

Development of Flip PDF Corporate Edition Based Learning Media on Price Index Material at SMA Negeri 3 Banjarbaru

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ARTICLE INFO

DOI: 10.32832/jm-uika.v14i1.9782

Article history:

Received Call Paper:

21 January 2023

Accepted:

13 February 2023

Available online:

5 March 2023

Keywords:

Learning media, Flip PDF Corporate Edition, ADDIE

ABSTRACT

Learning media is one of the important supports can be used in learning activities. Objective of the study was to develop flip PDF corporate edition based learning media on price index material a support for learning activities, in order to improve student learning outcomes. The discussion was carried out measure the feasibility of learning media and influence of learning media on learning outcomes price index material using the Pretest-Posttest Control Group Design. This research was done using the ADDIE development model. Learning media result validated by media experts obtained score of 4.43 very good criteria and percentage of 88.61% in the very decent category. The results material expert validation obtained of 4.29 very good criteria and percentage of 85.84% very feasible category. In limited field trials there was 4.35 very good criteria and 86.88% very feasible category. While the operational field trials score of 4.33 very good criteria and percentage of 86.43% very feasible category. Overall was an average score of 4.35 very good criteria and percentage of 86.94% very feasible category. Testing the influence of the media learning outcomes was using the Wilcoxon test, the results of the experimental and control groups obtained the same significance value, namely $<0.001 < 0.05$. Meanwhile, the Mann Whitney test yielded a significance value of $0.032 < 0.05$.

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1. INTRODUCTION

The development of increasingly advanced science and technology can be used in modifying and even creating media to support learning. Teachers as educators are required to have the ability and knowledge in the use of technology for learning support. One of the teacher's demands is to utilize technology in creating media to support learning activities. Utilization of learning media by following the progress of science and technology is used in order to increase the effectiveness of learning. Learning process involving the media is more effective than not involving the media in the process of learning activities (Wahyono, 2019). Learning media that is in contact with technology has an important role in the learning process, explanation of material can be assisted by media so that it will be more interesting and not cause boredom (Gunawan, 2017).

Based the results of observations and interviews was stated that learning activities were still dominantly carried out using textbooks. The use of instructional media which is still less varied in learning makes teaching and learning activities monotonous so that they do not attract the students the attention in learning. In addition, students still have difficulty in analyzing and calculating the process so that it has an impact on the lowest student scores on the price index material and affects student learning outcomes.

The use learning media is one important things used in the process learning. Learning media is a tool that can assist in making the message's contents more understandable so that the learning objectives can be met successfully and quickly (Nurrita, 2018). It is necessary to develop learning media to overcome these problems they can support the learning process on price index material. In research conducted by Fardany & Dewi (2020) states that learning by using media during learning is more effective and can improve student learning outcomes.

Learning media with audio-visual elements can be applied to the learning process. Audio-visual media can be presented with clear spoken and written messages, can get around time and space constraints so that it can be utilized for learning (Rahmattullah et al., 2020). Learning to use media with images and sound or audio-visual displays will increase learning activities in the classroom so that learning is more meaningful (Saputra & Gunawan, 2021).

Flip PDF corporate edition is an application for making digital teaching materials which can contain images, text, audio, video and so on (Zinnurain, 2021). Thus the use of media in learning makes learning activities not monotonous, absorption of material can be maximized because it utilizes the senses of sight and hearing simultaneously (Rahima et al., 2021). Using the corporate edition of Flip PDF is quite easy, just by sharing the link with students and can be accessed via a smartphone. The use of smartphone properly can provide positive value for students (Bharata & Premi, 2021). It can be seen that students at SMA Negeri 3 Banjarbaru are allowed to use smartphones in learning activities.

This study was carried out to develop learning media to overcome problems in economic learning on price index material. In this study it was intended to determine the process of developing learning media, the feasibility of the media and the influence of media use on learning. The development of learning media flip PDF corporate edition-based has never been developed in economic learning, especially price index material.

2. RESEARCH METHODS

Research is included in the type of research and development, namely research that can produce a product. Using the ADDIE development stage model with stages consisting of analysis, design, development, implementation, and evaluation. This research was conducted in class XI IPS SMA Negeri 3 Banjarbaru with a total population of 179 students and the sample used was 100 students using a purposive sampling technique, with certain considerations chosen by the teacher as an expert who knows the students in that class.

The feasibility of learning media is measured by validating it from media experts, materials, and students' practitioners. Testing was carried out by limited field trials and operational field. Meanwhile, the measurement of the influence of the media on learning outcomes uses the Pretest-Posttest Control Group Design research design with the trial design as follows:

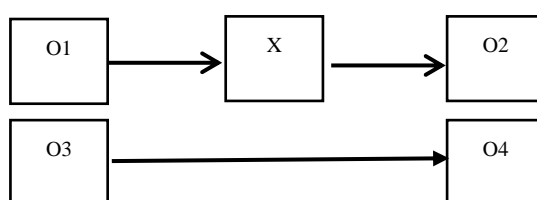


Figure 1. Pretest-Posttest Control Group Design

Source: Sugiyono, 2018

Information:

O1 and O3 = Pretest in the experimental and control group

O2 and O4 = Posttest in the experimental and control groups

X = giving treatment with the use of media

Data collection techniques to determine the feasibility of using validation questionnaires with descriptive qualitative and quantitative descriptive data analysis techniques. Quantitative data obtained will be converted to value with the following reference:

Table 1. Convert Quantitative Data Into Qualitative Data

Score	Score Intervals	Category
5	$X > 4,2$	Very good
4	$3.4 < X \leq 4.2$	Well
3	$2.6 < X \leq 3.4$	Pretty good
2	$1.8 < X \leq 2.6$	Not good
1	$X \leq 1.8$	Very less

Source: Yanti & Huda (2020)

Then to measure the percentage of eligibility of the media using the following formula:

Table 2. Media Eligibility Category

No	Percentage	Information
1	00%-20%	Very Unworthy
2	21%-40%	Not feasible
3	41%-60%	Less Eligible
4	61%-80%	Worthy
5	81%-100%	Very Worth it

Source: Muthoharoh (2021)

Data collection used to influence the media on learning outcomes with test questions. Data analysis techniques for test instrument questions used validity tests, reliability tests, and difficulty levels. Meanwhile, to calculate learning outcomes using the Wilcoxon test and Mann Whitney test.

3. RESULTS AND DISCUSSION

RESULTS

Several stages were produced in the research by applying the ADDIE development model consisting of analysis, design, development, implementation, and evaluation stages. The following are the results obtained from the research that has been conducted:

Analysis

At the analysis stage it was carried out to collect data related to needs in economics learning in class XI IPS SMA Negeri 3 Banjarbaru. Based on the data obtained through observation and interviews instructional media use still less varied, teaching and learning activities are dominantly carried out using textbooks. The learning media used does not attract the students attention in learning so that it makes feel bored and bored in learning. This has an impact on student learning outcomes. From the existing problems, learning media are needed that can attract students attention so that they no longer make learning monotonous and can improve student learning outcomes.

Design

At the design stage, product design is carried out in the form of material design, media, and the assessment instruments to be used. The material developed in this study is price index material contained in economic learning. The presentation of the material is adjusted to the high school economic competency standards. The product design used by researchers in developing learning media is in the form of flip PDF corporate edition. The preparation of media design consists of covers, prefaces, button functions, menu displays, profiles, learning objectives, core competencies, basic competencies, concept maps, learning materials, learning videos, questions, and bibliography. The instrument used in the media feasibility test is the Likert Scale which contains five columns of assessment options for each question.

Development

The development stage is carried out by producing product that is developed in form of flip PDF corporate edition-based learning media. The developed learning media is validated by experts. The several display media developed are as follows:

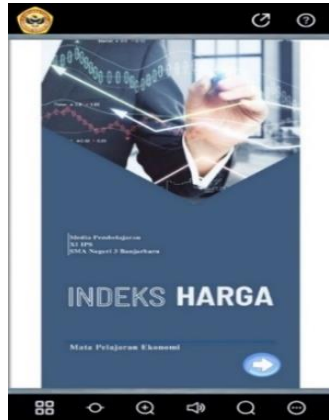


Figure 2. Media preview
Source: Researcher Data, 2022



Figure 3. Menu view
Source: Researcher Data, 2022

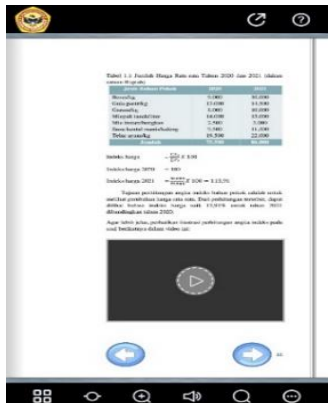


Figure 4. Material page
Source: Researcher Data, 2022

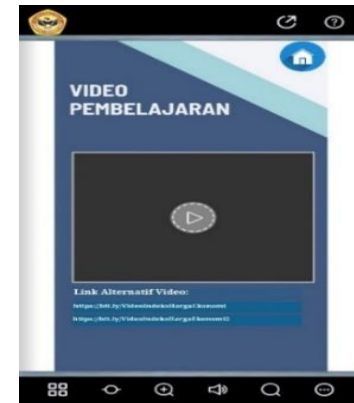


Figure 5. Learning video page
Source: Researcher Data, 2022

Product developed in the learning media form is then validated by the media validator and material validator to obtain ratings, comments, and suggestions for improving the media. Results of the media validation assessment can be seen as follows:

Table 3. Media Validation Results

No	Aspect	Evaluation	Validator Results
1	Format	Total Average	4,42
		Percentage	88.33%
		Criteria	Very good
		Category	Very Worth it
2	Fill	Total Average	4,31
		Percentage	86.25%
		Criteria	Very good
		Category	Very Worth it
3	Language	Total Average	4,56
		Percentage	91.25%
		Criteria	Very good
		Category	Very Worth it
4	Whole	Total Average	4,43
		Percentage	88.61%
		Criteria	Very good
		Category	Very Worth it

Source: Researcher Data (2022)

Table 3, it states that the average rating score by the two media expert validators on the format aspect is 4.42 with excellent criteria and the results of the assessment percentage are 88.33% with a very decent category. Then on the content aspect the score of the assessment by the two validators was 4.31 with very good criteria and the results percentage were 86.25% with a very decent category. Whereas in the aspect of language stated that the average rating score by the two validators was 4.56 with very good criteria and the results of the percentage assessment were 91.25% with a very decent category. The results of the assessment of media experts as a whole obtained an average rating with a score of 4.43 with very good criteria and an assessment if measured by a percentage was 88.61% with a very decent category.

Assessment of learning materials on the media is done to assess in the feasibility of the material. The presentation of the price index material is adjusted to comply with predetermined competency standards. The assessment was carried out by the material validator with the following results:

Table 4. Material Validation Results

No	Aspect	Evaluation	Validator Results
1	Theory	Total Average	4,33
		Percentage	86.67%
		Criteria	Very good
		Category	Very Worth it
2	Presentation	Total Average	4,25
		Percentage	85.00%
		Criteria	Very good
		Category	Very Worth it
3	Whole	Total Average	4,29
		Percentage	85.84%
		Criteria	Very good
		Category	Very Worth it

Source: Researcher Data (2022)

Then in Table 4 it states that the material expert's assessment by the two validators material aspect is 4.33 very good criteria and the percentage assessment are 86.67% with a very decent category. Whereas in the presentation aspect it states that the average rating score by the two validators is 4.25 with very good criteria and 85.00% with a very decent category. The results of the assessment of material experts as a whole obtained an average rating with a score of 4.29 with very good criteria and an assessment if measured by percentage was 85.84% with a very decent category.

Validation was carried out with media and material validators to obtain suggestions used for the revision stages of learning media. The several revisions made according to the suggestions are as follows:



Figure 6. Addition of Cover Material
 Source: Researcher Data, 2022



Figure 7. Video Additions and Material Adjustments
 Source: Researcher Data, 2022

The suggestions obtained from media and material experts are regarding adding covers to material pages, adding videos on material discussions, and adjusting material to current year conditions as well as adjusting the appearance and placement of buttons accordingly. If improvements have been made, then the implementation stage will be carried out.

Implementation

The following Implementation phase which can be carried out after passing the expert validation process. This stage carried product trials in the form of learning media that have been developed. In addition, at this stage, pretest and posttest questions were also tested to determine the effect media use on learning outcomes. The trial carried out in two stages, namely a limited trial with relatively small respondents and an operational trial with a larger group of respondents. The limited field trial was conducted with a relatively small number of 6 students in class XI Social 1 SMA Negeri 3 Banjarbaru. The trial was carried out using a questionnaire which purpose find the response of students to the learning media that was developed. The results of student responses in limited field trials are as follows:

Table 5. Limited Field Response Results

No	Aspect	Average	Criteria	Percentage	Category
1	Response	4,40	Very good	87.92%	Very Worth it
2	Reaction	4,29	Very good	85.83%	Very Worth it
	Total	4.35	Very good	86.88%	Very Worth it

Source: Researcher Data (2022)

In Table 5 it can be seen the results obtained through limited field trials. In the response aspect, it obtained score of 4.40 with very good criteria and a percentage result of 87.92% with a very decent category. Whereas in the reaction aspect, an average of 4.29 is obtained with very good criteria and the percentage results show 85.83% if converted to the eligibility category, the learning media gets a very feasible category. Limited field trials as a whole, an average rating was obtained with a score of 4.35 with very good criteria and the percentage rating was 86.88% with a very decent category.

Learning media that have been tested on limited groups are then tested on operational groups

with larger respondents. The tryout was carried out on sample of class XI IPS 1 and XI IPS 2 SMA Negeri 3 Banjarbaru with a total of 60 students as respondents. The results of student responses to operational field trials related to the development of instructional media are as follows:

Table 6. Operational Field Response Results

No	Aspect	Average	Criteria	Percentage	Category
1	Response	4.37	Very good	87.33	Very Worth it
2	Reaction	4,28	Very good	85.53	Very Worth it
	Total	4,33	Very good	86,43	Very Worth it

Source: Researcher Data (2022)

In Table 6 it is known that the responses of students in operational field trials. In the response aspect, the results of student responses showed an average score of 4.37 if converted, indicating very good criteria and 87.33% for percentages with very decent categories. Whereas in the reaction aspect results the operational trials obtained score of 4.28 with very good criteria and the percentage results were included in the very feasible category or 85.53%. The overall operational field trial was 4.33 very good criteria and the percentage result was 86.43% very feasible category.

Implementation stages in operational field trials are also used to obtain data regarding student learning outcomes through pretest and posttest. This is used to determine the effect of using learning media on students on learning outcomes.

Evaluation

Evaluation stage the final stage in research and development carried out. This stage is evaluated in the form of a final revision of the learning media obtained through the responses of students as practitioners. The validation results of the media validators, material validators, and students' responses as practitioners to flip PDF corporate edition-based learning media can be stated that learning media is very suitable use in the process of learning activities. In addition, this stage also measures the learning outcomes of students who have been given pretest and posttest questions at the implementation stage between the experimental class with the application of media and the control class without the application of learning media. The pretest and posttest questions were given to students at SMA Negeri 3 Banjarbaru in class XI IPS 1 and XI IPS 2 as many as 66 students the experimental group and in class XI IPS 3 as many as 34 students as the control group. Wilcoxon test and Mann Whitney test are used in the test. The calculation of the Wilcoxon test to find out the difference the mean of two paired samples is as follows:

Table 7. Wilcoxon test

	Statistics test	
	Experimental Posttest - Experimental Pretest	Posttest Control - Pretest Control
Z	-6.917b	-4.675b
asympt. Sig. (2-tailed)	<.001	<.001
a. Wilcoxon Signed Ranks Test		
b. Based on negative ranks.		

Source: Researcher Data (2022)

Table 7 shows that the Wilcoxon test results for the experimental group were <0.001 . The significance value is $0.001 < 0.05$, it can be proven that the experimental group has a positive and significant influence from the use of flip PDF corporate edition-based learning media on outcomes student learning. Meanwhile, results the Wilcoxon test in the control group were <0.001 . With a significance value of $0.001 < 0.05$ there is a difference between the pretest and posttest values without the use of media in learning activities. The Mann Whitney test was then carried out to find out whether or not there were differences in outcomes student learning in the experimental group and control group with the following results:

Table 8. The Mann Whitney test

Statistics test	
	Learning outcomes
Mann-Whitney U	835,000
Wilcoxon W	1430,000
Z	-2,148
asypm. Sig. (2-tailed)	0,032
a. Grouping Variables: Class	

Source: Researcher Data (2022)

Table 8 shows that the significance value is $0.032 < 0.05$, which means there is a difference in the learning outcomes of the experimental group using learning media and the control group without using learning media. It can be said that there is a positive and significant influence on the use of flip PDF corporate edition-based learning media on student learning outcomes on price index material.

DISCUSSION

The research and development that has been carried out to create develop learning media based on flip PDF corporate edition has obtained results that are feasible for use in learning. This statement was obtained from results the following assessment:

Table 9. Media Validation Results, Materials and Student Responses to Flip PDF Corporate Edition Based Learning Media

No	Validators and Respondents	Average	Criteria	%	Category
1	Media Expert	4,43	Very good	88,61	Very Worth it
2	Material Expert	4,29	Very good	85,84	Very Worth it
3	Limited Field Trials	4.35	Very good	86,88	Very Worth it
4	Operational Field Trials	4,33	Very good	86,43	Very Worth it
Whole		4.35	Very good	86.94	Very Worth it

Source: Researcher Data (2022)

Table 9 above shows the overall results of the assessment of the development of flip PDF corporate edition-based learning media on price index material with a score of 4.35 with very good criteria and the percentage result is 86.94 with a very decent category.

Results of assessment the validators consisting of media experts, material experts, and practitioners in limited field trials and operational fields obtained an average rating with very good criteria and a very decent category. In line with research conducted by Nurhasanah (2021) states that after the validation process is carried out can be seen that feasible learning media to be applied to learning activities. The developed learning media can also help students in learning because easy to use and can be used without space and time limits. The same thing is also found in research Hanisah et al., (2022) states which that learning media is able to facilitate the learning process in students. Learning media feasible to use and effective for improving student learning outcomes (Citra & Rosy, 2020). Thus it can be stated that instructional media can be applied as a variation of the use of media in learning after obtaining very good and very proper ratings from expert validators and practitioners in limited field trials and operational field implementation tests. So it can be stated that flip PDF corporate edition based media feasible to be used in process of learning activities.

Measurement of learning outcomes is carried out to determine the effect of using learning media on student learning outcomes. Graphs of learning outcomes assessment can be seen:

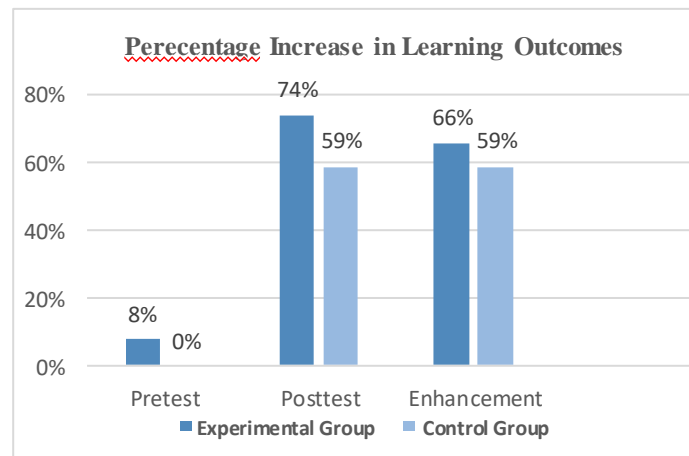


Figure 8. Increase in Learning Outcomes

Source: Researcher Data, 2022

The pretest and posttest were carried out in the experimental group and the control group with test results in the experimental group increasing by 66% while in the control group increasing by 59%. It can be said that the results of increased learning in the experimental group were higher when compared to the control group. In line with Nurparida & Srirahayu (2021) the group using media learning outcomes increased higher than the control group without the media during learning. Used of good learning media is able to improve student learning outcomes (Setiawan et al., 2021).

It is proven from results of Wilcoxon test and the Mann Whitney test which have been carried out to determine the effect of instructional media on outcomes student learning. The result of the Wilcoxon test in the experimental group was <0.001 . With a significance value of $0.001 < 0.05$ which indicates that there is a positive and significant effect of the use of flip PDF corporate edition-based learning media on outcomes student learning. While the results of the control group's Wilcoxon test were <0.001 . Where the significance value $0.001 < 0.05$ which can be said there is a difference in pretest and posttest values without the use of media in learning activities.

In the Mann Whitney test that has been carried out, the results obtained a significance value of $0.032 < 0.05$. So it can be said that the difference is in learning outcomes of students in the experimental group using learning media and the control group without using learning media. The results of the same research were also carried out by Ghalib & Ali (2022) in his research the Mann Whitney test showed that there were differences in the experimental posttest with the control. Research by Deviyanti et al., (2020) that the learning media developed proved feasible and able to improve results of student learning. The same thing is found in research Gemmara & Subroto (2019) that the use of effective learning support media to be used is reviewed through the results of the pretest and posttest that have been carried out. Based on this statement, it can be said there is a significant and positive influence on the use of flip PDF corporate edition-based learning media on student learning outcomes in economics learning on price index material.

4. CONCLUSIONS & SUGGESTIONS

CONCLUSION

Research and development was carried out to produce flip PDF corporate edition-based learning media on price index material at SMA Negeri 3 Banjarbaru. It can be concluded the development of flip PDF corporate edition-based learning media on price index material at SMA Negeri 3 Banjarbaru is declared feasible and can be used in student learning activities. It can be proven through the results of the assessment of media validators, material validators, and students' responses as practitioners. Flip PDF corporate edition-based learning media is stated to have positive effect on the learning process and can improve student learning outcomes on price index material at SMA Negeri 3 Banjarbaru.

SUGGESTION

Based on the research related to learning media, the following can be suggested:

1. For students to be more active in learning activities. The use of flip PDF corporate edition learning media can be used without time and space limits, making it easier for students to learn independently in gaining knowledge and can improve learning outcomes.
2. Teachers can use flip PDF corporate edition based learning media to support learning activities. Using learning media based on flip PDF corporate edition can overcome monotonous learning activities so as to make the learning process of students more enjoyable.
3. For schools to apply use learning media as a whole in process learning. The use of flip PDF corporate edition used learning media feasible and is proven to improve outcomes student learning, so that it can help teachers as educators in overcoming learning problems.
4. This research is still limited to student learning outcomes that have not improved as a whole. Some students still obtain learning outcomes under the minimum completeness criteria that have been set. It can be suggested that other researchers are expected to be able to develop flip PDF corporate edition-based learning media on different materials or broader and deeper material content. In addition, it can conduct research so that all students get complete learning outcomes.

ACKNOWLEDGEMENT

The author realizes that this research cannot be separated from various parties who have helped in the completion of this writing. Therefore the author would like to thank:

1. Principal and teacher of SMA Negeri 3 Banjarbaru who have given permission and opportunity for the author to conduct research.
2. The students of SMA Negeri 3 Banjarbaru who have participated in the implementation of this research.
3. All learning media validators who have provided assessments, input, and constructive suggestions so that this research was completed.
4. All parties who have contributed to the smooth running of this research that cannot be mentioned one by one.

The author realizes that this research still has deficiencies due to the limitations of the authors. Hopefully this research can be useful for readers and various parties in need.

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