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DEVELOPMENT OF ANIMATED LEARNING MEDIA TEXTBOOKS TO IMPROVE SKILLS IN MAKING MEDIA PROJECT

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PENGEMBANGAN BUKU AJAR MEDIA PEMBELAJARAN ANIMASI UNTUK MENINGKATKAN KETERAMPILAN MEMBUAT PROYEK MEDIA

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ABSTRACT

Abstract: *The research in this paper is conducted to develop a textbook product of animation-based instructional media guidelines with valid criteria in terms of content, practical use, and effectiveness in improving skills in making learning media projects for students at the Economics Education study program of Universitas Pamulang. The research methodology used is research and development (R&D) with a 4D model (define, design, develop, and disseminate). Technique and data collection instruments are product validation questionnaire sheets validated by three experts, user response sheets for practicality tests, and project assessment rubrics for effectiveness tests. Data analysis techniques used Content Validity Index (CVI), descriptive statistics, and independent sample t-test. The results reveal that 1) the product has valid criteria in content with a CVI value of 0.95, 2) products with practical use criteria with a percentage of 81.7%, and 3) products with effective criteria in improving the skills of making learning media projects with an increasing result at 36.275 in the experimental class compared to the control class at 20.720. The conclusion of the research is that the developmental product of animation-based learning media textbook guidelines is a valid criterion in terms of content, practical use, and effectively improved skills in making learning media projects.*

Keywords: textbooks, media project, animation

Abstrak: Penelitian pada artikel ini dilakukan untuk mengembangkan produk buku ajar panduan media pembelajaran berbasis animasi yang berkriteria valid secara isi, praktis pengunaannya, dan efektif dalam meningkatkan keterampilan membuat proyek media pembelajaran mahasiswa program studi Pendidikan Ekonomi, Universitas Pamulang. Metodologi penelitian yang digunakan adalah research and development (R&D) dengan model 4D (*define*, *design*, *develop*, dan *disseminate)*. Teknik dan instrumen pengumpul data berupa lembar angket validasi produk oleh 3 ahli, lembar respons pengguna untuk uji kepraktisan, dan rubrik penilaian proyek untuk uji keefektifan. Teknik analisis data menggunakan *Content Validity Index* (CVI), statistika deskriptif, dan *independent sample t-test*. Hasil penelitian menunjukkan 1) produk berkriteria valid secara isi dengan nilai CVI 0.95, 2) produk berkriteria praktis pengunannya dengan presentase 81.7%, dan 3) produk berkriteria efektif dalam meningkatkan keterampilan membuat proyek media pembelajaran dengan kenaikan hasil kelas eksperimen sebesar 36.275 dibandingkan dengan kelas kontrol sebesar 20.720. Kesimpulan penelitian yaitu produk pengembangan buku ajar panduan media pembelajaran berbasis animasi berkriteria valid secara isi, praktis penggunaanya, dan efektif meningkatkan keterampilan membuat proyek media pembelajaran.

Kata Kunci: buku ajar, proyek media, animasi

CITATION

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INTRODUCTION

The development of the 5.0 industrial revolution digital era requires teachers to master technology in carrying out teaching. Teachers do not only teach conventionally using the lecture method, but teachers can provide variations in learning using innovative learning media. The use of technology for teaching teachers has begun to be intensified since the emergence of the Covid-19 pandemic. Learning that was originally face-to-face has shifted to online learning. This forces teachers to learn to master technology in order to teach online. Astini (2020) mentions that teachers deliver teaching materials through several applications such as zoom meetings, Google Classroom, WhatsApp, e-learning, and so on.

The use of applications for online learning is also supported by the use of digital-based learning media. The learning media used by the teacher must be interesting, challenging, and can increase students' understanding of the teaching material. In this digital era, learning media has evolved from conventional media to digital media. Digital learning media uses technology and the internet. Alami (2020) states that the use of teaching media and educational platforms can be used as an alternative solution in learning, for the continuity of learning in each education unit during the co-19 pandemic.

One of the digital learning media is animation media. Animated learning media are teaching media in the form of moving visuals that can be integrated into other media such as videos or presentations so that they can simplify and accelerate the acceleration of teaching materials to students. According to Daly, et al (2016) stated that animated image media is an interesting form of image presentation because there is a simulated image of an object experiencing movement. The definition of animation according to Amali, et al (2020) is a change in the shape of an object that can be displayed at a certain time. Animation is a form of learning innovation in elementary schools because it can show virtual objects. Kenedi, et al (2019) stated that animation is a combination of integrated text, image, audio, video components into one so that it can facilitate teachers in learning activities. Teachers use applications in making animation-based learning media, such as powtoons, animakers, and applications. other. The advantages of animation-based learning media according to Abdillah (2022: 65) include being able to make abstract teaching materials concrete, overcome the limitations of space and time, can increase interest in learning and students' understanding of teaching materials.

But in reality, the skills of making learning media projects based animation by students of the 5th semester Economics Education study program, Pamulang University in the Learning Media Development course were still relatively low. Students have not been able to develop animation-based learning media properly. Learning media projects made by students are still relatively easy. This was evidenced by the results of student learning media projects that still have some shortcomings, such as the appearance of writing that is not clear, too much writing, lack of animation, poor sound quality, the illustrations used are not quite right, the content of the media is not appropriate with the learning objectives, and others. So that the value of the development of learning media projects for semester 5 students of the Economics Education study program, Pamulang University in the Learning Media Development course was low, namely only 45% (29 students) out of a total of 65 students got project scores above 70. Meanwhile, 55% (36 students) out of a total of 65 students got a project score below 70.

Based on the analysis of students' needs about the importance of developing animation-based learning media, it is necessary to develop a guidebook in the use of

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animation-based learning media. The developed textbook contains several chapters consisting of the definition and types of learning media, multimedia learning media, and tutorials on developing learning media using the powtoon application and the animaker application. Andriati, Susanti, & Hudaidah (2016) stated that the development of powtoon application-based learning media is more effective in improving online learning outcomes. Powtoon and animaker are applications for making videos with various variations to make them more interesting.

This research is supported by several previous studies, including Munawar, Hasyim, & Maâ (2020) which states that the development of digital teaching materials assisted by animaker applications shows 85.2% success in increasing the creativity of PAUD teachers. Furthermore, Setiawan, Hakim & Filestianto (2021) also developed animation-based teaching materials during the Covid-19 pandemic to obtain very good standard results in terms of material content, graphic animation, and readability. Smaragdina et al (2020) have developed multimedia-based teaching materials in dealing with the industrial revolution 4.0 era which has an impact on increasing the creativity abilities of elementary school teachers.

Based on the description of the background above, the researcher determined that the research objective was to produce an educational product in the form of a textbook on Development of Animation-Based Learning Media with valid criteria in content, practical in use and effective in improving skills in making learning media projects for students of the Economics Education study program, Pamulang University.

METHOD

The aims of this research were (1) to find out the form of educational product development in the form of animation-based learning media textbooks; (2) to analyze the content validity of animation-based learning media textbooks; (3) to analyze the practicality of animation-based learning media textbooks; (4) to analyze the effectiveness of animation-based learning media textbooks in improving skills in making learning media projects for students of the Economics Education study program, Pamulang University.

Based on the aim's research above, so the research approach used a mixed method approach. According to Anggara & Abdillah (2019: 13) states that the mix-method approach is a combination of a quantitative approach and a qualitative approach whose implementation is not concurrent, but alternates. The methodology used in this research is the research and development (R&D) methodology. Research and Development (R and D) according to Borg and Gall (in Anggara & Abdillah, 2019 : 63) is a process in developing and validating educational products.

The selection of the research and development research methodology is because the research objective is to develop educational products in the form of textbooks for the development of animaker-based learning media with the criteria of valid content, practical use, and effectiveness skills in making learning media projects for students of 5th semester students in the Learning Media Development course.

This research and development methodology uses the 4D model developed by Thiagarajan in Anggara & Abdillah, 2019 : 68). The model stages consist of define, design, develop, and disseminate. First, the define stage, the researcher conducted a needs analysis by making observations at the Economics Education Study Program, Pamulang University. Based on the results of the needs analysis, it was found that textbooks were needed that could assist students in developing learning media. Second, the design stage is designing product development in the form of a textbook on Animation-based Learning Media Development which consists of 5 chapters related to tutorials for using

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digital learning media applications. The three stages of develop are validity testing, practicality testing, and effectiveness testing of product development. The four stages of disseminate are the dissemination of product development research results through the publication of scientific journals and to other communities.

The instruments and data analysis techniques used in this study can be seen in Table 1.

Table 1. Data Analysis Instruments And Techniques

No.	Product Test	Instrument	Data analysis technique
1	Test the content validity of textbook products	Product validation questionnaire sheet by 3 experts	Content validity index (CVI). Content valid criteria if I-CVI ≥ 0.60
2	Practicality test	User response sheet	$P = \frac{\sum Xi}{\sum Xj} \times 100\ \%$
3	Test effectiveness	Media project assessment rubric	Prerequisite test: normality and homogeneity test Hypothesis test: Independent sample t-test

RESULTS AND DISCUSSION

Product Form Development

The educational product developed is a textbook entitled the development of animaker-based learning media. The book consists of 3 parts, namely the beginning, the main part, and the end. At the beginning it consists of a title page, preface, table of contents, list of tables, and list of figures. Whereas in the core section, it consists of 5 main chapters, namely the nature of learning media, multimedia-based learning media, animation-based learning media, development of learning media through the powtoon application, and development of learning media through the animaker application. At the end of the book consists of a glossary and bibliography. The following presents the form of product development textbooks for the Development of Animation-based Learning Media.

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Figure 1. Components of Animation-Based Learning Media Development textbooks

The advantage of this animation-based learning media development textbook was that the material presented was not only related to the concept of understanding and types of learning media, but also presented with features and tutorials/steps in developing learning media using the powtoon and animaker applications. The preparation of complete material aims to make readers not only know the concepts but are able to practice how to make learning media based on the tutorials provided. After the textbook product is developed, then it was tested for content validity, tested for practicality, and tested for its effectiveness on students.

a. The content validity of the Textbook for the Development of Animation-Based Learning Media

The content validity test was carried out on textbook products for the development of animation-based learning media obtained through assessments from 3 academics. Then the assessment results from the three academics were analyzed using the content validity index (CVI). The CVI technique refers to the opinion of Polit & Beck (2006) which states that CVI is a calculation of the proportion of items that get a score of 3 or 4 from experts. Then the determination of the validity criteria for the content of the instrument refers to the opinion of Rempusheski and O'hara (2005) which states that the proportion of CVI recommended for valid items ranges from 0.60 to 1.00. In the following, Table 2 presents the results of the content validity assessment by experts on the textbook product for Animation-Based Learning Media Development.

Table 2. Results of Assessment of Textbook Products by Experts

Aspect	Criteria	Validator			Total (item score 3 or 4)	Item CVI
		1	2	3		
Fill	Matching goals with the title of the book	4	3	4	3	1.00
	Appropriateness of the components of learning objectives	3	4	4	3	1.00
	The suitability of the title with the content of the material	4	3	4	3	1.00

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	Tutorial suitability with the application	4	4	4	3	1.00
	Home page equipment	3	3	4	3	1.00
	Completeness of the core material	4	4	3	3	1.00
	Final page fittings	4	4	4	3	1.00
Language	Accuracy in the use of standard language	3	2	4	2	0.67
	Accurate use of punctuation	3	4	3	3	1.00
	Coherence between sentences	4	3	2	2	0.67
	The sentence editor is easy to understand	3	3	3	3	1.00
Display	General view of the book cover	3	4	3	3	1.00
	The display of colors used in the book	4	3	4	3	1.00
	Display the use of letters in the book	3	4	4	3	1.00
	TOTAL (item score 3 or 4)	**14**	**13**	**13**		
	CVI/Mean-CVI	**1**	**0.93**	**0.93**		**0.95**
	Content validity criteria			**valid**		

Based on Table 2, it was found that the Textbook product for Animation-based Learning Media Development has valid criteria with a CVI value of 0.95. This can be seen from the three aspects assessed by experts, namely material aspects, language aspects, and display aspects. In the material aspect, the product is in accordance with the learning objectives, the book components are complete, and the content suitability of the material is in accordance with the title per chapter. In the aspect of language, textbook products already use standard language, accuracy of punctuation, and sentence editors that are easy to understand. While in the display aspect, it was found that the cover display, image display, and letter appearance were clear.

Even though the textbook product has valid criteria in terms of content, the experts also provide input for improvements to the book. Some of the improvements suggested by experts include: the size of the image is adjusted to the proportion of the page so that it can be clearer, arrows/circles should be given in the tutorial as a marker of activity focus, questions and exercises should be given at the end of each chapter. The following is an example of the improvements that have been made to the textbook product for the Development of Animation-Based Learning Media.

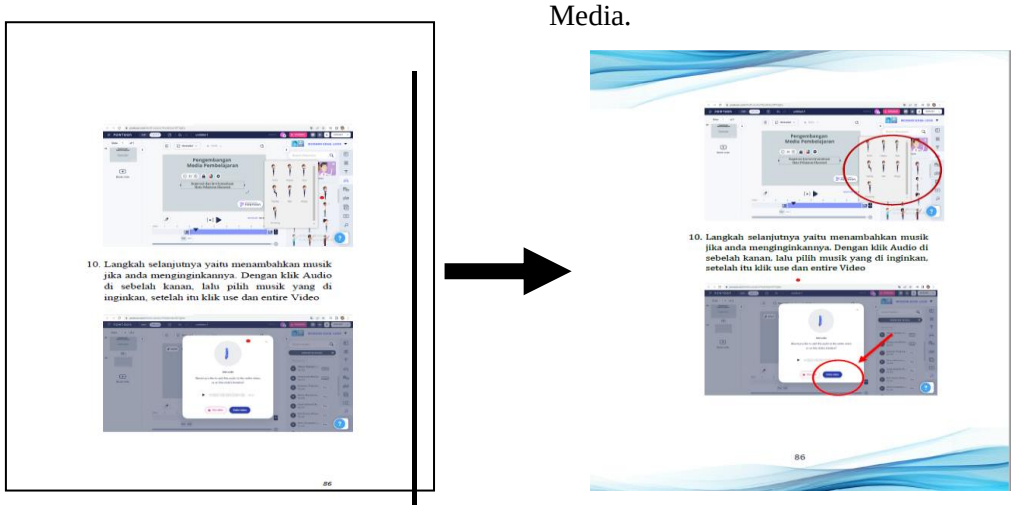

Figure 2. Book form before and after revision

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b. Practicality of Animation-Based Learning Media Development Textbook products

The textbook products that have been developed by researchers have been tested for practicality through the assessment of three users of the textbook products, namely 3 lecturers from the Economics Education Study Program who teach the Learning Media Development course. The results of the assessment of the three textbook users were then analyzed using descriptive statistics which can be seen in Table 3 below.

Table 3. Practicality test results by 3 textbook product users

Aspect	Respondent			Total score
	1	2	3	
1. Fill	20	19	20	59
2. Language	16	15	14	45
3. Display	14	13	13	40
4. Impact of Use	15	14	11	40
Gain Score				184
Maximum score (5 x 15 questions x 3 respondents)				225
Percentage				81.7%
Practicality Criteria				Good

Based on Table 3 above, it was found that the textbook on Animation-Based Learning Media Development had good criteria in its practicality test with a percentage of 81.7%. The three respondents from Economics Education lecturers who teach the Learning Media Development course have assessed that these products really help the lecture process, especially in improving students' skills in operating animation applications such as powtoons and animakers when preparing assignments to make learning media. This is in line with Revita (2019) that for practicality testing of product development it is necessary to carry out field tests in the form of giving questionnaires to users.

c. The effectiveness of the Textbook for the Development of Animation-Based Learning Media

After the validity and practicality tests were carried out, the next step was to test the effectiveness of the Animation Learning Media Textbook on the skills of making student learning media projects. The effectiveness test was carried out through trials on semester 5 students of the Economics Education Study Program, Pamulang University in the Learning Media Development course. At this stage, the researcher used a quasi-experimental methodology with a non-equivalent control group design involving two classes, namely the experimental class 05PIEP001 and the control class 05PIEP002.

After testing the use of Animation Learning Media Textbooks in the experimental class 05PIEP001, the results of the trials were analyzed using inferential statistics, namely the independent sample t-test to find out significant differences between the increase in skills in making learning media projects in the experimental class and the control class. Before being analyzed using these statistics, the skill data was subjected to prerequisite tests, namely the normality test and homogeneity test using SPSS. The following are the results of the normality test on experimental class and control class data.

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Table 4. Data normality test results

Group	Kolmogorov-Smirnov		
	Statistic	df	Sig
Experimental class project assessment data	0.156	30	0.186
Control class project assessment data	0.134	30	0.192

Based on table 4 above, it can be concluded that the experimental class project assessment data gets a sig value of 0.186 more than 0.05, so the experimental class project assessment data is normally distributed. While the project assessment data in the control class got a sig value of 0.192 more than 0.05, the control class project assessment data concluded to be normally distributed. Furthermore, the project assessment data for the two classes were tested for homogeneity to find out whether the data had the same variance or not. The following are the results of the homogeneity test for both types of project assessment data for the experimental class and the control class.

Table 5. Data homogeneity test results

Lavene Statistic	Df1	Df2	sig
4.257	1	58	0.067

Based on Table 5 above, it was found that the value of the sig lavender statistic was 0.067 more than 0.05, so it can be concluded that the project assessment data for the experimental class and the control class had the same variance. After the data has been tested for normality and homogeneity, the next step is the independent sample t-test to find out the significant difference between the increase in project ratings for the experimental class and the control class. The following presents the results of the average increase in project appraisal in the experimental class and control class which can be seen in Table 6.

Table 6. Statistical group results

Group	N	Mean
Data on the increase in experimental class project assessment	30	36.275
Data on the increase in control class project assessment	30	20.720

Based on Table 6, it was found that the increase in project appraisal in the experimental class with an average of 36.275 was higher than the increase in project appraisal in the control class with an average of 20.720. Next, the results of the independent sample t-test are presented in the following table 7.

Table 7. Test Results Independent sample t-test

Data	t	df	Sig (2-tailed)
Data on the increase in project assessment	3.567	58	0.018

Based on table 7 above, a sig value of 0.018 is obtained, less than 0.05, meaning that there is a significant difference between the average increase in the project assessment of the experimental class and the control class. So it can be concluded that the textbook product for the development of animation-based learning media has effective criteria in improving the skills of making learning media projects.

Based on the results of the validity test and effectiveness test, the textbook product for the development of animation-based learning media is more effectively applied in lectures

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compared to conventional lectures. This is evidenced by the difference in the average increase in the experimental class project assessment of 36.375 higher than the average increase in the control class project assessment of 20.720.

This is because the textbook on the Development of Animation-based Learning Media does not only consist of theoretical concepts, but also provides tutorials or steps for applying the development of teaching media using the powtoon application and the animaker application. Students can practice the material in textbooks to assist in the task of developing learning media projects in the Teaching Media Development course.

The textbook that guides the development of animation-based learning media contains conceptual and procedural material in the use of animaker and powtoon applications. Simarmata et al (2019: 7) state that hybrid learning-based learning media is expected that students are able to learn independently, sustainably, and develop throughout their lives so that learning will become more effective, more efficient, and more interesting through digital systems. Oktaviani & Mandasari (2020) stated that the use of web-based learning media, namely the powtoon application, can improve students' language skills and technological abilities.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the study, it can be concluded that: 1) Textbooks for the development of animation-based learning media have content valid criteria with a CVI value of 0.95; 2) Textbooks for the development of animation-based learning media have good criteria in practicality with a percentage of 81.7%, and 3) the use of textbooks for the development of animation-based learning media is more effective in improving students' process skills in making animation-based teaching media in Learning Media Development lectures, this is evidenced by the existence of a significant difference between the increase in the average process skills of students in the experimental class of 36.275, which was higher than that of the control class, which was only 20.720. The advice given to educational practitioners is to be able to use the textbook Development of Animation-based Learning Media in Teaching Media Development lectures to improving skills in making learning media projects for students of the Economics Education study program, Pamulang University. Suggestions recommended for researchers are to be able to develop textbooks for the development of learning media using other applications.

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