education today, many students use smartphones during teaching and learning activities. This can be a good opportunity for the world of education. One of the opportunities is the development of innovative, creative and interactive learning media (Lubis & Elvianti, 2018).

Smartphones which are widely used today are based on Android. Android is an operating system that supports the work of smartphones that are used for various purposes. The ease of use and usage increases the interest of users, especially students, in having it. Apart from searching for information and news, smartphones can also be used as a learning medium. Smartphones used for learning or called mobile learning can be an alternative learning media that can motivate students in learning because it makes it easy for users to find information using images, text and sound at one time (Anam & Hakim, 2017).

The creation of Android-based learning media currently varies greatly, starting from creation-based coding or non-coding. There are many Android creation and development applications, one of which is Articulate Storyline 3. Articulate storyline 3 is an application developed by Global Incorporation in 2014 to create interesting and interactive learning media. This application is also capable of combining slides, images, videos and animations into one (Firdawela & Reinita, 2021). Articulate storyline available as software to transform containers or tools into materials for interactive teaching that are fun and easy to use. Its very simple interface, similar to Microsoft PowerPoint, allows unfamiliar teachers to use the tools or process of creating containers as interactive teaching materials. This will become easier because Articulate Storyline, which is similar to Microsoft PowerPoint, does not require many tools and programming languages (Leztiyani, 2021).

Articulate storyline 3 as an application that can create interactive learning media has several advantages and disadvantages. Advantages of articulate storyline 3 of them are (1) interactive application display, (2) application that can be used at unlimited times and places, and (3) easy to use (Rohmah & Bukhori, 2017). Articulate storyline 3 also provides a quiz creation menu so that developers can easily add quizzes to the learning media used in the learning process (Leztiyani, 2021). Besides that, articulate storyline This application can be published in the way the user wants because it is supported in HTML5 format, this application can be accessed via the

ISSN (Online): 2961-9602

internet as well as via computers and smartphones (Firdawela & Reinita, 2021). Weaknesses of articulate storyline 3 of them require relatively high computer specifications so that many developers have not used them (Rianto, 2020). Articulate storyline 3. This is also a paid application, which is a drawback of this application.

The development of the times must be followed by the development of the curriculum in the world of education. The curriculum currently implemented in Indonesia is the Independent Curriculum. The Independent Curriculum is an educational initiative introduced by the Ministry of Education, Culture, Research and Technology of the Republic of Indonesia. This program aims to give students greater freedom in determining their educational path according to their individual interests, talents and needs. The Merdeka Belajar curriculum also aims to develop students' creativity, skills and character. There are several key points from the Merdeka Curriculum, including educational flexibility, strengthening character, improving skills, project-based approaches, and technology-based learning. One thing that is of concern is technology-based learning. The Merdeka Curriculum encourages the use of technology as a learning tool and prepares students to face challenges in the digital era. This is in line with the development of Android-based learning media using smartphones. The development of this media makes learning easier for students and also prepares students to face challenges in the digital era.

One of the vocational high schools that implements the Independent Curriculum is SMK Negeri 4 Klaten. SMK Negeri 4 Klaten is a vocational high school under the Central Java Province Education and Culture Service which is located at Jalan Raya Solo - Yogyakarta, Cantelan, Belang Wetan, Kec. North Klaten, Klaten Regency, Central Java. SMK Negeri 4 Klaten has 6 skill competencies, namely Accounting and Institutional Finance, Office Automation and Management, Online Business and Marketing, Computer and Network Engineering, Sharia Banking, and Hospitality.

SMK Negeri 4 Klaten is one of the vocational high schools which is included in the gradual implementation of the Independent Curriculum. The implementation of the Independent Curriculum structure is carried out in classes X and This gradual implementation of the Independent Curriculum results in differences in the application of the curriculum structure in learning. Classes X and The elements of each phase are different, one example is that phase E - Basics of Accounting has elements consisting of business processes in accounting and institutional finance, technological developments in industry and the world of work, professional profiles and job opportunities in the field. institutional accounting and finance, scope of work in the field of institutional accounting and finance, work safety and environmental health, professional ethics in the field of institutional accounting and finance, basic accounting and banking principles and concepts, as well as the use of number processing applications (spreadsheet). These elements are adjusted to the learning outcomes in each phase of the Independent Curriculum.

Based on the results of observations carried out at SMK Negeri 4 Klaten from 26 February to 4 March 2024, it was observed that students were still having difficulty in one element, namely the scope of work in the field of accounting and institutional finance, especially in the financial report material of service companies. This is caused by several factors, one of which is the lack of additional learning media as a medium for independent learning outside of learning. Package books used as a medium and teaching material are also limited in their use and can only be used in the school environment. Some students also cannot afford to buy additional reference books due to economic and family financial factors. Another problem is that the learning media used by accounting teachers tends to be monotonous, namely using whiteboards and PPT media. This monotonous learning media causes students' enthusiasm for learning to decrease because the learning is boring. Students tend to be busy with other activities such as playing with smartphones, sleeping, joking with their classmates, and so on so that the learning process does not run effectively.

ISSN (Online): 2961-9602

Learning media is a need that cannot be ignored in learning (Satin, 2014). A teacher must be able to create and develop interesting learning media so that the class atmosphere becomes active and fun so that the learning material can be understood well (Gunawan & Ritonga, 2019). Learning media that is not developed will result in monotonous learning which can reduce students' interest and motivation to learn. This is what makes learning media so important in learning activities for students.

Learning media is also an external factor that can influence student learning outcomes. Kurniawan et al. (2017) stated that learning media is one of the external factors that can influence student learning outcomes. Inappropriate use of media will have an impact on the understanding students gain during the learning process. Learning media must be adapted to the learning material and objectives so that students or students can understand the learning material well.

Based on an interview with one of the accounting teachers at SMK Negeri 4 Klaten, it was stated that motivation and interest in learning were still not good. This can be seen when students do not pay attention to the teacher during class, especially during the day. Students tend to be tired so their focus and interest in learning becomes less good. Most students are busy with other activities such as playing on smartphones, sleeping and joking with friends so that learning becomes ineffective.

The accounting teacher also added that one of the factors causing students' lack of motivation and interest in learning was the monotonous use of learning media. Some accounting teachers at SMK N 4 Klaten only use whiteboards and PPT with the lecture method in learning so that students tend to get bored and have no enthusiasm for learning. Students' independent learning activities are also lacking due to limited teaching materials in the form of books. Package books can only be used at school and cannot be taken home. This sometimes makes it difficult for students to learn independently, thus affecting their learning outcomes. Therefore, we need a learning media that can be accessed anywhere and at any time so that students get additional lessons independently through this learning media. Accounting teachers hope that there is a learning media that contains material and explanatory videos that can be accessed by students without time and place restrictions so that they can improve student learning outcomes.

SMK Negeri 4 Klaten has supporting facilities such as Android TV in each class, Liquid Crystal Display (LCD), projectors, computer laboratories, and internet networks. Students of SMK Negeri 4 Klaten are also allowed to bring smartphones. Most students at SMK Negeri 4 Klaten have smartphones which are based on Android. Smartphone This is sometimes used to search for learning references on the internet. However, learning at SMK Negeri 4 Klaten is still felt to be less effective. This is because most accounting teachers still use textbooks, whiteboards and PPTs as learning media. This sometimes causes a learning atmosphere that is less interesting, making students less likely to understand the learning material presented by the teacher because they are bored and unpleasant, and also affects student learning outcomes.

Based on the results of these observations and interviews, researchers are interested in developing Android-based learning media to improve student learning outcomes on service company financial report material because it can help teachers in delivering the material and achieving learning objectives. This is in line with research by Wahyono (2019) which states that Android-based learning media is good and suitable for use to support learning. Other research from Ardianti & Susanti (2022) shows that Android-based interactive learning media in accounting subjects is very suitable to be applied and used as a learning media.

The development of Android-based learning media also needs to be developed, one of which is by using applications articulate storyline 3. With the advantages of articulate storyline 3 which is able to create interactive learning can overcome students' problems in understanding service company financial report material. Articulate storyline 3 is also expected to be an attraction to foster students' interest and motivation to learn at SMK Negeri 4 Klaten so that students can understand the material and influence learning outcomes. Several previous studies also revealed the influence of articulate storyline 3 towards improving student learning outcomes, Sari &

ISSN (Online): 2961-9602

Marlena (2022) shows that interactive learning media is used articulate storyline in the transaction administration subject in class Students showed a response of 82.6% to learning media which shows that students responded well to the media.

Other research was also conducted by Kamilah & Susanti (2022) Interactive media-based learning articulate storyline that has the ability to increase student engagement and motivate them to learn. The results of material expert validation were 91%, media validation was 87%, and field trials were 94.66%. Octavia et al. (2021) also stated that M-learning media is based on articulate storyline which is intended to improve student learning outcomes is valid, practical, and significant for high school students. From previous research that has been carried out, there has been no development of Android-based articulate storyline media on service company financial report material to improve learning outcomes so that this is the novelty from this research.

METHOD

This type of research is development research (Research & Development) using the ADDIE development model (Analyze, Design, Development, Implementation, Evaluation). The design of this research is expert testing, product testing, and product effectiveness testing. The expert test consists of three stages, namely the material expert test, the media expert test, and the practitioner teacher test. Product trials are carried out in small group trials and effectiveness tests are carried out in large group trials. The subject of the expert test was a lecturer in Economic Education, FEB UNNES, and a teacher in the Accounting and Finance subject at SMK Negeri 4 Klaten. The small and large group trial subjects involved students of class X Accounting and Finance at SMK Negeri 4 Klaten for the 2023/2024 academic year.

This research procedure was carried out through several stages in accordance with the ADDIE development model. The first stage, namely analyze or analysis that aims to identify problems and analyze needs. The second stage is design, namely the stage of creating a learning media design that is in accordance with the results at the analysis stage. The steps required in designing learning media include (1) creating flowchart which describes the structure of learning media, (2) creating a storyboard consisting of design template and learning materials and (3) compiling research instruments, namely test and non-test instruments. The third stage is development namely the stage of realizing the product design that was designed in the previous stage. The process at this stage is the creation of a real product. The learning media that has been developed is then validated by material experts, media experts and practicing teachers so that the learning media developed can be properly accounted for. The fourth stage is implementation namely the product testing stage. Product trials were carried out twice, namely small-scale trials and large-scale trials. The purpose of conducting small-scale trials is to determine student responses and identify problems that occur when using learning media and large-scale trials are carried out to determine the comparison of learning outcomes before and after implementing Android-based learning media with articulate storyline 3 in the financial report material of service companies. The final stage is evaluation namely the stage of determining product quality both before and after implementation.

The data collection methods and instruments used in this research were observation, interviews, questionnaires and tests. Questionnaires are used in expert validation tests and student responses to determine the suitability of learning media. Tests are used to test the effectiveness before and after the use of learning media pre test and post test. The test instrument used is 20 multiple choice questions which have gone through the test phase. The data analysis technique used in this research is quantitative descriptive analysis and t-test inferential statistical analysis. Quantitative descriptive analysis is used to process data from expert test and trial questionnaire assessments. The t-test inferential statistical analysis used in this research is paired sample t test. paired sample t test used to determine the effectiveness of Android-based

ISSN (Online): 2961-9602

learning media with articulate storyline 3 in the financial report material of service companies by comparing values pre test and post test obtained by students.

RESULTS AND DISCUSSION

This research develops Android-based learning media with articulate storyline 3 in the financial report material for service companies through the stages of the ADDIE development model. The first stage, namely analysis, is carried out to identify problems and analyze user needs. The results of the analysis show that in class The learning process is carried out by relying on material in textbooks and PPT as learning resources. The learning outcomes of class This can happen because students feel bored and are not interested in following lessons due to several factors, including material that is difficult for students to understand and the delivery of material by teachers who lack variety in the use of learning media. Therefore, learning media is needed that is able to cover a wide range of material and provide interesting and enjoyable learning for students. The results of the user needs analysis are shown in table 1.

Table 1. User Needs Analysis Results

Provision	Analysis Results
User Target	Class X students of the Accounting and Finance skills program at SMK Negeri 4 Klaten
Material	Service company financial reports
Types of Learning Media	Android-based learning media takes the form of an application that can be installed on smartphone android
Required Features	- Application navigation instructions - Learning outcomes and flow of learning objectives - Materials and examples of financial reports for service companies - Case studies or example questions - Exercise questions and feedback - Library list and developer pag

The second level is design (planning), on android-based learning media is done to make a learning plan. Learning media planning is done with several steps including creating flowchart learning media structure, creating storyboard and learning materials, as well as preparing test and non-test instruments consisting of questions pre test and post test, validation sheet, and response scale.

The third stage is development, which is the stage of realizing the product design that was designed in the previous stage. The process at this stage is the creation of a real product. Illustrations, menu buttons, navigation and all other designs are created using the application articulate storyline 3. The final result of developing learning media products using articulate storyline 3 in the form of HTML 5 which is then converted into an Android application with help from Apk Builder. Result of articulate storyline 3 which has been converted into an android application with Apk Builder will produce a file in the form of (.apk) which can then be opened on a smartphone which is based on Android. Learning media applications that have been developed using articulate storyline 3. Then validation is carried out to determine the level of suitability of the learning media. There were 2 validators in developing this learning media, namely one lecturer in Accounting Education, FEB UNNES and an Accounting teacher at SMK Negeri 4 Klaten. Validation of this learning media consists of validation of material experts, media experts and practicing teachers using a validation sheet created based on a scale Likert.

Table 2. Learning Media Validation Test Results

No.	Subject	Results	Qualification	Information
1.	Material Expert	75%	Worth it	Worth to use

ISSN (Online): 2961-9602

2.	Media Expert	57%	Decent Enough	Worth to use
3.	Practitioner Teacher	96%	Very Worth it	Worth to use

The results of validation tests on materials, media, and practitioner teachers obtained scores of 75%, 57%, and 96%, which have a value greater than 41%, so H1 can be accepted as a whole, which means that Android-based learning media with articulate storyline 3 in the financial report material for service companies is suitable for application in the learning process. Learning media that have been validated by material, media and teacher practitioners are then revised according to the suggestions given by the validator. This learning media needs to be improved so that the resulting product is better and suitable for use in the learning process. The results of comments or suggestions from validators can be seen in table 3 and the results of learning media development can be seen in figure 1.

Table 3. Validator Comments and Suggestions

No.	Comments or Suggestions	Remedial Steps
1.	On the page login Added attendance and class numbers	Added absence and class numbers to the page login
2.	The main menu page model is quite old	Replace the main menu page model with scrolling up and down
3.	The introductory page provides allocation of learning time	Added learning time allocation to the introduction page

ISSN (Online): 2961-9602

Figure 1. Results of Android-Based Learning Media with Articulate Storyline 3

The fourth stage of implementation is the stage where the media that has been developed and validated by media experts, material experts and Accounting subject teachers is tested on users. The trials were carried out twice, namely small scale trials and large scale trials. Small-scale trials are carried out to determine student responses and identify problems that occur while using learning media so that the results of small-scale trials can be used as a reference in revising learning media. This small-scale trial on the development of learning media was carried out on 8 respondents from the population with the same characteristics. A large-scale trial on the development of learning media was carried out in class X AKL 2 of SMK Negeri 4 Klaten with a total of 33 students. The purpose of this large-scale product trial is to find out the comparison of learning outcomes before and after implementing Android-based learning media with articulate storyline 3 in the service company's financial report material. The data obtained is in the form of results pre test and post test given to students before and after the application of learning media..

Table 4. Pre Test and Post Test Student Results

Information	The Number of Student	Minimum Value	Maximum Value	Average
Pre Test	33	20	80	51,52
Post Test	33	50	90	75,45

The T test is a test carried out to determine the results of differences in treatment of the same sample. This research will test Accounting learning outcomes before and after using Android-based learning media articulate storyline 3 in the financial report material of service companies for one group. Data analysis using tests dependent sample t test or paired sample t test with the help of the SPSS program.

Table 5. Paired sample t test Results

Data	Std. Dev	t	Sig
Pre test – post test	11,302	-12,167	0,000

ISSN (Online): 2961-9602

Based on the results of test calculations paired sample t test with the help of the SPSS program, it is known that the significance value obtained is 0.00 < 0.05, so it can be concluded that H2 is acceptable. This shows that Android-based learning media with articulate storyline 3 in the financial report material of service companies is effective in improving student learning outcomes.

N-Gain test that was done to find out how effective the use of learning media is in research. The n-gain test can calculate the difference in scores before and after using learning media. N-test calculation done with the help of Microsoft Excel.

Table 6. N-Gain Results

Data	Average	Category
Pre Test and Post Test Results	0,47	Medium

Based on the results of the N-gain calculation in the table, it is known that the average N-gain is 0.47 in the medium category. This shows that the effectiveness of using learning media on learning outcomes is included in the medium effectiveness category. This can happen because some students do not pay attention to the material properly and students also only work on the evaluation given without understanding the simulation given properly.

At this implementation stage, students' responses to the learning media developed were also obtained. The results of these student responses can be used as supporting data regarding the feasibility of this learning media. The following are the results of student responses obtained from small and large scale trials.

Table 7. Students Response Results

No.	Subject	Results	Qualification	Information
1.	Small Scale Test	88%	Very worth it	Worth to use
2.	Large Scale Test	87%	Very worth it	Worth to use

The final stage of evaluation is the process of assessing whether each operational step and product being made is in accordance with the designed specifications. The purpose of evaluation is to determine product quality both before and after implementation. After the implementation or trial phase, student assessments and results of questionnaires and tests will be collected and evaluated to determine the quality, useful value, feasibility and effectiveness of the learning media.

CONCLUSION

Android-based learning media with articulate storyline 3 in the service company's financial report material was declared suitable for use in learning and effective in improving student learning outcomes at SMK Negeri 4 Klaten. Based on the results of research and development that has been carried out, Android-based learning media with articulate storyline 3 is still far from perfect. Therefore, further research requires the development of learning media articulate storyline 3 for all operating systems smartphone so that the resulting media can reach a wider audience. Future researchers can also develop learning media with other applications such as Kodular, Thunkable, App Inventor, or Smart App Creator and can add quiz content or games so that learning becomes more enjoyable for students.

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