Contextually Based Interactive E-LKPD Assisted by Liveworksheets Website on Mathematics Content in Third Grade Elementary School

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Abstrak

Kurangnya media interaktif dalam pembelajaran membuat hasil belajar matematika siswa rendah. Melihat hal tersebut maka penelitian ini bertujuan untuk menganalisis efektivitas E-LKPD interaktif berbasis kontekstual berbantuan website liveworksheets pada muatan matematika di kelas III SD. Penelitian ini menggunakan model ADDIE. Metode pengumpulan data dengan kuesioner rating scale dan tes. Instrumen pengumpulan data yakni lembar kuisioner dan tes pilihan ganda. Instrumen yang telah dibuat diuji validitasnya menggunakan rumus gregory. Subjek penelitian terdiri dari 2 ahli, 3 guru dan 21 siswa. Teknik analisis data yang digunakan yakni analisis data kualitatif dan kuantitatif. Hasil penelitian menunjukkan kelayakan produk oleh ahli materi sebesar (4,8), ahli media sebesar (4,65), dan oleh ahli desain sebesar (4,8). Kepraktisan oleh guru sebesar (4,8) dan peserta didik sebesar (4,48). Uji one sample t-test *hasil belajar siswa menunjukkan E-LKPD interaktif berbasis kontekstual berbantuan* website liveworksheets *pada muatan matematika layak, praktis, dan efektif untuk meningkatkan hasil belajar kognitif pada materi sudut bangun datar di kelas III Sekolah Dasar. Implikasi penelitian ini yakni diharapkan mampu menambah referensi bagi guru dalam pembuatan LKPD yang interaktif bagi siswa.*

Kata Kunci*: E-LKPD, Matematika, Pendekatan Kontekstual,* Website Liveworksheets*, Hasil Belajar*

Abstract

The lack of interactive media in learning makes students' mathematics learning outcomes low. Seeing this, this research aims to analyze the effectiveness of contextually based interactive E-LKPD assisted by the liveworksheets website on mathematics content in class III elementary school. This research uses the ADDIE model. Data collection methods using rating scale questionnaires and tests. The data collection instruments are questionnaire sheets and multiple-choice tests. The validity of the instruments that have been created is tested using the Gregory formula. The research subjects consisted of 2 experts, 3 teachers and 21 students. The data analysis techniques used are qualitative and quantitative data analysis. The research results showed that the feasibility of the product by material experts was (4.8), media experts were (4.65), and design experts were (4.8). Practicality by teachers is (4.8), and students are (4.48). The one sample t-test on student learning outcomes shows that contextually based interactive E-LKPD with the help of the live worksheets website on mathematical content is feasible, practical and effective for improving cognitive learning outcomes in the material of angles of plane shapes in class III of elementary school. This research implies that it is hoped that it will be able to add references for teachers making interactive LKPD for students.

Keywords: E-LKPD, Mathematics, Contextual Approach, Website Liveworksheets, Learning Outcomes

1. INTRODUCTION

Tasker's constructivist learning theory, one of which emphasizes the need for students' active role in constructing their knowledge meaningfully (Djamaluddin & Wardana, 2019; Suryana et al., 2022; Casfian et al., 2024). During the process of constructing this knowledge, students certainly have varying learning speeds, so it is not enough to only be facilitated by the teacher. In this case, teachers need learning support facilities or devices so that students can be guided independently according to their own speed in constructing knowledge (Islamiah et al., 2024; Rosidah et al., 2021). There are many types of use of learning tools with the aim of creating an effective learning environment and supporting student

development, one of which is Student Worksheets (LKPD) (Astuti, 2021; Nasution et al., 2023). The function of the LKPD is to guide students in discovering the concepts being studied, so that learning is constructivist (Rosidah et al., 2021; Susanti et al., 2021). Moreover, if learning uses many learning resources such as interactive LKPD which combines various media such as text, images, audio, video and illustrations, it will make the learning atmosphere less boring and can motivate students' enthusiasm for learning (Nareswari et al., 2021; Qekaj-Thaqi & Thaqi, 2021).

Moving on from there, nowadays the use of technological devices is no longer a strange thing in innovation to support learning in the world of education (Effendi & Wahidy, 2019; Salsabila & Agustian, 2021). Be it in the form of software or supporting hardware. In this case, of course, teachers must be able to utilize technology in order to present a learning process that provides space for students to be able to explore as time goes by (Effendi & Wahidy, 2019; Qekaj-Thaqi & Thaqi, 2021). Moreover, based on research results, digital technology-based teaching materials can improve students' abilities, train their creativity and can increase students' motivation in learning (Artini et al., 2023; Trinaldi et al., 2022). As is the case at the elementary school level, many people are starting to have technology and information equipment that can be used to support more contemporary learning (Sara et al., 2023; Tanjung, 2022).

However, based on the results of observations at SD Negeri 5 Kampung Baru and interviews conducted on August 28 2023 with the homeroom teacher for class III at the school, it was found that so far the teacher had prepared LKPD, but it was more in the form of a question sheet and not a worksheet with problems and can be manipulated in terms of content. The LKPD used is only a printed device whose appearance is still less attractive and monotonous, in terms of material it is still minimal, and less interactive so it does not attract students' interest in learning. Based on the results of this interview, it was also stated that these LKPD sources are rarely developed independently by teachers and more often use LKS purchased by schools from partners. Moreover, the LKPD used does not yet integrate learning models or approaches that suit the characteristics or needs of students. Meanwhile, the use of learning approaches or models in learning activities is very important because it can obtain good results in learning design (Suwastini et al., 2022; Fatimatuzzahrah & Fathurrohman, 2023).

Based on the results of the interview, it is also known that the school already has equipment such as LCD projectors, laptops or Chromebooks, audio speakers and others. However, the use of these tools is less than optimal in classroom learning. For example, LCD projectors or audio speakers are still rarely used in learning. The use of Chromebooks has also been implemented in class III, but in terms of content it is still less varied, including only being used to watch YouTube videos in certain learning contexts. Thus, these facilities have not been used optimally. One alternative that can be offered is to carry out interactive learning that utilizes digital devices. In this way, we will be able to optimize the use of digital devices owned by the school so that they are more targeted and effective. Apart from that, good cooperation is also needed from various parties so that the use of technology meets its objectives because the role of educational innovation in digital technology-based learning is very important (Ambarwati et al., 2022; Sara et al., 2023).

Furthermore, based on the results of the interview, it was stated that there were problems in terms of class III students' learning interest in mathematics lesson content. Most students get bored easily during learning and this results in them being less active in learning. This is based on the findings shown by class III students through filling out a questionnaire on understanding mathematics material, namely 57.14% of students stated that they were less interested in learning mathematics, 66.66% of students stated that mathematics lessons made them feel bored, 66.66% of students stated that they had difficulty understanding

Mathematics lessons, and 52.38% of students stated that they were less active in the Mathematics learning process. This could be caused by limited variation and innovation in the use of learning tools at SD Negeri 5 Kampung Baru.

The various conditions that have been explained will have an impact on students, namely reducing students' motivation and interest in the mathematics learning process so that it can affect their learning outcomes. Meanwhile, interest and motivation are factors that can influence student learning outcomes (Laras & Rifai, 2019; Lestari & Sa`diyah, 2021). Students will experience difficulty in understanding Mathematics material and students' active participation in the learning process will decrease, which in turn will hinder the achievement of learning goals. Based on this, efforts that can be made are to develop learning materials and package them into contextual-based interactive mathematics E-LKPD. The advantage of contextually based Mathematics interactive E-LKPD is that it can increase students' learning motivation because it is packaged in an interactive and interesting way so that it can stimulate students' activeness in learning. Apart from that, students can also relate the learning content to their own experiences so that they can grasp the meaning of the learning as their reason for learning.

One of the websites that can be used to create interactive E-LKPD is the liveworksheets website. Liveworksheet-based interactive e-LKPD can be designed to make lesson material more alive (Susilawati et al., 2023). With interactive worksheets created in LiveWorksheets, teachers can also integrate images, audio, video, and hyperlinks to transform learning beyond the printed page (Le & Prabjandee, 2023). In this way, the interactive E-LKPD designed will certainly be able to facilitate the diversity of student learning styles.

This development research has elements of novelty by combining contextual approaches, mathematics, and electronic student worksheets as learning tools to support the learning activities of students in lower grades, especially grade III elementary school. The development of this interactive E-LKPD also has an element of novelty in terms of design. The E-LKPD consists of one link containing six learning meetings in sub-themes 1 and 2 of theme 8 and can be accessed easily by simply typing "intip.in/Elkpd" in the browser of each electronic device.

Development of contextually based interactive E-LKPD is possible with the liveworksheets website. One of the supporting research results is that E-LKPD is a learning strategy that can be applied as a solution to increase effectiveness and motivation according to the characteristics of students (Artini et al., 2023). Apart from that, previous research also stated that the live worksheet-based E-LKPD that was developed could be said to be feasible, very practical and effective for use in learning (Maghfiroh et al., 2023; Vonna et al., 2022). In the research entitled "Learning Mathematics with Contextually Based LKPD" also developed LKPD which is very relevant, valid, and can help overcome problems in learning mathematics in fourth grade elementary school (Nareswari et al., 2021). It's just that in previous research, there was no discussion regarding the development of contextually based interactive E-LKPD with the help of liveworksheets websites in mathematics learning, especially angles and plane shapes in class III elementary school. So, the focus of the study in this research aims to describe the design, feasibility and practicality as well as describe the effectiveness of contextually based interactive E-LKPD assisted by the liveworksheets website on the cognitive learning outcomes of students in mathematics content in class III of SD Negeri 5 Kampung Baru.

2. METHODS

Research on the development of contextually based interactive E-LKPD with the help of the liveworksheets website on mathematics content uses the ADDIE model. This model is an instructional process that consists of five phases, including analysis, design, development, implementation and evaluation which is dynamic and can still adapt very well to various conditions even though there is revision and evaluation at every stage (Cahyadi, 2019; Safitri & Aziz, 2022). At the analysis stage, student characteristics analysis, curriculum analysis, LKPD needs analysis, and learning facilities analysis are carried out. The design stage starts from collecting mathematical material, selecting hardware and software used in development, creating storyboards and creating product assessment instruments. The development stage is carried out with product realization activities. The implementation phase was carried out with a trial at the target school, namely to determine the effectiveness of the Contextually Based Interactive E-LKPD Assisted by the Liveworksheets Website on mathematics content on the learning outcomes of class III students at SD Negeri 5 Kampung Baru on angles and plane shapes.

The test subjects in this research were 2 lecturers as media experts, material experts, design experts, 3 teacher practitioners and 21 students. Meanwhile, the object of this research trial is the feasibility, practicality and effectiveness of contextually based interactive E-LKPD on the mathematical content of flat angles for grade III elementary school students. This research uses a pre-experimental design, one shot case study. Data collection methods include observation, interviews, questionnaires and tests. The instruments used are rating scale sheets and multiple choice tests. The instrument grid of the instruments used can be seen in Table 1, Table 2, Table 3, Table 4, Table 5, and Table 6.

Table 1. The Material Expert Instrument Grid

No.	Aspect	Indicator	Number of Items
1	The structure of the material presented	1. Conformity of indicators to Basic Competencies 2. Learning objectives in accordance with indicators 3. Suitability of material to learning objectives 4. Suitability of questions to learning objectives 5. Suitability to student needs	5
2	Use of grammar	1. Readability of writing on material 2. Accuracy of grammar used 3. Clarity of information 4. Accuracy of spelling in the material 5. Accurate use of punctuation marks in the material	5
3	Material learning videos	1. The video matches the material 2. The videos used are appropriate to the characteristics of the students	2
4	Serving	1. Coverage of material 2. The material is easy to understand 3. Increasing students' learning independence	3
		Amount	**15**

(Source: modified from Suartama, 2016)

Table 2. The Media Expert Instrument Grid

No.	Aspect	Indicator	Number of Items
1	Screen design display	1. Correct and harmonious composition and color combination 2. Balance of cover/front cover layout (text and image layout) 3. Accurate layout of each section in the Interactive E-LKPD 4. Title Clarity 5. Attractive cover/cover design 6. Clarity in use and easy to read font size 7. Accuracy in the use of picture illustrations that support learning	7
2	Ease of use	1. Interactive E-LKPD is easy to operate using a device or PC/laptop 2. Instructions for using interactive E-LKPD are very clear	2
3	Expediency	1. Make it easier for students to understand learning material 2. Can raise student motivation 3. Using E-LKPD makes it easier for students to study independently 4. Make it easier for educators in the teaching and learning process at school	4
		Amount	**13**

(Source: modified fromSuartama, 2016)

Table 3. The Learning Design Expert Instrument Grid

No.	Aspect	Indicator	Number of Items
1	Objective	1. Conformity of indicators to Basic Competencies. 2. Clarity of learning objectives 3. Consistency between objectives, materials, and evaluation	3
2	Strategy	1. Learning activities can motivate students 2. Providing examples in the presentation 3. How to deliver material 4. Clarity of instructions for using E-LKPD 5. Provide opportunities for students to learn independently	5
3	Evaluation	1. Presentation of practice questions for understanding concepts 2. Providing feedback on evaluation results	2
		Amount	**10**

(Source: modified fromSuartama, 2016)

Table 4. The Teacher Practitioner Instrument Grid

No.	Aspect	Indicator	Number of Items
1	Display clarity E-LKPD	1. Image clarity 2. Clarity of writing 3. Video clarity	3
2	The attractiveness of the dish	1. The LKPD color combination used is appropriate and attractive 2. Interesting video explanation of the material 3. The attractiveness of the images presented 4. The material in the video is easy to understand	4
3	Presentation of Material	1. Conformity of indicators with basic competencies 2. Suitability of material to learning objectives 3. The correctness of the concept of the material presented 4. Suitability of material to student needs	4
4	Expediency	1. Interactive e-LKPD can increase students' attention 2. Make it easier for students to receive learning material 3. Using interactive E-LKPD makes it easier for students to learn independently 4. Interactive e-LKPD is able to motivate students' learning	4
5	Ease of use	1. Ease of access to various electronic devices 2. Ease of teachers in operating E-LKPD 3. Ease of teachers in providing assessments of students' work results	3
	Amount		**18**

(Source: modified fromArianingsih et al., 2022)

Table 5. The Student Practitioner Instrument Grid

No.	Aspect	Indicator	Number of Items
1	Clarity of E-LKPD display	1. Image clarity 2. Clarity of writing 3. Video clarity	3
2	Interesting students' interests	1. The LKPD color combination used is attractive 2. Interesting video explanation of the material 3. The attractiveness of the images presented	3
3	Presentation of Material	1. The material presented is clear 2. The material presented is easy to understand	2
4	Expediency	1. Interactive e-LKPD can increase attention 2. Makes it easier to receive learning material 3. Using interactive E-LKPD makes it easier to study independently 4. Interactive e-LKPD is able to motivate learning	4
5	Ease of use	1. Ease of access to various electronic devices 2. Ease of students in operating E-LKPD	2
	Amount		**14**

(Source: modified from Arianingsih et al., 2022)

Table 6. The Multiple-Choice Question Instrument Grid for Effectiveness Testing

Competence Base	Indicator	C1	C2	C3	C4	C5	C6	Question Form	Amount Question	No. Question
3.11 Explain angles, types of angles (right angles, acute angles, and obtuse angles), and non-standard units of measurement.	3.11.1 Explain the concept of angles.	√						P.G	2	4, 11
	3.11.2 Compare the magnitudes of angles		√					P.G	6	1, 2, 5, 6, 7, 9,
	3.11.3 Find right, acute and obtuse angles in objects around students		√					P.G	2	3, 8
	3.11.4 Deduce angle measurements based on non-standard units.				√			P.G	2	10, 14
3.12 Analyze various flat shapes based on their properties.	3.12.1 Analyze square shapes based on their properties				√			P.G	2	13, 18
	3.12.2 Analyze rectangular flat shapes based on their properties				√			P.G	3	12, 16, 17
	3.12.3 Analyze triangular shapes based on their properties				√			P.G	1	15
	3.12.4 Design a shape model by combining several flat shapes.					√		P.G	2	19, 20
Amount									**20**	**20**

In this research there is qualitative and quantitative analysis. The qualitative descriptive analysis method was used to analyze data from the review of the Interactive E-LKPD product assessment in the form of input, suggestions and criticism contained in the questionnaire. The quantitative descriptive analysis method is data analysis carried out by arranging it systematically in the form of numbers regarding an object being studied, so that general conclusions are obtained. The quantitative descriptive analysis consists of analyzing the feasibility and practicality of the product using the average formula. Analysis of media effectiveness on mathematics learning outcomes was carried out using the One Sample T-Test formula. Before that, there is a prerequisite test that must be carried out, namely the normality test.

3.   RESULTS AND DISCUSSION

Result

The design of an interactive E-LKPD product based on contextual mathematics content was developed using the liveworksheets website. The material discussed is about angles and properties of flat shapes for class III elementary school. The e-LKPD that was developed was designed with A4 paper size using Canva. In the developed E-LKPD, there

are training activities that are in accordance with several contextual learning components and that students can do to train their analytical skills, and several games and learning videos are included to support students' understanding. This E-LKPD consists of one main E-LKPD which contains hyperlink buttons to six meetings according to mathematics learning in Subthemes 1 and 2 of Theme 8 class III as well as one evaluation activity which is accessed from the main E-LKPD. This E-LKPD link can be accessed via each student's device or the school's computer, laptop and Chromebook so its use is very flexible. The display of the main E-LKPD can be seen at Figure 1.

Figure 1. The Main E-LKPD Display

The practicality test of contextually based interactive mathematics E-LKPD was carried out by providing a rating scale sheet that had been declared relevant to the experts. These experts consist of two lecturers, each of whom is a material expert, media expert and learning design expert. Data from these experts was analyzed by calculating the average score obtained on the eligibility sheet. The average score obtained was then converted using a five scale conversion guide to determine the feasibility index and qualifications for the contextually based interactive mathematics E-LKPD product which was developed as a whole. In summary, the results of the average analysis of contextual-based interactive mathematics E-LKPD feasibility tests are presented in the following table.

Table 7. The Average Product Feasibility Test Results

Expert	Item	Evaluator		$\sum x$	n	$\bar{x}$	Information
		I	II				
Material	1-15	69	75	144	30	4.8	Very Good
Media	1-13	61	64	121	26	4.65	Very Good
Design	1-10	46	50	96	20	4.8	Very Good

Based on the data in the table above, it can be concluded that the contextually based interactive mathematics E-LKPD obtained an average product suitability index by material experts of 4.8. Product feasibility by media experts was 4.65 and product feasibility by design experts was 4.8. Based on a five-scale assessment, the overall average score for product suitability by material, media and design experts is in the score range $3.75 \leq\, < 5.01$, meaning that the product developed is included in the very good qualifications. This means that the contextually based mathematics interactive E-LKPD has obtained the qualification for the predicate of very good eligibility.$\bar{x}$

The implementation of the contextual-based interactive mathematics E-LKPD practicality test in this development research is viewed from the perspective of teachers as practitioners in learning and students as users of learning products. The practitioners were three homeroom teachers and six class III students at SD Negeri 5 Kampung Baru. The scores obtained through assessments given by expert practitioners are analyzed to calculate the average score, then the data is converted to a five-scale assessment table to determine the practicality index and qualifications for the product being developed. In summary, the results of the average analysis of the practicality test of contextually based interactive mathematics E-LKPD by teachers and students can be seen in the following table.

Table 8. The Practicality Test Results by Teachers

Practitioner	$\sum x$	n	$\overline{x}$	Category
Practitioner I	86	18		
Practitioner II	87	18	4.8	Very good
Practitioner III	86	18		

Table 9. The Practicality Test Results by Students

Practitioner	$\sum x$	n	$\overline{x}$	Category
Student I	63	14		
Student II	63	14		
Student III	64	14	4.48	Very good
Student IV	60	14		
Student V	64	14		
Student VI	62	14		

Based on the data in the table above, it can be concluded that the contextually based interactive mathematics E-LKPD obtained an average index of product practicality by teachers as a whole of 4.8 and overall product practicality by students of 4.48. Based on the five-scale assessment, the overall average score for the product practicality of teachers and students is in the score range $3.75 \leq\ < 5.01$, meaning that the product developed is included in the very good qualifications. This means that the contextually based interactive mathematics E-LKPD has received the qualification for the predicate of very good practicality.$\overline{x}$

Product effectiveness testing in this development research was carried out through pre-experiments with a one shot case study design. The subjects used were class III students at SDN 5 Kampung Baru, totaling 21 students and the objects in the effectiveness test were the students' learning results on angles and plane figures. The learning outcomes for angles and plane shapes were obtained from the results of evaluation tests carried out after implementing contextually based interactive mathematics E-LKPD in the learning process. Then the evaluation test scores will be compared with the minimum completeness criteria (KKM) scores in mathematics lessons. The KKM for mathematics learning in class III of SD Negeri 5 Kampung Baru is 70. Analysis was carried out using the one sample t-test formula. Before that, there is a prerequisite test that must be carried out, namely the data distribution normality test.

The normality test was carried out using the Shapiro-Wilk type test because the number of samples used was less than 50 samples. The significance value in the Shapiro-Wilk column shows a value of 0.138. The results of the significance value show a value

greater than the significance level of 5% or 0.05. Thus, it can be concluded that the value of student learning outcomes on angles and plane figures after implementing contextually based interactive E-LKPD assisted by the live worksheet website on normally distributed mathematics content. Based on the results of the one sample t-test, which compared the KKM in mathematics lessons with the results of students' learning tests after implementing E-LKPD, the calculated t value was 6.417 with a significance (2-tailed) of 0.000. This value shows significance that is smaller than 0.05 (5% significance level) or 0.000 < 0.05 so that H0 is rejected and Ha is accepted. Thus, contextually based interactive E-LKPD assisted by the liveworksheets website is effective in improving learning outcomes in the mathematical content of plane angles material for class III students at SD Negeri 5 Kampung Baru.

Discussions

There are several reasons why the contextually based interactive E-LKPD assisted by the live worksheet website on mathematics content received a very good assessment by experts and practitioners, and in its implementation in the classroom it was effectively used to improve student learning outcomes. As a result of the design, this contextually based interactive E-LKPD on mathematics content consists of one main E-LKPD link which contains a hyperlink to the E-LKPD at each learning meeting. In this E-LKPD there are six meetings in accordance with mathematics learning in subthemes 1 and 2 of theme 8 class III, as well as one evaluation activity. This E-LKPD link can be accessed via each student's device or the school's computer, laptop and Chromebook so its use is very flexible, easy and reduces space and time so that learning becomes more effective (Suryaningsih & Nurlita, 2021; Puspita et al., 2023). Thus, as long as you are connected to the internet network, the worksheet can be accessed from anywhere and does not require any costs to print it.

This E-LKPD learning tool was declared suitable for use in learning activities. The product feasibility review is based on assessments from material experts, media experts, and learning design experts. The assessment from material experts is seen from four aspects including the structure of the material presented, use of grammar, video explanation of the material and presentation. The e-LKPD developed is in accordance with the basic competencies, indicators and learning objectives to be achieved. The grammar, use of punctuation and spelling in contextually based interactive E-LKPD material are also correct. In terms of the learning videos presented, they are appropriate to the material and characteristics of the students. The assessment from a media expert perspective is seen from three aspects, namely screen design appearance, ease of use and usefulness. The screen design display on contextually based interactive E-LKPD has a harmonious composition and color combination. With a cover design that is balanced, attractive, and the layout of the text, title and images is correct. Apart from that, the use and size of the letters are clear and easy to read with appropriate supporting illustrations. Assessment from the perspective of learning design experts is seen from three aspects, namely objectives, strategy and evaluation. The objectives, materials and evaluation of contextually based interactive E-LKPD are also consistent. In terms of strategy, learning activities using contextually based interactive E-LKPD can motivate students. In the interactive E-LKPD, contextual examples are also provided in its presentation. And this E-LKPD can provide students with the opportunity to learn independently. This is certainly in line with Tasker's constructivist learning theory, one of which emphasizes the need for students' active role in constructing their knowledge meaningfully (Casfian et al., 2024; Djamaluddin & Wardana, 2019).

This E-LKPD learning tool is stated to be practical for use in learning activities. The presentation, color combinations and images used are very attractive to students. This is in accordance with Rosita's opinion which states the characteristics of children aged 7-11 years with emotional and intellectual development who like bright colors (Nareswari et al., 2021;

Suryana et al., 2022). For teachers, E-LKPD is also able to increase students' attention. For students, E-LKPD can make it easier for them to receive learning material, can motivate and make it easier for students to learn independently. In terms of use, E-LKPD is also easy to access and can help teachers make assessments of students' work results. The findings of the research results are also supported by previous research where the interactive LKPD based on live worksheets developed meets practical criteria and can provide a pleasant experience for students and achieve completeness (Susilawati et al., 2023; Khikmiyah, 2021).

This contextually based interactive e-LKPD, assisted by the liveworksheets website on mathematics content, was also declared effective in improving learning outcomes on angles and plane shapes for class III students at SD Negeri 5 Kampung Baru. First, E-LKPD applies contextual-based mathematics learning. Such learning provides students with meaningful learning experiences because it allows students to connect learning with real-world situations to develop their understanding and academic abilities (Fatimatuzzahrah & Fathurrohman, 2023; Vonna et al., 2022). Moreover, when students can relate the content of academic subjects to their own experiences, they will find meaning and this meaning gives them a reason to learn.

One of the characteristics of mathematics learning in elementary schools is that it still requires an inductive mindset, where examples are used to illustrate specific concepts before reaching more general concepts (Susanah, 2021). This is in accordance with the learning components contained in the contextual approach and has been used as a reference in the development of E-LKPD in this research. This learning device product was also designed based on the results of a needs analysis in the field with the aim of helping solve the problems faced by students. Such learning activities can certainly help students understand mathematics material so that it influences student learning outcomes.

Second, this E-LKPD is also designed with several interactive activities with the help of the liveworksheets website. Interactive activities on E-LKPD refer to a number of features and capabilities designed to enhance students' learning experience by enabling them to actively interact with learning materials and electronic learning tools. Such as activities of pulling and pasting several images, making connecting lines, placing tick marks and several other features (Le & Prabjandee, 2023). The insertion of learning activities in this way provides variety in learning activities and can attract students' attention so that when studying mathematics students no longer feel bored. This is supported by previous research which states that the liveworksheets website can be used by teachers to increase student learning activity (Khikmiyah, 2021; Susilawati et al., 2023). Interactive worksheets created with the help of liveworksheets, can also be integrated with videos and hyperlinks so that learning can certainly accommodate various student learning styles (Le & Prabjandee, 2023; Nareswari et al., 2021).

Third, the learning in the E-LKPD that has been developed has been adapted to learning objectives which refer to indicators of achieving basic competency in angles and plane shapes in class III elementary school. The learning indicators were developed taking into account cognitive levels from C2 to C6. Likewise, the multiple choice test instrument used to measure the improvement in students' mathematics learning outcomes has been adjusted, namely by using test questions at cognitive levels C2 (Understanding), C3 (Applying), C4 (Analyzing), C5 (Evaluating) and C6 (Create). These adapted learning activities and test instruments will certainly be able to train students' analytical, critical and creative skills because they contain High Order Thinking Skills (HOTS) based questions (Andarini, 2022; Saraswati & Agustika, 2020). In this way, the assessment carried out can be more comprehensive and thorough in evaluating students' ability to understand the material being taught. Empirically, the results of this research are supported by previous research which produced products in the form of LKPD based on live worksheets and structured

contextual-based learning with very valid categories with revisions, practical and potential effects for use in learning (Maghfiroh et al., 2023; Vonna et al., 2022). In this way, it is hoped that this development research can have implications for improving the quality of learning and optimizing the use of school-owned digital facilities so that they are more targeted and effective.

Although this research was successfully carried out, there were several limitations to this research. This limitation is due to lack of time and researcher ability. These limitations include the scope of material, level of material content, number of subjects, and supporting facilities used in implementing research products. The scope of material developed in contextually based interactive E-LKPD with the help of the liveworksheets website on mathematics content is only limited to mathematics learning content for class III, even semester, theme 8, sub-themes 1 and 2. Therefore, it is hoped that in future research we can carry out research with material and subject coverage. broader research.

4. CONCLUSION

Based on the results of the discussion above, it is believed that contextually based interactive E-LKPD learning tools assisted by live worksheet websites on mathematics content are one of the learning support innovations that can be developed. Apart from that, this product was also declared suitable and practical for use in learning and has the effectiveness of improving the learning outcomes of students in class III elementary school. The hope is that teachers can develop similar learning products. For students, contextually based interactive E-LKPD assisted by live worksheet websites on mathematics content can provide real experience in the surrounding environment, thereby increasing enthusiasm for learning and making it easier to understand the mathematics learning material being taught.

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