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Development of E-LKPD PjBL With the Insertion of Tri Hita Karana to Improve the Activeness and Learning Outcomes of Class III Elementary School Students

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ABSTRACT

The e-LPKD PjBL model with *Tri Hita Karana* (THK) insertion has not been developed, and student learning outcomes and learning activities are deficient. The purpose is: produce e-LKPD, determine the validity and practicality of the media, and explain the effectiveness of E-LKPD PjBL with THK NInsertion in Improving the Activeness and Learning Outcomes of Science Students. The data collection method is in the form of questionnaires and tests. The type of development research is with the ADDIE model. The study focuses on E-LKPD, with 20 students from grade III A, 22 from grade III B, and four teachers. The data analysis technique uses percentages, prerequisite analysis tests, and hypothesis tests. The results of the study are as follows: (1) E-LKPD is accessed in the form of a link, (2) the results of media validity are 94.38%, material validity is 93.84%, very valid, (3) the results of the practicality percentage are 89.99%, very practical. (4) The results of the effectiveness test obtained Pillai's Trace, Wilks'Lambda, Hotelling's Trace, and Roy's Largest Root values each have a statistical value of F = 83.776 and a significant figure of 0.001, this value is smaller than the significance level of 0.05 ($p < 0.05$). So, it can be concluded that there is an influence of learning activity and learning outcomes together between students who study with E-LKPD PjBL with THK insertion and without using e-LKPD. The implication for basic education is that it can implement THK with the Pjbl model.

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1. INTRODUCTION

PjBL, as a learning model that emphasizes student involvement in real projects, provides opportunities for students to actively learn, collaborate, and apply their knowledge in relevant contexts [1], [2]. PjBL has great potential; its implementation in many schools is

still limited. One of the main challenges in developing E-LKPD with the insertion of PjBL is the lack of adequate resources and infrastructure [3]. The limited learning resources that rely solely on the school's handbook, distributed to each student, underscore the urgency of developing digital learning media, namely electronic learner worksheets (E-LKPD) [3], [4], [5]. Many schools, especially in remote areas, face limited knowledge about designing e-LKPD with project insertion. Learning media in the form of books and printed LKPD/LKS are considered not to have varied [6], [7]. In addition, teachers often do not have sufficient training to design and use E-LKPD effectively in the context of PjBL

This results in an inability to utilize technology optimally in the learning process, thereby reducing the effectiveness of PjBL implementation in elementary schools [8]. The government has suggested implementing PjBL into the implementation of learning in elementary schools [9], [10]. The government suggested this because PjBL, when applied according to the characteristics of children in elementary school [11], [12]. PjBL is implemented in research and education to help learners learn to solve problems in their surrounding environment [13]. However, in elementary schools, they still teach by asking questions in the realm of knowledge alone, often ignoring the importance of developing students' learning activity [8].

The lack of support from schools and the government in integrating PjBL into the curriculum is also a barrier to the development of innovative E-LKPD [14]. LKPDs made by educators tend to be summaries of ordinary problem exercises. This is the cause of students being less interested in doing it, as the LKPD form does not include a work step and uses printed paper without contextual pictures that attract students' attention during learning [15]. Findings in educational institutions indicate that some of the LKPDs used are not digital-based and that there is a lack of interaction due to limitations in the use of technology [16]. The teaching materials presented in elementary school learning, especially e-lkpd, do not contain local wisdom values such as THK. This is because the teaching materials provided by students are government-designed, so they do not align with the characteristics of local wisdom [17].

Based on observations at SDN 10 Sanur South Denpasar, several obstacles were encountered in the learning of IPAS in grade III of elementary school, namely the lack of student learning activities. This can be seen when students do the tasks given by the teacher: they tend to be passive, unenthusiastic, and do not express their opinions. There is no student worksheet (LKPD) that can increase student learning activities and student learning outcomes. Based on the interview results, it was also found that obstacles existed, namely that teachers often lacked sufficient training to design and use E-LKPD effectively in the context of PjBL. Based on the results of the document study on the LKPD, students were not well integrated with local Balinese wisdom. The integration of Balinese local wisdom into elementary school learning can take the form of THK [18] teaching. Based on the recording of documents on the average learning outcomes of third-grade students at SDN 10 Sanur Denpasar, it was found that the average student learning outcomes were low, below the KKTP, at 70. Therefore, it is important to identify and address these problems so that E-LKPD with PjBL insertion can be implemented effectively [19] and improve learning quality

by increasing student learning activity. In addition, Bali, which is famous for its local wisdom, THK must remain in the classroom [20].

In learning in elementary schools, especially elementary schools in urban areas such as Denpasar, there are obstacles, namely the implementation of learning with insertion THK very minimally implemented, carried out only on certain content or material topics and because of the student environment in densely populated areas and a modern environment, even though THK is universal and can be applied to all material content, especially IPAS. THK will stimulate habituation in learning. Students will begin to get used to respecting each other's opinions and differences with their friends, thereby creating a harmonious classroom atmosphere [21]. [22], [23], [24], [25].

Therefore, developing e-lkpd PjBL with the insertion of THK in improving the Activeness and Learning Outcomes of Social Science for Grade III Students of SD N 10 Sanur Denpasar. The advantage of e-lkpd is that it provides guidance to involve students in various activities that develop their skills, creativity, and engagement [26]. Developing e-LKPD can create a learning process that is effective, efficient, and aligned with the learning objectives [27]. The purpose of this research is to create a design E-LKPD PjBL with insertion THK, analyze validity, analyze practicality, and obtain effectiveness in increasing student learning activity. This research has the latest design, which is designed with the canva application, can be accessed in print and electronically, and there are video tutorials to work on the project and are inserted THK.

2. METHOD

The research method is research and development. The research design, as applied to the ADDIE model, is as follows.

Figure 1. E-LKPD PjBL Development Design with THK Insertion through the ADDIE Model (Modified from: Tegeh et al., 2014)

The object of the research is the domino card media of diversity, while the subject of the research is the students of SD N 10 Sanur Denpasar, consisting of III A (20 people), III B (22 people), and four teachers as practitioners. The research instrument consists of a questionnaire on the validity of media, materials, practicality, small-group trials, and learning competencies, comprising 30 items that have been tested for validity and reliability. The multiple-choice test instrument consists of 20 questions that have been declared valid

and reliable, show good differentiation, are of good difficulty, and are deceitful in the good category.

Data analysis techniques include quantitative and qualitative methods. Quantitative by conducting an analysis prerequisite test consisting of normal, homogeneous, box's M, and multicorrelation test and hypothesis test to test the effectiveness of media on learning outcomes, learning activity, and simultaneously to measure learning outcomes and learning activity. Meanwhile, qualitative research was conducted to gather input from judges on media improvements.

3. RESULTS AND DISCUSSION

3.1. Results

Results of the design and construction of E-LKPD PjBL with Insertion THK. That is, at the design stage, it is created in Canva and then uploaded to Flip Builder, so it receives a link and can be accessed online. The result of the design and construction of the E-LKPD PjBL by means of THK is shown in the following table and figure.

Table 1. E-LKPD PjBL design with THK insertion

No.	Design	Description
1	Application	• Microsoft Word is used to compile the alignment of the content of the elkpd • Adobe Photoshop is used to edit photos (content). • Adobe Illustrator is used to prepare design assets for the LKPD, including shading elements and other assets. • Flip PDF converts precompiled lkpd files into flipbook files.
2	Steps	Step by step. • Determining the overall content of the elkpd • Prepare the content needed (photos) for the LKPD • Prepare designs for LKPD, such as backgroun, element designs, and other designs in Adobe Illustrator. • After all the design assets and content have been collected, compile the entire elkpd content in Microsoft Word. • Next, convert the compiled file to a flipbook in the PDF Flip application. • The last step is to upload the flipbook file to the Flippdf server so that it can be accessed online.
3	Specification	• The minimum specifications of computers and other devices needed to access flipbook files to run optimally are • Laptop/computer with 4GB RAM capacity and 50GB memory • Smartphone = the latest operating system of Android and ios

The image of the final product of E-LKPD PjBL by way of THK is shown in the following image.

Figure 1. E-LKPD PjBL Cover with THK Insertion and Barcode

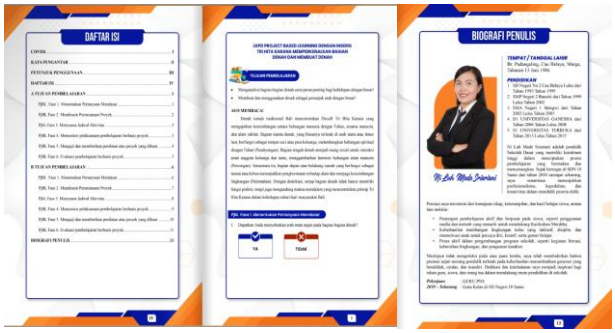

Figure 2. Table of Contents and Author Biography

The results of research and development include the results of the design and development of E-LKPD PjBL with THK Insertion in increasing the activity and learning outcomes of IPAS of Grade III elementary school students, including data on the validity of materials and media, data on the results of small group tests, data on practicality results, data on the results of post-test experimental groups and control groups.

Results of Validity of E-LKPD PjBL with **THK Insertion**

The results of the validity of the E-LKPD PjBL with THK Insertion that two experts have assessed are shown in the following table.

Table 3. Data on the Validity of E-LKPD PjBL with Insertion THK

No.	Aspects	Expert I	Expert II	Quantity	Percentage (%)
1	Text Message Design	27	29	56	45,16
2	Image Message Design	19	20	39	24,19
3	Organizing	15	14	29	23,38
	Quantity	61	63	124	100
	Percentage	45,92	48,46	-	-
Total Percentage Achievement Rate				94,38	

The validity results for the E-LKPD PjBL media with THK Insertion are 94.38% in the very valid category, suitable for use without revision. The results of the validity of the material on the Validity of E-LKPD PjBL with THK Insertion are shown in the following table.

Table 4. Data on the Validity Results of the E-LKPD Project Based on Validity Materials Learning with THK Insertion

Yes	Aspects	Expert I	Expert II	Quantity	Percentage (%)
1	Curriculum	14	14	28	22,95
2	Material	17	18	35	28,68
3	Evaluation	10	9	19	15,57
4	Language	20	20	40	32,78
	Quantity	61	61	122	100
	Percentage	46,92	46,92	-	-
Total Percentage Achievement Rate			93,84		

Results of the validity of E-LKPD materials PjBLwith Insertion THK, namely 93.84% in the category of very valid, suitable for use without revision. Results of Small Group Trials for E-LKPD PjBLwith Insertion THK. In a small-group trial with 10 students, the results are shown in the following table. The validity of e-LKPD is consistent with previous research, which found that THK-oriented LKPD for Grade V elementary school students is valid based on media and material tests [29]. The LKPD content aligns with the learning objectives. The feasibility of the presentation (learning objectives, learning outcome indicators, and activities) was rated as valid, with the material in the LKPD arranged sequentially and systematically [29], [30], [31], [32].

Practical Results of E-LKPD PjBL with THK Insertion

The practicality of E-LKPD PjBL with THK Insertion, as assessed by four classroom expert teachers, is shown in the following table.

Table 5. Data on the Results of the Practicality of E-LKPD PjBL with THK Insertion

Yes	Aspects	I	II	III	IV	Quantity	Percentage (%)
1	Attraction	18	16	16	18	68	26,98
2	Contents	14	13	14	13	54	21,42
3	Usage	14	14	14	14	56	22,22
4	Language	10	9	10	10	39	15,47
5	Evaluation	9	9	9	8	35	13,88
6	Quantity	65	61	63	63	252	100
7	Percentage (%)	23,21	21,78	22,5	22,5	-	-
8	Total Percentage (%)				89,99		

Results of the Percentage of practicality of E-LKPD PjBLwith Insertion THK 89.99 in the very practical category. The results of this research are in accordance with previous research, which states that E-LKPD, combined with interactive media and learning models, can improve student learning outcomes. Therefore, the researcher conducted research on the development of E-LKPD through a combination of PjBL-based E-LKPD, which has six stages: (1) Determining basic questions, (2) Designing project planning, (3) Preparing schedules, (4) Monitoring project progress, (5) Assessing results and (6) Evaluating experiences [33], [34]. The PjBL model is suitable for application at the elementary school level because it can train students to identify existing environmental problems and develop

solutions through the project they create. By involving students, they will be skilled in critical and creative thinking [35].

Data Analysis Results

The data analysis presented the results of the prerequisite test and the hypothesis test of the Effectiveness of E-LKPD PjBL with THK Insertion.

Results of the Analysis of the Prerequisite Test of the Effectiveness of E-LKPD PjBL with THK Insertion

The results of the analysis prerequisite tests include normality, homogeneity, the box'm test, and the multicollinearity test.

Table 6. Results of Normality Test Analysis of Activeness Data and Learning Outcomes

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Experimental learning activity	,170	20	,133	,938	22	,217
Experimental Learning Outcomes	,142	20	,200*	,942	22	,264
Activeness of Learning Control	,183	20	,077	,924	20	,120
Control Learning Outcomes	,098	20	,200*	,951	20	,383

The results of the normality tests for learning activity and learning outcomes were based on the Kolmogorov-Smirnov and Shapiro-Wilk tests, both with p-values> 0.05, indicating that both data sets are normally distributed.

Table 7. Results of Analysis of the E-LKPD PjBL Homogeneity Test with THK Insertion

No.	Homogeneity Test	Significance results
1	Learning Activity Based on Average	0,152
2	Learning Outcomes Based on Average	0,924

The results of the homogeneity test of activeness and interest in learning were tested using a statistical test for homogeneity, with the p-value for both data > 0.05, indicating that the data are homogeneously distributed.

The use of MANOVA also requires a test of homogeneity of variance matrices, performed with the Box's M test in SPSS 26.0 for Windows. The results of the variance-covariance matrix homogeneity test are presented in Table 8.

Table 8. Results of Box's M Homogeneity Test Analysis

Box's M	7.361
F	2.320
df1	3
df2	420219.242
Sig.	.073

Based on Table 8, the value F = 2.320 has a significance value of 0.073. The significance figure was greater than 0.05 (p > 0.05). This shows that the variance-covariance matrix between dependent variables is not different, in other words. So, the variance matrix for the variables of activity and learning outcomes is the same (homogeneous). The results of the multicollinearity test aim to determine whether there is a relationship between two bound variables. Multicollinearity can be assessed using Pearson's correlation in SPSS 26.0 for Windows. The Pearson Correlation value (r) is 0.241 with a significance value of 0.124. The correlation value was smaller than 0.8, and the significance value was greater than 0.05 (p > 0.05). This shows that the correlation value between the activeness variable and learning outcomes is not significant. Thus, it can be concluded that there is no correlation between the variables of activity and learning outcomes, or that multicollinearity does not occur.

Results of Effectiveness Test Analysis

The first hypothesis test used the one-way ANOVA formula in SPSS 16.00 for Windows. The test criterion is that if the value of F is significant at the 0.05 level, then H0 is rejected; this means that there is an influence of E-LKPD PjBL on student learning activity with the insertion of THK.

Table 9. Results of the First Hypothesis Test Analysis

Variable		Sum of Squares	Df	Mean Square	F	Sig.
Activeness of learning	Between Groups	19815,287	1	19815,287	45,155	,001
	Within Groups	17553,118	40	438,828		
	Total	37368,405	41			

Based on Table 9, a value of F = 45.155 with a significance of 0.001, which is less than 0.05; thus, H0 is rejected. This means that there is an influence of E-LKPD PjBL with THK insertion on student learning activity.

The second hypothesis test uses the one-way ANOVA formula in SPSS 16.00 for Windows. The test criterion is that if the value of F is less than 0.05, then H0 is rejected; this means that there is an E-LKPD PjBL with the insertion of THK on the Learning Outcomes of elementary school students.

Table 10. Results of the analysis of the second hypothesis test

		Sum of Squares	df	Mean Square	F	Sig.
Learning outcomes	Between Groups	5841,564	1	5841,564	36,323	,001
	Within Groups	6432,841	40	160,821		
	Total	12274,405	41			

Based on Table 10, a value of F = 36.323 with a significance of 0.001, which is less than 0.05; thus, H0 is rejected. This means that there is an influence of E-LKPD PjBL on the learning outcomes of elementary school students with the insertion of THK.

The third hypothesis test was carried out using the MANOVA formula with Wilks' Lambda analysis in SPSS 16.00 for Windows. The calculation was carried out using SPSS 16.00 for Windows with a significance level of 5%. If the significance level is less than 0.05, then the null hypothesis is rejected, meaning that there is a simultaneous difference in the bound variables between groups.

Table 11. Results of the Third Hypothesis Analysis

Effect		Value	F	Sig.
Classes	Pillai's Trace	,811	83.776b	,001
	Wilks' Lambda	,189	83.776b	,001
	Hotelling's Trace	4.296	83.776b	,001
	Roy's Largest Root	4.296	83.776b	,001

The conclusion of this hypothesis test was made based on the F analysis of Pillai's Trace, Wilks'Lambda, Hotelling's Trace, and Roy's Largest Root analysis. If all four have an F value with a significance of less than 0.05, then H_0 is rejected, and H1 is accepted. Based on the multivariate test, as presented in Table 4.11, it can be interpreted that the statistical values of Pillai's Trace, Wilks'Lambda, Hotelling's Trace, and Roy's Largest Root each have a statistical value of F = 83.776 and a significant number of 0.001 is smaller than the significance level of 0.05 ($p < 0.05$) thus H_0 is rejected and H1 is accepted. So, it can be concluded that there is an influence of the learning activity and learning outcomes on students who study with E-LKPD PjBL with THK insertion and without using e-LKPD.

3.2. Discussion

E-LKPD PjBL with THK Insertion Increases Learning Activity

The results of this study are in accordance with previous research, which stated that the use of LKPD PjBL-based Digital is a manifestation of technology use in the context of education, providing relevant and appropriate means for the times. The main advantage of E-LKPD PjBL lies in the ease of access for both teachers and students, aligning itself with the demands of the times [36], [37], [38]. On the E-LKPD platform, learning materials are presented in multimedia, integrating pictures, videos, and interesting questions to work on. This not only increases the attractiveness of learning but also increases learning activity [39], [40].

E-LKPD PjBL with THK Insertion Improves Learning Outcomes

The results of this study are in line with previous research indicating that project-based learning (PBL) holds promise for education, especially as a method to improve 21st-century skills and a connected worldview [41], [42]. The use of LKPD with THK content can serve as an innovative learning solution, applicable in online or direct learning. The use of THK-based e-LKPD can serve as a teaching material for elementary school learning, thereby improving learning outcomes [43]. There is integration of THK values. THK is a Hindu-Balinese philosophy that emphasizes harmony between humans and God (Parahyangan), humans and humans (Pawongan), and humans and the environment (Palemahan). This

integration aims to improve student learning outcomes through a holistic, creative, and contextual approach, especially in areas with strong Balinese cultural roots [21], [44].

E-LKPD PjBL with THK Insertion Increases Activeness and Learning Outcomes

The results of the study are supported by previous research, which states that E-LKPD, or Electronic Student Worksheets, is a teaching material and an interactive medium that supports learning. The PjBL model leads to the development of positive attitudes and important interpersonal skills. This includes effective interaction during project presentations, teamwork, perseverance, and creative thinking. The advantage of E-LKPD is that it is easier and more flexible, and can be used anywhere, thereby improving learning outcomes and student activities [8], [45]. The students not only acquire technical and soft skills through a project-based learning approach, but also propose sustainable solutions to real-world problems, many of which have been fully implemented or developed. Overall, students feel more motivated and motivated to do a good job, driven by recognition of the social or environmental impact of their work. Perceived ethical values contribute to the learning experience [46], [47], [48].

4. CONCLUSION

There was an influence of the learning activity and learning outcomes, and of activity and learning outcomes together, on students who studied with E-LKPD PjBL with THK insertion and without using E-LKPD. The advantage of E-LKPD PjBL with THK Insertion is that it can be accessed anywhere, anytime; it contains Balinese local wisdom that is universal, does not consume storage space, and is equipped with learning videos. Suggestions for future research to develop E-LKPD with a broader range of IPAS materials. The theoretical contribution is that science learning materials in elementary schools are closely related to Balinese local wisdom, such as caring for and preserving the universe. Implications for students include the ability to create projects that integrate THK's local wisdom. Implementation in the curriculum includes structuring learning through PjBL stages and incorporating local wisdom from THK.

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