Development of Interactive Learning Media Based on Articulate Storyline 3 on Computer Network Hardware Materials

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Abstract. When learning Computer Network Hardware at SMK Bina Banua, Banjarmasin, media has not been used. This is the researcher's assumption as one of the reasons why many students still have difficulty understanding the material. Learning media is an important component in the education system that enriches the learning process and offers innovative methods to improve student understanding. Therefore, researchers developed learning media based on Articulate Storyline 3, Computer Network Hardware material. This research has reached the stage of testing media eligibility that has been developed. The research method used is R&D adapted from the Borg and Gall model with five stages: preliminary study, planning, initial product development, testing and evaluation, and final product and deployment. This research produces interactive learning media products for Computer Network Hardware material, in APK format. The results of the feasibility test: material expert validation results are 4.70 in the Very Good category, media expert validation results are 4.67 in the Very Good category, individual trial results are 4.64 in the Very Good category, and field trial results namely 4.82 in the Very Good category. Therefore, it can be concluded that this learning media is suitable for use in the learning process
Keywords: learning media, research and development, articulate storyline 3, media eligibility

1. Introduction

In the era of increasingly information technology, understanding Computer Network Hardware has also become very important for class X students of the Computer and Network Engineering Skills Program (TKJ) at SMK Bina Banua Banjarmasin. Computer Network Hardware is a device used to connect two or more computers in a computer network so that each connected computer can share data, files and other resources, for example using routers, switches, and so on. Computer Network Hardware is the main foundation in understanding and applying information and communication technology (ICT) in everyday life, both in the context of education and the world of work.

There are still many students at class X TKJ have difficulty understanding Computer Network Hardware material. Learning does not yet use concrete media that can attract students. The lack of visual examples such as pictures makes it difficult for students to understand the material, making students confused about recognizing each component, tool and computer network hardware. So, when students occupy higher classes or enter school internships, some of them still don't understand some computer network hardware. These problems certainly create challenges for teachers to be able to present complex material in a way that is interesting and easy for students to understand. A teacher must choose the right media in learning so that learning activities become more effective and efficien (Sari, 2024). The media used in the teaching and learning process will have an influence on students in understanding the subject matter presented by the teacher. By utilizing appropriate learning media, it is hoped that student's absorption of the material being taught will increase (Herfani, Zulkarnain, & Afriani, 2023).

In the digital era, of course learning requires media that can attract students' attention. Learning media is an intermediary used by a teacher to convey learning so that it can attract students' attention when learning. Learning media is a learning aid that can attract students' attention during learning, so

that students do not feel bored when participating in the teaching and learning process (Fitri & Ardipal, 2021); Rowntree (Fadilah, Nurzakiyah, Kanya, Hidayat, & Setiawan, 2023). Learning media becomes an intermediary in conveying learning objectives. The benefits of learning media in particular: the delivery of learning material can be uniform, the learning process becomes more interesting, the learning process becomes more interactive, the amount of teaching and learning time can be reduced, the quality of student learning can be improved, the learning process can occur anywhere and at any time, a positive attitude students towards the learning process can be improved, and the teacher's role can change in a more positive and productive direction Suwarna, etc (Fadilah, Nurzakiyah, Kanya, Hidayat, & Setiawan, 2023). The use of learning media by utilizing technology is very important to support student learning success.

There are many learning media now, one of which is interactive learning media. Interactive learning media is a tool that presents learning material and allows interaction between users and the media. This media is very effective in the teaching process because it can reduce student boredom. Apart from that, the use of interactive learning media also helps students understand the material more easily because of its attractiveness, so that students become more focused during the learning process (Gunawan, et al., 2022). Interactive learning is a learning method or technique used by teachers when presenting learning material, the teacher is the main actor in creating an educational interactive situation, namely interaction between teacher and student, student and student and with learning resources in supporting the achievement of learning goals, Rohmalina Wahab (Firdausia, Setiawan, & Maulidnawati, 2023). Interactive learning media can be a solution to support learning in the classroom. One of the interactive media that can be used is Articulate Storyline, because this software is very interesting when used as an interactive learning medium. And this software can involve students in learning so that students can be active and make learning easier for students to understand (Yasin & Ducha, 2017). Articulate Storyline can be used as a learning medium in the classroom or as a learning medium for students themselves. Therefore, researchers developed interactive learning media based on Articulate Storyline 3 which is expected to be a solution to existing problems (Yumini & Rakhmawati, 2015).

2. Method

This type of research is Research and Development (R&D). R&D serves to validate and develop products. Validating a product means that the product already exists, and researchers are only testing the effectiveness or validity of the product. Developing products in a broad sense can take the form of updating existing products so that they become more practical, effective and efficient or creating new products that have not previously existed (Sugiyono, 2022).

This research uses the Borg and Gall model which has been modified by Wibowo and Nugroho into 5 stages: (1) Preliminary study, consisting of needs analysis and curriculum analysis. At this stage, it is carried out to obtain information about the actual conditions occurring in the field so that information can be obtained. use and need for learning media in classroom learning; (2) Planning, consisting of determining media development goals, determining learning materials developed in media and compiling media assessment instruments; (3) Initial product development, consisting of initial design planning (material framework , concept maps and interface design), create media, validation of material experts and validation of media experts; (4) Trial and Evaluation consisting of individual trials and field trials; (5) Final product and distribution, which is produced in the form of learning media based on the Articulate Storyline 3 application on Computer Network Hardware materials.

The instruments used are validation sheets (material and media) and trial sheets (individual and field). The instrument was created using a Likert-5 scale. Material expert validation was tested by two material experts, media expert validation was tested by two media experts, and one to one evaluation and field trials evaluation were tested by students. The validation results, both material and media expert validation, as well as the results of one-to-one evaluation and field trial evalution are analyzed to determine the eligibility of the media being developed. The media eligibility categories used as a reference for analysis are:

Table 1 Category of Media Eligibility

Mean	Category
$\bar{X} > 4{,}01$	Very Good
$3{,}34 < \bar{X} \leq 4{,}01$	Good
$2{,}66 < \bar{X} \leq 3{,}34$	Enough
$1{,}99 < \bar{X} \leq 3{,}34$	Not Enough
$\bar{X} \leq 1{,}99$	Very Less

The mean score ($\bar{X}$) is calculated using the formula:

$$\bar{X} = \frac{\Sigma x}{N}$$

where $\bar{X}$= mean; Σx = number of score; N = number of indicator.
This category was created referring to Sudijono's media eligibility guidelines (Nugraha & Muhtadi, 2015). The minimum limit for product eligibility is good, as a result of assessments from material experts, media experts and students. The product developed is said to be eligible for use if the overall final assessment results for each learning aspect, content aspect, display aspect and programming aspect are at least good.

3 Results And Discussion

The results of research and development of Android-based Computer Network Hardware learning media consist of several parts, including the following:

1. *Home Page*

This initial page contains a greeting, a form to fill in student personal data so that student personal data can appear on the next page, save and continue buttons to continue to the next page.

Figure 1: Home Page

2. Pop-up

If students do not fill in their name or class on the home page, a pop-up page will appear with an error inputting their personal data. Apart from that, there is a close button to exit on this page so that students can re-enter their data.

Figure 2: Pop up

3. Menu

On this page there is the identity of the school and media, the name of the participant/student and their class when they have filled in the personal data form on the home page. On this page there is also a description of the material and there is a mute/unmute button (reducing and increasing the volume of the music), a menu button which will be directed to the pop-up menu page and a back button which will be directed to the home page.

Figure 3: Menu

4. Pop-up Menu

On the pop-up menu page there are several menu options including Introduction, Material, Instructions, Evaluation and Developer Profile.

Figure 4: Pop-up Menu

5. Introduction Page

On this page there are Pancasila student profiles, Learning Objectives Flow, subjects, learning materials, Learning Achievements and Learning Objectives, along with a home button to return to the pop-up menu page.

Figure 5: Introduction Page

6. Material Page

On the material page there is the content of the material complete with learning videos. On this page there are also several buttons including a home button to return to the pop-up menu page, a button to move to the previous page and the next page, as well as a button or icon to enlarge the image and play the learning video.

Figure 6: Material Page

7. User Manual Page

The user manual page is a page that contains a collection of buttons and image icons and descriptions to make it easier for users/students to recognize the buttons in this learning media application. On this page there is also a home button to return to the pop-up menu page.

Figure 7: User Manual Page

8. Evaluation Instructions Page

The evaluation instructions page contains instructions before carrying out an evaluation, both offline and online. On this page there are buttons to start offline and start online to go to the evaluation filling page and there is a home button to return to the pop-up menu page.

Figure 8: Evaluation Instruction Page

9. Evaluation Page

On this page there are two different pages, the offline and online evaluation pages.

Figure 9: The Offline Evaluation

Figure 10: The Online Evaluation

10. Score Page

On this page there are also two different pages, the offline evaluation score page and the online evaluation score page. This page will appear when the user/student has finished carrying out the evaluation on the evaluation page.

Figure 11: The Offline Evaluation Score

Figure 12: The Online Evaluation

11. Developer Profile Page

On the developer's profile page there is the university logo, developer's photo and the developer's personal data. On this page there is also a home button to return to the pop-up menu page.

Figure 13: Developer Profile Page

After the media is developed, the eligibility of the media is measured. The results of material expert validation:

Table 2 The Results of Material Expert Validation

Assesment Aspect	**Number of Indicator**	**1st Validator**		**2nd Validator**		**Mean**	**Category**
		Score	**Mean**	**Score**	**Mean**		
Learning Aspects	9	42	4.67	43	4.77	4.72	Very Good
Content Aspect	8	38	4.75	37	4.62	4.69	Very Good
		Mean				**4.70**	**Very Good**

The results of media expert validation

Table 3 The Results of Media Expert Validation

Assesment Aspect	**Number Indicator**	**of1st Validator**		**2nd Validator**		**Mean**	**Category**
		Score	Mean	Score	Mean		
Display Aspect	11	52	4.72	51	4.63	4.68	Very Good
Programming Aspect	12	57	4.75	55	4.59	4.67	Very Good
		Mean				4.67	Very Good

Product revisions were made to this learning media based on suggestions given by the validator, providing evaluation or taking grades online to make it easier for teachers if they had a need to take student grades in the product that had been developed

Next, one to one evaluation and field trial evalution were carried out using 10 indicators. The mean score obtained from the results of individual trials on 5 students was 4.64, very good category. Meanwhile, the average score obtained from the results of field trials on 19 students was 4.82, very good category. Overall results obtained:

Table 4 The Assesment Results of Media Eligibility

Mean	Category
Material Expert Validation	Very Good
Media Expert Validation	Very Good
One to One Evaluation	Very Good
Field Trials Evaluation	Very Good

All stages of the assessment are in the very good category, so it can be said that the learning media developed is eligible for use.

The learning media developed is eligible for use in the learning process because this media contains several texts, images and videos related to computer network hardware material so that this media can help teachers in conveying learning material. As stated by Trimansyah, one of the reasons for strengthening learning at this time must be supported by interactive multimedia, namely that visualization in the form of text, images, audio, video and animation will be better remembered and captured by students (Trimansyah, 2021). Apart from that, this media is interactive by adapting to students' learning styles. Surjono stated that the interactivity of a learning media is an important thing because interactivity will encourage active learning and will support the media to become more interesting and increase student learning motivation (Suhartini, Ayu, & Ramli, 2022).

4. Conclusion

The process of developing Interactive Learning Media Based on Articulate Storyline 3 Computer Network Hardware Material at class X TKJ SMK Bina Banua Banjarmasin, goes through several stages which have been carried out including, introduction, planning, media development, validation and testing and the final product. The development of this learning media product was carried out with the help of Articulate Storyline 3 software, which was then converted into an Android application in Apk format. The learning media developed is eligible for use as learning media because it exceeds the minimum limit for product eligibility, in the good category.

Reference

Fadilah, A., Nurzakiyah, K. R., Kanya, N. A., Hidayat, S. P., & Setiawan, U. (2023, Maret). Pengertian Media, Tujuan, Fungsi, Manfaat dan Urgensi. *Journal of Student Research (JSR)*, 01-17.

Firdausia, S., Setiawan, I. P., & Maulidnawati, A. (2023, Januari). Pengaruh Penggunaan Model Pembelajaran Interaktif (Explicit Instruction) terhadap Karakter dan Hasil Belajar Siswa pada Pembelajaran Tematik Murid. *ALENA – Journal of Elementary Education, 1*(1), 1-14.

Fitri, F., & Ardipal. (2021). Pengembangan Video Pembelajaran Menggunakan Aplikasi Kinemaster pada Pembelajaran. *Jurnal BASICEDU, 5*(6), 6330-6338.

Gunawan, Sultani, D. I., Silalahi, C. A., Suherlan, A., Dwi, D. F., Mukhlis, Nirmawan. (2022). *Media Pembelajaran Interaktif Sederhana untuk MI/SD.* Yogyakarta: K-Media.

Herfani, S., Zulkarnain, M. R., & Afriani, D. (2023). Pengembangan Media Belajar Mandiri Matematika Materi Segitiga dan Segiempat Berbasis Android. *Jurnal Pendidikan Sultan Agung, 3*(1), 42-52.

Nugraha, A. N., & Muhtadi, A. (2015, April). Pengembangan Multimedia Pembelajaran Matematika pada Materi Bangun Ruang Sisi Datar untuk Siswa SMP Kelas VIII. *Jurnal Inovasi Teknologi Pendidikan, 2*(1), 16-31.

Sari, F. A. (2024, Juli-Desember). Pentingnya Media Pembelajaran dalam Sistem Pembelajaran. *ENTINAS: Jurnal Pendidikan dan Teknologi Pembelajaran, 2*(2), 414-421.

Sugiyono. (2022). *Metode Penelitian dan Pengembangan, Research and Development.* Bandung: Alfabeta.

Suhartini, E., Ayu, W. I., & Ramli, B. M. (2022, Desember). Pengembangan Media Pembelajaran Berbasis Articulate Storyline 3 Materi Gaya pada Siswa Kelas IV SDN 009 Sungai Kunjang. *Kompetensi: Jurnal Pendidikan dan Humaniora, 15*(2), 225-232

Trimansyah. (2021). Kecendrungan Media Pembelajaran Interaktif. *FITRAH: Jurnal Studi Pendidikan, 12*(1), 13-27.

Yasin, A. N., & Ducha, N. (2017, Mei). Kelayakan Teoritis Multimedia Interaktif Berbasis Articulate Storyline Materi Sistem Reproduksi Manusia Kelas XI SMA. *BioEdu: Berkala Ilmiah Pendidikan Biologi, 6*(2), 169-174.

Yumini, S., & Rakhmawati, L. (2015). Pengembangan Media Pembelajaran Interaktif Berbasis Articulate Storyline pada Mata Diklat Teknik Elektronika Dasar di SMK Negeri 1 Jetis Mojokerto. *Jurnal Pendidikan Teknik Elektro, 4*(3), 845-849.