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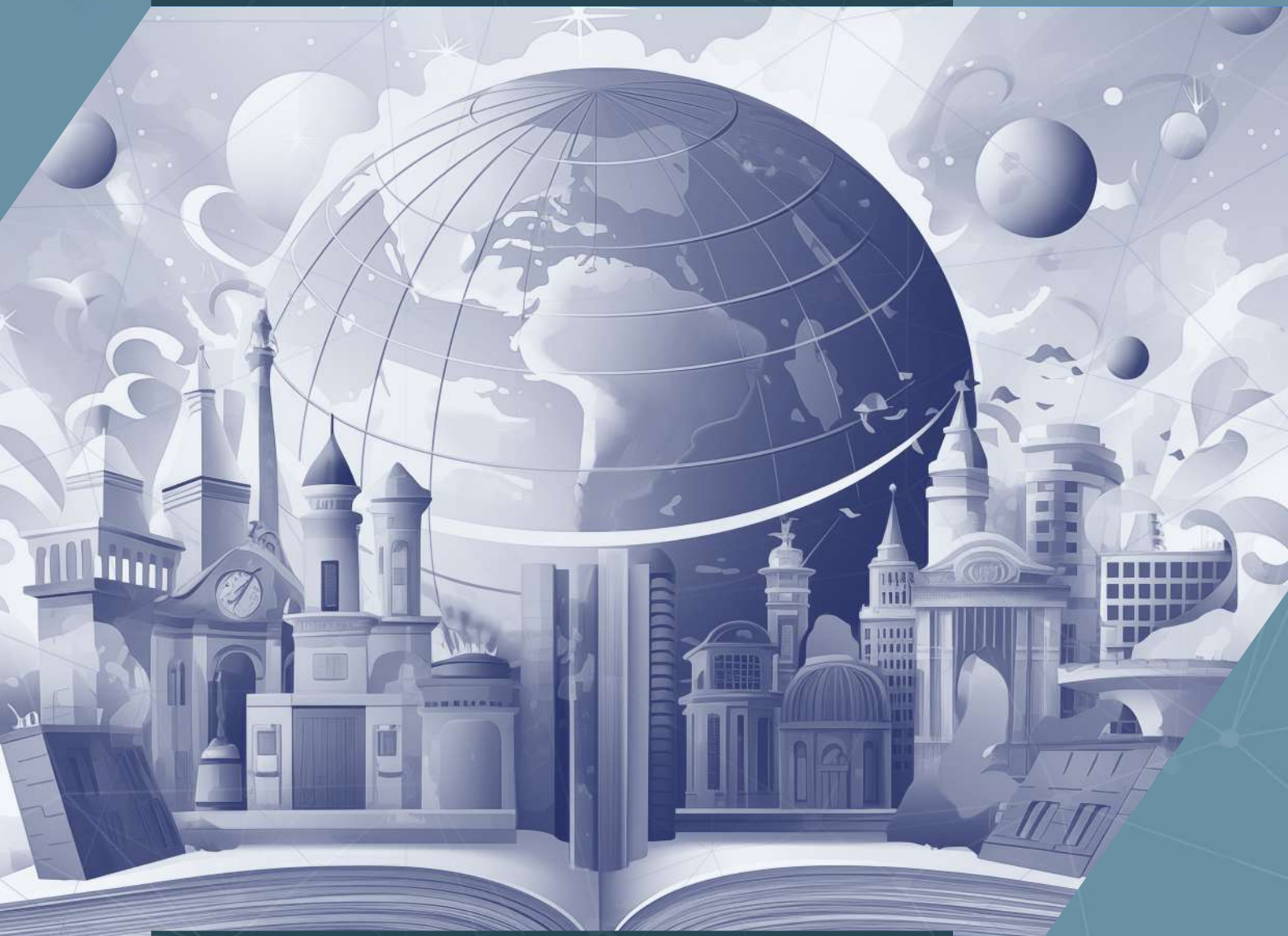

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Development of E-LKPD based on learning style differentiation in economics subjects in class XI State High School in Surabaya

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Abstract. The emergence of the development of an Android-based offline version of economic E-LKPD learning media with learning style differentiation aims to (1) analyze the feasibility of E-LKPD; (2) to analyze the practical structure of E-LKPD; (3) to analyze how big the change in student learning outcomes is before and after being exposed to the media that has been developed; 4) to analyze students' responses after using the media developed. The testing phase was limited to 4 students in each school, namely State High School 6 Surabaya, State High School 7 Surabaya State High School 13 Surabaya, State High School 15 Surabaya, and State High School 16 Surabaya. This research uses a 4D model (define, design, develop, disseminate). The research results were declared very feasible with a material test percentage of 100%, language test 90%, media test 100%. The media practicality level is 90%. 86% of students gave positive responses to this development media so that interactive learning media based on E-LKPD is suitable to support students' understanding and be applied in the learning process.

Keywords. *E-LKPD, economics, and learning media*.

1. Introduction

In Indonesia, science and technology are developing rapidly which of course can change the world very quickly, as well as human skills and expertise which are increasingly developing in line with the progress of the times. The development of the times has provided changes in the learning process by utilizing online-based technology. This will create students who are creative, interactive, innovative, and the class will become more active. The development of increasingly sophisticated science and technology is also developing the world of education without realizing it. The existence of technology is also able to make the scope of learning for students and teaching staff unlimited, because with technology teaching and learning activities can be carried out outside the classroom, of course with the guidance of teaching staff and aims to make students more independent in solving problems[1]. Minister of Education and Culture Nadiem Makarim has changed the 2013 curriculum to MBKM (Free Learning Independent Campus) in 2019. This MBKM was formed from "Free Learning" and "Free Campus". Freedom to learn can be interpreted as students' freedom of critical thinking and freedom of expression in the learning process related to students' interests and talents. Freedom to learn is in line with the ideals of Ki Hajar Dewantara, which focuses on freedom in creativity so that learning takes place actively and innovatively, thereby creating an independent-spirited personality.

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Therefore, students and teaching staff can explore knowledge widely. The policies from the Ministry of Education and Culture regarding the independent learning curriculum are as follows [2]. 1) Change the USBN to an assessment that has been held by the school, 2) Change the National Examination to a Minimum Competency Assessment and Character Survey, 3) A simplified Learning Implementation Plan (RPP), 4) An expanded zoning system in Admission of New Students (PPDB).

The learning process certainly coexists with the curriculum because without the curriculum learning will not be achieved. A suitable learning model in accordance with the implementation of the independent curriculum is Problem Based Learning [3]. In the independent curriculum, it has been adapted to CP and ATP for Phase F. Based on learning style differentiation in economics subjects. Problem Based Learning is a learning model that prioritizes student activity and critical thinking in solving problems. With this model, students can organize their knowledge independently with creativity and innovation.

[4] DePorter, explained that there are three types of learning styles which are often abbreviated as VAK, namely Visual which is defined as a learning style model that utilizes the sense of sight, Audiotory is more dominant in using the sense of hearing to carry out learning activities, and Kinesthetic is supported by [5] states that the kinesthetic learning style is a way of learning through movement, touching, and has a character who finds it difficult to sit still for hours because their desire for activity and exploration is very strong. This VAK learning style is applied to electronic learning media, namely E-LKPD. Visual learning style can be interpreted as a learning style model that utilizes the sense of sight. Electronic teaching materials are teaching materials published in digital format, containing writing, images, which can be read via a computer or other digital device [6]. This will certainly encourage students to achieve success because currently electronic teaching materials will make it easier for students in the learning process.

Electronic Student Worksheet (E-LKPD) is a student work guide that helps in the electronic learning process. Students will be more helped by the existence of this E-LKPD because it can be accessed via each student's Android cellphone. This will certainly attract students so that students have guidebooks, not just printed media. The world of learning today is so vast that Electronic Student Worksheets (E-LKPD) can facilitate and narrow down space and time so that the learning process will run effectively and efficiently [7]. Students very easily experience boredom so that if there is no interesting learning model the teaching and learning process will not run effectively.

Based on the results of observations made through interviews with teaching staff in class In accordance with the directions of the Independent Learning Curriculum, State High Schools in Surabaya no longer use worksheets, which with advances in technology, teaching staff use them by uploading learning materials to Google Drive and then sending links to students. In the learning process, teaching staff also provide learning media via YouTube and so on.

Supported by the Ministry of Education and Culture (Kemendikbud) regarding the continued use of Student Worksheets (LKS) at primary and secondary education levels in a circular issued by the Ministry of Education and Culture regarding the elimination of LKS because they are less effective. It is said to be less effective because the evaluation questions on the LKS are not yet HOTS, the cost of traded LKS is too high, and there is a lack of communication between parents and the school regarding LKS costs. However, SMAN in Surabaya, on the other hand, has replaced LKS by using Student Worksheets (LKPD). This facility can help and simplify teaching and learning activities so that effective interactions between students and education can be formed, which can increase students' learning activities and achievements. Specifically, the schools studied were State High School 6 Surabaya (east),

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State High School 7 Surabaya (north), State High School 13 Surabaya (west), High School 15 Surabaya (south), and State High School 16 Surabaya (central) which had the same problem, namely replacing LKS with LKPD.

Due to this problem, researchers took the initiative to create an Electronic Student Worksheet (E-LKPD) in the form of an offline-based application where efforts are made to adjust the learning process by providing various ways through differentiation of content, processes, products and learning environments that meet the learning needs of each student because of the current era. The digital technology that has developed today certainly makes things easier for all groups, one of which is students. In the current digital era, most students have smartphones so they can support the learning process by using Electronic Student Worksheets (E-LKPD) which makes learning easier for students because they can be opened anytime and anywhere. Based on the description that has been described as well as considering the urgency and usefulness, the researcher intends to conduct development research with the title "DEVELOPMENT OF E-LKPD BASED ON LEARNING STYLE DIFFERENTIATION IN ECONOMICS SUBJECTS IN CLASS XI STATE HIGH SCHOOL IN SURABAYA"

2. Literature Review

Understanding Development Research

[8] Sugiyono, Development research or research and development (R&D) is a basic research activity in order to obtain information on user problems (needs assessment), then researchers will continue activities in the form of development (development) in order to produce a product and be able to review the effectiveness of the resulting product. Furthermore, to test products that are still hypothetical, the steps that can be taken are to carry out experiments or action research and if the resulting product has been tested then the product can be implemented.

The current development of technology is accompanied by an increasingly advanced world of education, so the products produced are in the form of curricula, especially those that are more focused on education, such as learning media, learning models, textbook guidelines used, teacher modules, evaluation systems, room readiness, etc [9]. [10] Sukmadinata, that development research is research that produces certain products or products that have been updated by developing previous products.

Differentiated Learning

Differentiated learning is learning that requires educators to understand the needs of each student who will be taught. [11] Triyanti, Even though the definition states that teaching staff must meet the different learning needs of each student, this does not mean they have to teach one person using one learning method. Educators out there often misunderstand or have misconceptions about the meaning of differentiated learning. More than that, this learning allows teachers to meet students' learning needs in a more comprehensive way.

[12] Ambarita & Simanullang, In differentiated learning, the learning environment is very influential on the success of its implementation. Differentiated learning must be built on what we call a learning community. A learning community is a learning community whose members are all students [13]. Educators will lead their students to develop attitudes and practices that mutually support the growth of the learning environment.

VAK Learning Style (Visual, Auditory, Kinesthetic)

[4] DePorter & Hernacki, explains that a person's learning style is a combination of how students understand, then organize and manage information. In general, a person's learning style is considered to originate from personality variables, knowledge, psychology, socio-cultural

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background and educational experience. This causes students to like learning that varies according to their learning style. The diverse learning styles of students require the selection of appropriate teaching strategies so that students' learning strengths develop well [14].

The learning modality was first developed by [15] to show individual preferences in the learning process, namely, visual, auditory and kinesthetic (VAK). Even though almost all of these three modalities are owned by every student, all students always tend to one of the three. These three modalities are used for learning, processing, and communication. In fact, some students do not only tend to one modality, they can utilize a combination of certain modalities to improve their learning abilities.

3. Research Methods

This research uses the type of R&D (Research and Development). In line with [16] The research and development method is a method of systematic and structural research that is useful in producing products as final results and includes testing the effectiveness of the products being made. Research and development is used to answer the first to third problem formulations which aim to produce a particular product. In this research, researchers developed Electronic Student Worksheets (E-LKPD) to support the Merdeka curriculum.

The development model suggested by Thiagarajan and Semmel in [17] namely 4D which consists of 4 stages of development, namely, Definition, Planning, Development and Dissemination. All stages of the research will be carried out.

The research procedures in this development lead to the recommended development model oleh S. Thiagarajan, Dorothy S. Semmel, dan Melvyn I. Semmel (1974) in [17] namely 4D which consists of 4 stages of development. The stages of developing 4D model learning tools are as follows: The first stage carried out by researchers is the definition stage, which consists of 5 analyzes namely (1) initial analysis, (2) students, (3) concepts, (4) tasks, and (5) formulation of learning objectives. The second stage carried out by the researcher is the design stage which consists of 3 main steps, namely (1) preparing the test, (2) selecting customized media based on learning objectives, (3) selecting the format. The next stage carried out by researchers is the development stage which consists of steps namely (1) review and validation of the device by experts, (2) limited and field trials on the product (3) revision. The last is the dissemination stage (deserminite) by distributing media with the aim that the product can be used in other areas, for example implemented in more schools.

This stage was carried out with the aim of obtaining results on the feasibility of the learning media product, and finding out its effectiveness and practicality through students' responses to the development of an Android-based offline version of the economics E-LKPD learning media. Researchers used a trial design, namely True Experimental design with a Pretest-Posttest Control Group Design model in facilitating research that developed this media product [16].

Experiment	O_1 ⟶	1 ⟶	O_2
Control	O_3 ⟶	2 ⟶	O_4

Figure 2. Pretest–Postest Control Group Desain
Source: [16]

Information:

O_1 : Analysis of the pretest scores of students in the experimental group before being given the Android-based offline version of economic E-LKPD media

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O_2 : Analysis of the posttest scores of students in the experimental group after being given the Android-based offline version of economic E-LKPD media
O_3 : Analysis of the pretest scores of students in the control group before being given the Android-based offline version of the economics E-LKPD media
O_4 : Analysis of the posttest scores of students in the control group after being given the Android-based offline version of the economics E-LKPD media
1 : Providing treatment with media in the form of an Android-based offline version of economic E-LKPD media
2 : There is no treatment provided with media in the form of the Android-based offline version of economic E-LKPD media

The type of data used in research on the development of an Android-based offline version of economic E-LKPD refers to quantitative and qualitative data. The data collected is quantitative in nature, obtained by researchers through a series of data from expert validation results, media effectiveness through pretest-posttest and media practicality through student responses. Meanwhile, the qualitative data set was obtained by researchers through a series of interview results which were applied as supporting research data and results of reviews from experts. The development results which are the conclusions of the data obtained will be used as a benchmark in carrying out product revisions.

The Electronic Learning Media Student Worksheet (E-LKPD) has the following specifications: (1) The product output is an Android application in .APK format which can be accessed offline on an Android system with a minimum RAM capacity of 2 Gigabites; (2) E-LKPD was developed to contain images, colors, writing, audio which are used to make it easier for students to understand class XI economics material; (3) In addition to providing material, the developed E-LKPD is also equipped with evaluation in the form of HOTS-based multiple choice questions, namely competency, enrichment and remedial tests; (4) The design of this application was developed using JavaScript programming language technology and combined with an Android base interpreter, while for voice, artificial intelligence (AI) voiceover technology was used; (5) The E-LKPD for the Class XI Economics Subject is an Android-based offline version with evaluation questions that can be done directly on the E-LKPD. So that the teaching materials used are interactive and interesting for students so they can be used anywhere and anytime; (6) The E-LKPD application is also designed with VAK systematics, namely (Visual with a seeing learning style, Auditory with a listening learning style, and Kinesthetic with a touching learning style) which is applied to the Android-based offline version of Class XI Semester 2 Economics subject evaluation questions. The structure of teaching materials is arranged based on students' needs and achievements[18].

4. Result and Discussion

Result

The results of this researcher developed a product with the output, namely E-LKPD learning media which was packaged through an application in apk format. The Android-based offline version of the economic E-LKPD has learning outcomes: first, employment, second, money theory, third, fiscal policy and monetary policy. In this research, researchers used research procedures with a 4D model based on opinion [19] which is composed of 4 stages, namely definition, design, development and deployment.

This definition stage was carried out to determine the basis of the problems that arose during the learning activities, namely the results obtained that as a senior secondary school there was a lack of understanding as indicated by the low learning outcomes of students in these subjects which was due to the learning media used by teachers being still limited to media. and

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teaching materials that are only able to convey theory in general so that they require learning media, namely Electronic Student Worksheets (E-LKPD) which can help students improve their understanding through better understanding of the material in productive subjects, namely E-LKPD learning media. Economics subjects can improve student learning outcomes.

From this stage, the researcher developed learning media, namely the Android-based offline version of the Electronic Student Worksheet (E-LKPD) on economics for the economics subject class X1 semester 2 which contains material, images and HOTS questions in audio, visual and kinesthetic form. The learning media developed uses language that suits the learning styles of high school students, namely by having practice questions in the form of audio, visual and kinesthetic which makes it easier for students to understand the learning process so that it can improve student learning outcomes.

The design stage is used to design the learning media being developed. In the learning media developed, apart from the material, there are also practice questions in the form of HOTS so that it will make it easier for students to continue practicing with the E-LKPD learning media. The description of the material, taking into consideration the students' need to deepen concepts and the need for additional relevant examples, led the researchers to design an Android-based offline version of the economics E-LKPD application. Researchers use the concept of the elements contained in the E-LKPD according to [20] which includes mind map centers, branches, words, images, and colors. Use detailed and concise E-LKPD so that students can focus on the explanation that must be understood.

This media product development stage uses the help of .apk. With this .apk, Android users can download and install the Android-based offline version of the economic E-LKPD application. The advantage of this application is that it can be used without using the internet or can be used offline. In the process of developing this media, it has gone through an assessment stage from various experts in their respective fields, namely the fields of material, language and media in the form of comments and suggestions referred to from the results of the review as well as validation and trial stages of the product being developed. The material presented as E-LKPD includes a table of contents, flow of learning objectives, materials, competency test questions, remedial and enrichment where there is a VAK (Visual, Auditory and Kinetic) learning style applied to the practice questions. This learning media is also equipped with assessment score results so that students can immediately see the score results on the questions they have worked on. The following is the menu display on the E-LKPD learning media that was developed.

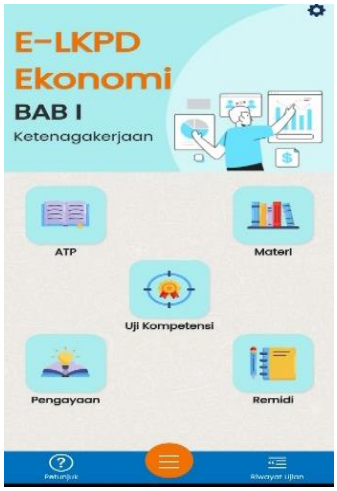

Figure 3. E-LKPD Learning Media Menu Display

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The final stage in the Four D development model is the deployment process (desserminite). At this stage the researcher hopes that the publicity of a product development can be used by its users. According to the opinion of [19] by categorizing distribution into validation testing, packaging, diffusion and adoption. The researcher packaged the product in detail and made the product's default details, namely a media usage guide, into one package. This packaging, which is realized in one package, is intended as a way for researchers to make it easier for other users when they want to use the Android-based offline version of the E-LKPD learning media. Distribution of media products through outreach to teachers and students at High School 6 Surabaya, State High School 7 Surabaya State High School 13 Surabaya, State High School 15 Surabaya, and State High School 16 Surabaya.

Discussion

The first discussion in this research is the feasibility of an Android-based offline version of E-LKPD, where a complete learning media in this research is based on obtaining validation data from material, language and media experts. The data obtained is in the form of assessments carried out by material expert lecturers with the aim of providing criticism or suggestions on the appropriateness of the content of the material in the Android-based offline version of the E-LKPD [21]. The feasibility test can be seen in the percentage of material expert validation which is summarized in the following table:

Table 1. Expert Team Validation Recapitulation

Validation Aspect	Average Percentage of Validation Results
Materials Expert	100%
Linguist	90%
Media Expert	100%

In the table above, the first validation of the material was carried out by an expert lecturer, namely Dr. Norida Canda Sakti, M.Si, who is a Lecturer in Economic Education, Faculty of Economics and Business, Surabaya State University, was chosen based on her background in mastering scientific disciplines that match the components in the material field in the E-LKPD learning media. The assessment results show that the acquisition of expert validation of the Android-based offline version of E-LKPD material is 100%, which means it is very feasible when used in the learning process. From the data obtained, the average results of material expert validation are stated to have met the criteria for material suitability ≥ 61%, meaning that the development product is declared feasible, whereas if the percentage reaches ≥ 81% then it can be stated [22]. that the Android-based offline version of the E-LKPD material is very suitable for use in the learning process

Both language validations were carried out by expert lecturers, namely Andik Yuliyanto, S.S., M.Si. who is a Language and Literature Lecturer, Faculty of Language and Arts (FBS), Surabaya State University who was chosen with consideration of language mastery background that matches the components in the field of language and literature in the E-LKPD learning media. The assessment results show that the validation obtained by language experts on the Android-based offline version of E-LKPD is 90%, which means it is very feasible when used in the learning process. From the data obtained, the average validation results from language experts are stated to have met the material eligibility criteria of ≥ 61%, meaning that the development product is declared feasible, whereas if the percentage reaches ≥ 81%, it can be stated that the Android-based offline version of the E-LKPD material is very suitable for use in the learning process [23].

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The three media validations were carried out by expert lecturers, namely Dr. Fajar Arianto, S.Pd., M.Pd. who is a Lecturer in Educational Engineering, Faculty of Engineering, Surabaya State University who was chosen with consideration of his background in mastering the media developed in accordance with the components in the field of technology in the E-LKPD learning media. The assessment results show that the validation obtained by media experts on the Android-based offline version of E-LKPD is 100%, which means it is very feasible when used in the learning process. From the data obtained, the average results of material expert validation are stated to have met the criteria for material suitability ≥ 61%, meaning that the development product is declared feasible, whereas if the percentage reaches ≥ 81% then it can be stated that the Android-based offline version of the E-LKPD material is very suitable for use in the learning process.

The second discussion is the Practicality of the Android-Based Offline Version of the E-LKPD. The practicality of the learning media in this problem formulation focuses on analyzing and measuring how far the Android-based offline version of the E-LKPD economics learning media has been developed to be more practical than other media. Maamuujav et al., (2020) explained that this practicality measurement was felt by students after using the Android-based offline version of the E-LKPD learning media with material variables which were felt to be very practical and easy to use in learning with a percentage of 89%, for the language variable the percentage was 95%, and finally the media variable with a percentage of 88% which means all aspects are categorized as very practical. Based on the overall results, all variables can be calculated with an average percentage of 91% which is categorized as very practical. From these results it is concluded that the development product, namely the Android-based offline version of economic E-LKPD, is suitable for use in the learning process [25].

The third discussion is the effectiveness of the Android-based offline version of E-LKPD. This effectiveness measures how significant the learning outcomes obtained by students are. The results in question are the scores on the pretest and posttest questions that have been completed by students which will be recapitulated into quantitative data measured by statistical tests. The results of the scores from the pretest and posttest questions that students have completed will be recapitulated into a collection of quantitative data measured by statistical tests. The statistical test used by researchers is the T Test (Paired Sample Test) as an effort by researchers to find out how big the difference is in the average level of change in students' understanding from the experimental class to the control class. However, before the t test was carried out, the researcher wanted to fulfill the requirements for the data on the results of measuring understanding in the pretest-posttest in both classes to be declared to have been distributed at a normal level. The following is a normality test at State High School 6 Surabaya, State High School 7 Surabaya State High School 13 Surabaya, State High School 15 Surabaya, and State High School 16 Surabaya.

Table 2. State High School 6 Surabaya Normality Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Hasil	Pre-Test Eksperimen (E-LKPD)	.187	20	.065	.924	20	.117
	Post-Test Eksperimen (E-LKPD)	.175	20	.109	.905	20	.051
	Pre-Test Kontrol (Konvensional)	.187	20	.065	.916	20	.084
	Post-Test Kontrol (Konvensional)	.183	20	.078	.943	20	.275

a. Lilliefors Significance Correction

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Based on the normality test table at State High School 6 Surabaya, it is known that the significance value in the pretest-posttest class in the experimental class and pretest-posttest in the control class, all data is known to be > (more than) 0.05, which means it is normally distributed [26]. Once the data is normally distributed and has met the requirements, you can proceed to the T test stage as follows:

Table 3. Independent Sample T-Test for State High School 6 Surabaya

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
hasil_belajar	Equal variances assumed	.001	.974	3.985	38	.000	11.250	2.823	5.535	16.965
	Equal variances not assumed			3.985	37.803	.000	11.250	2.823	5.534	16.966

Based on the independent sample t-test test table at State High School 6 Surabaya, it can be concluded that the results of the recapitulation of the independent sample t-test in the experimental and control classes show a significance value of t < 0.05, which means that the economic E-LKPD media is effective in increasing students' understanding of the results learn it.

Table 4. State High School 7 Surabaya Normality Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Hasil	Pre-Test Eksperimen (E-LKPD)	.187	20	.065	.924	20	.117
	Post-Test Eksperimen (E-LKPD)	.178	20	.097	.931	20	.161
	Pre-Test Kontrol (Konvensional)	.187	20	.065	.916	20	.084
	Post-Test Kontrol (Konvensional)	.183	20	.078	.943	20	.275

a. Lilliefors Significance Correction

Based on the normality test table at State High School 7 Surabaya, it is known that the significance value in the pretest-posttest class in the experimental class and pretest-posttest in the control class, all data is known to be > (more than) 0.05, which means it is normally distributed [27].

Table 5. Independent Sample T-Test for State High School 7 Surabaya

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
hasil_belajar	Equal variances assumed	.388	.537	4.198	38	.000	11.250	2.680	5.825	16.675
	Equal variances not assumed			4.198	36.675	.000	11.250	2.680	5.819	16.681

Based on the independent sample t-test test table at State High School 7 Surabaya, it can be concluded that the results of the recapitulation of the independent sample t-test in the experimental and control classes show a significance value of t < 0.05, which means that the economic E-LKPD media is effective in increasing students' understanding of the results learn it.

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Table 6. State High School 13 Surabaya Normality Test

Tests of Normality

	Kelas	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hasil	Pre-Test Eksperimen (E-LKPD)	.187	20	.065	.924	20	.117
	Post-Test Eksperimen (E-LKPD)	.191	20	.053	.868	20	.011
	Pre-Test Kontrol (Konvensional)	.187	20	.065	.916	20	.084
	Post-Test Kontrol (Konvensional)	.192	20	.052	.930	20	.158

a. Lilliefors Significance Correction

Based on the normality test table at State High School 13 Surabaya, the significance value in the pretest-posttest class in the experimental class and pretest-posttest in the control class, all data is known to be > (more than) 0.05, which means it is normally distributed.

Table 7. Independent Sample T-Test for State High School 13 Surabaya

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
hasil_belajar	Equal variances assumed	4.147	.049	4.191	38	.000	10.500	2.505	5.428	15.572
	Equal variances not assumed			4.191	29.554	.000	10.500	2.505	5.380	15.620

Based on the independent sample t-test test table at State High School 13 Surabaya, it can be concluded that the results of the recapitulation of the independent sample t-test in the experimental and control classes show a significance value of t < 0.05, which means that the economic E-LKPD media is effective in increasing students' understanding of the results learn it.

Table 8. State High School 15 Surabaya Normality Test

Tests of Normality

	Kelas	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hasil	Pre-Test Eksperimen (E-LKPD)	.173	20	.120	.951	20	.378
	Post-Test Eksperimen (E-LKPD)	.175	20	.108	.916	20	.082
	Pre-Test Kontrol (Konvensional)	.160	20	.191	.913	20	.072
	Post-Test Kontrol (Konvensional)	.159	20	.200*	.953	20	.420

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the normality test table at State High School 15 Surabaya, it is known that the significance value in the pretest-posttest class in the experimental class and pretest-posttest in the control class, all data is known to be > (more than) 0.05, which means it is normally distributed.

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Table 9. Independent Sample T-Test for State High School 15 Surabaya

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
hasil_belajar	Equal variances assumed	.222	.640	4.832	38	.000	13.000	2.690	7.554	18.446
	Equal variances not assumed			4.832	37.428	.000	13.000	2.690	7.551	18.449

Based on the independent sample t-test at State High School 15 Surabaya above, it can be concluded that the results of the recapitulation of the independent sample t-test in the experimental and control classes show a significance value of t < 0.05, which means that the economic E-LKPD media is effective in increasing students' understanding of the results learn it

Table 10. State High School 16 Surabaya Normality Test

Tests of Normality

	Kelas	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hasil	Pre-Test Eksperimen (E-LKPD)	.157	20	.200*	.938	20	.221
	Post-Test Eksperimen (E-LKPD)	.191	20	.053	.868	20	.011
	Pre-Test Kontrol (Konvensional)	.187	20	.065	.916	20	.084
	Post-Test Kontrol (Konvensional)	.183	20	.078	.943	20	.275

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the normality test table at State High School 16 Surabaya, it is known that the significance value in the pretest-posttest class in the experimental class and pretest-posttest in the control class, all data is known to be > (more than) 0.05, which means it is normally distributed.

Table 11. Independent Sample T-Test for State High School 16 Surabaya

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
hasil_belajar	Equal variances assumed	3.696	.062	3.863	38	.000	9.250	2.394	4.403	14.097
	Equal variances not assumed			3.863	30.630	.001	9.250	2.394	4.364	14.136

Based on the Independent Sample T-Test test table at State High School 16 Surabaya, it can be concluded that the results of the recapitulation of the independent sample t-test in the experimental and control classes show a significance value of t < 0.05, which means that the economic E-LKPD media is effective in increasing students' understanding of the value of their learning outcomes.

Discussion of Student Responses to the Android-Based Offline Version of E-LKPD Learning Media, where students respond after using E-LKPD learning media by measuring the responses, reactions and impacts of the media. The condition of students carrying out analysis

is related to measuring responses, reactions and impacts felt after using the offline desktop version of economic mind mapping media. The condition of the students after learning using modified learning media was tried by researchers to interpret this through a procedural and systematic solution method. Media has several aspects that help teachers create classroom conditions that are interesting and have a greater learning impact. This is the basis for researchers to measure students' responses in order to find out the responses that arise as a result of learning something through providing stimuli with new learning media. According to[28] which states that a person's behavior in economic activities is influenced by three things, namely knowledge, personality and situational. The response questionnaire distributed to students is structured by parameters that have been adapted from [29]with benchmarks covering ease, attractiveness, implications for students, and systematic learning, as well as the quality of the media used. The ease aspect shows a percentage result of 94%, attractiveness shows a percentage of 85%, after someone gets learning media with a percentage of 86% and learning systematics with a percentage of 87%, as well as the results of responses given by students for the quality aspect of economic E-LKPD media Android based offline version. With these results, the researchers obtained an average conclusion from the calculation scheme found which was 92%. This label is also confirmed in [30] with the feasibility of a media development being proven to be good if the results of the interpretation of student responses are able to exceed 61% or to be very good if the acceptance is greater than 81%.

5. Conclusion

This finding can be concluded that the form of teaching is structured in a constructive manner which is aimed at linking core concepts so that it is hoped that it will be able to achieve the goal of increasing understanding of the material through access to learning obtained from developing an Android-based offline version of economics E-LKPD learning media which contains material on employment, theory. money, and fiscal policy & monetary policy. Support for these findings is obtained from the results of solving the problem formulation, namely: 1) analysis of the feasibility of the Android-based offline version of economic E-LKPD media which has passed review tests and validation tests in collaboration with several practitioners and expert lecturers, aiming at very feasible results for the quality of the material, language and media contained in the E-LKPD based interactive media that has been developed; 2) analysis of the practicality of the Android-based offline version of the economic E-LKPD media which is stated to be very practical compared to other available media when used in the classroom learning process; 3) the increase in understanding in both classes experienced an equally significant increase with the difference in average learning outcomes using media and conventionally expressed by the p-value in both the experimental class and the control class of 0.000, which means <0.05. However, the difference in the increase in pretest-posttest measurement results in the experimental class was higher than the increase in pretest-posttest in the control class; 4) analysis of student responses received 86% positive responses which was interpreted as relating to measuring responses, reactions and impacts felt after using the Android-based offline version of the economics E-LKPD learning media.

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