



Learning Innovation Through the Development of CRT-Based E-LKPD to Train Elementary School Students' Understanding of Concepts and Creativity

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Abstract: This research was motivated by the limited availability of teaching materials in schools and their insufficient alignment with students' learning needs, which has contributed to the low level of students' creative thinking skills. Therefore, this study aimed to develop a Culturally Responsive Teaching (CRT)-based E-LKPD for Indonesian language learning to enhance elementary school students' conceptual understanding and creative thinking skills. The developed product was evaluated in terms of its validity, effectiveness, and attractiveness. Product validity was determined through expert validation, while its effectiveness was assessed based on students' conceptual understanding and creative thinking test results. This study employed a research and development (R&D) approach using the 4D model, which consists of the define, design, develop, and disseminate stages. The results of the study show that the percentage of validity of E-LKPD based on learning design validation is 91.7%, teaching material validation is 93.3%, and material validation is 91.7%, all of which are included in the very valid category. The effectiveness is reviewed from the creativity of students classically reaching 100% of students in the minimum creative category, and the completeness of learning outcomes classically reaches 100% with complete criteria. The attractiveness was reviewed from the teacher's response obtained a percentage of 96.7%, while the student response reached 95%, both in the very interesting category. Based on these findings, it was concluded that E-LKPD teaching materials based on Culturally Responsive Teaching in Indonesian language learning to train the understanding of concepts and creative thinking skills of elementary school students were declared valid, effective, and interesting.

Keywords: E-LKPD; Culturally Responsive Teaching; Concept Understanding; Creative Thinking.

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Introduction

The rapid development of technology in the digital era has brought significant changes in various fields, including education. The integration of technology in learning is no longer seen as a complement, but has become a necessity to support the creation of an effective, interactive, and appropriate learning process in accordance with the characteristics of 21st-century students (Chafshah et al., 2024). The use of

technology provides opportunities for teachers to provide more diverse learning resources, facilitate students' active participation, and create more meaningful learning experiences. Therefore, technology-based learning innovations need to be developed as an effort to answer various increasingly complex educational challenges.

The use of technology in learning also needs to be balanced with learning design that considers the context

of students' lives. Learning that is only oriented to delivering material in the abstract tends to make it difficult for students to construct their understanding. On the other hand, contextual learning is able to connect material with experiences, social environments, and cultures that are close to students' lives so that the learning process becomes more relevant and meaningful. According to Ladson & Billings in (Gustiwi, 2017), Culturally Responsive Teaching is a learning approach that emphasizes the importance of students' cultural background in every aspect of the learning process. In this context, the Culturally Responsive Teaching (CRT) approach can be used as an alternative learning because it makes the students' cultural background a learning resource. Through this approach, students not only gain a better understanding of concepts, but also have the opportunity to increase confidence, active involvement, and appreciation for their cultural diversity. In addition, according to Saliya et al., (2024) that the Culturally Responsive Teaching Approach has proven to be effective in gradually increasing students' learning creativity. The application of this approach is able to significantly encourage student participation and involvement in the learning process.

In learning Indonesian in elementary school, understanding concepts and creativity are two important aspects that need to be developed in a balanced manner (Faradiba, 2024). Learning Indonesian language not only aims to shape students' language skills, but also develop the ability to think, express ideas, and produce works creatively. One of the materials that has the potential to develop both aspects is poetry. Through poetry learning, students are expected to be able to understand the elements that build poetry, interpret the meaning contained in it, and express their ideas, feelings, and imagination in the form of original works. However, the implementation of poetry learning in elementary schools still faces various obstacles so that these goals have not been achieved optimally.

Based on the results of observations in the field, several problems were found in learning the Indonesian language, especially in poetry materials. Student creativity is still relatively low, which can be seen from the tendency of students to imitate the results of their friends' work when working on project assignments rather than developing ideas independently. In addition, the teaching materials used in schools are still limited to books provided by the government, which present poetry material in general and do not fully accommodate the characteristics, learning styles, and cultural backgrounds of students. This condition causes students to have difficulty relating the material to real experiences so that engagement in learning and opportunities to explore creative ideas are less than

optimal. This finding is strengthened by the results of the initial creativity test which shows the achievement of creative thinking indicators in the aspects of fluency of 75%, flexibility 50%, elaboration 40%, and originality of 25%. Although research on the development of E-LKPD and the application of Culturally Responsive Teaching has been carried out, research that integrates the two in Indonesian language learning, especially poetry materials in elementary schools to improve students' understanding of concepts and creative thinking skills, is still limited. Therefore, this study developed E-LKPD based on Culturally Responsive Teaching as an alternative teaching material that suits the learning needs of students.

The ability to think creatively is becoming increasingly important considering that creativity is one of the essential competencies needed in the 21st century. This ability allows students to produce various alternative solutions, adapt to changes, and create innovations in dealing with various problems (Muslimin, 2023). Therefore, the learning process at school needs to pay attention to learning experiences that are able to facilitate the growth and development of creativity from the elementary education level. Innovatively designed learning is not only material-oriented, but also provides space for students to explore ideas, imagine, collaborate, and express their thoughts independently.

One of the solutions that can be offered is the development of teaching materials in electronic format that are not only relevant to current technological developments, but also able to provide space for students to explore their creative ideas. Furthermore, electronic teaching materials designed by integrating the Culturally Responsive Teaching approach can provide poetry writing materials that are interactive, and close to students' real lives. This is in line with the principle of differentiated learning, creating synergies that allow students to explore and utilize their potential more broadly while encouraging the development of creative thinking skills as an important provision in facing the challenges of the 21st century (Diarrhea, 2024).

Based on these conditions, learning innovations that are able to integrate technology, student characteristics, and cultural context are needed in one meaningful learning unit. E-LKPD based on Culturally Responsive Teaching is a relevant alternative to be applied to learning Bahasa Indonesia because it can connect the material with students' cultural experiences while facilitating active involvement in the learning process. Through this approach, learning is expected not only to increase the understanding of material concepts, but also to train the creativity of elementary school students.

Method

This research is a type of research development (R&D). According to Sugiyono (2022), research and development (R&D) is a method used by researchers to design, produce, or improve a product, then assess its effectiveness. Development procedure using Thiagarajan's 4D (Four-D) development model in (Mulyatiningsih, 2019). This 4D model consists of four stages including define, design, develop, and disseminate. In the Define stage, the researcher determines the type of product to be developed along with its characteristics and specifications based on the results of curriculum analysis, student needs analysis, material analysis, and the formulation of learning objectives. Next. The Design stage is carried out by compiling the initial design of the product which includes the preparation of assessment instruments, the selection of appropriate teaching materials, the determination of the presentation format, and the preparation of the initial design of the E-LKPD. The next stage is Development, where the researcher realizes the design that has been made into a product that is ready to be tested, then validates it by experts and tests the implementation to obtain input and refine the product to meet the expected criteria. The last stage is Disseminate, which is done after the product has been declared valid, effective, and interesting.

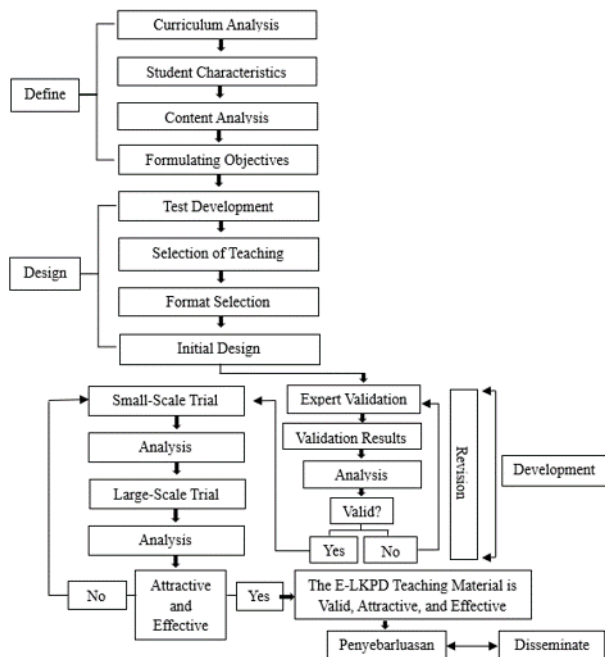


Figure 1. Research Procedure

The subjects used in this study are expert validators consisting of 3 people (Lecturers), including learning material experts, learning design experts, and teaching material experts. In addition, there are other subjects used to measure effectiveness and

attractiveness, namely grade IV teachers and grade IV students of SDN Banyuajuh 3 totaling 20. The data collection techniques in this study were carried out by interviews, observations, tests, and questionnaires. The research instruments used were interview sheets, expert validation sheets for teaching materials, validation sheets for learning material experts, learning design validation sheets, learning outcomes tests for concept understanding, tests for student creativity results, teacher response questionnaires, and student response questionnaires.

In this study, the data analysis techniques applied include qualitative and quantitative approaches as the basis for processing and analyzing the data that has been collected. According to Mesra et al., (2023)) In development research, the data processing process is generally carried out by combining qualitative and quantitative data analysis. Qualitative analysis techniques are used to process information in the form of input, criticism, and comments. In this study, qualitative data is in the form of narrative descriptions obtained from various sources, such as expert assessments (material experts, teaching material experts, and learning design experts), teacher and student responses, observation sheets, and interview results with teachers. Meanwhile, quantitative data analysis is used for the processing of numerical data obtained through various research instruments, such as expert validation scores, learning outcomes, creativity results, and teacher and student response questionnaires. This analysis serves to calculate the level of validity, effectiveness, and attractiveness of the developed product.

Table 1. Criteria for validity, effectiveness, and attractiveness

No.	Criteria	Categories
1	$81.25\% \leq \text{Score} \leq 100\%$	Highly Valid, Effective, Attractive
2	$62.5\% \leq \text{score} < 81.25\%$	Valid, Effective, Attractive
3	$43.75\% \leq \text{score} < 62.5\%$	Less Valid, Effective, Attractive
4	$25.00\% \leq \text{score} < 43.75\%$	Invalid, Effective, Attractive

(Source: Akbar, 2022; Researcher Modification)

The table presents the percentage interpretation criteria used to determine the level of validity, effectiveness, and attractiveness of E-LKPD. These criteria are a reference in interpreting the results of the assessment from the validators, the learning outcomes and the results of student creativity, as well as the response of teachers and students to the developed product. Thus, the quality of E-LKPD can be objectively

determined based on the categories that have been determined.

Result and Discussion

Validity of E-LKPD Teaching Materials

At this stage, an assessment was carried out by experts to test the validity of E-LKPD products based on *Culturally Responsive Teaching* in Indonesian language learning before being tested. The results of the assessment are used as a basis for revision to improve aspects of teaching materials, materials, and learning design to suit user needs. The validation process involves three validators, namely teaching material experts, learning material experts, and learning design experts.

Learning Design Validation

Validation of learning design experts is carried out to assess the validity of the teaching module design as a reference for learning implementation. This stage aims to ensure the suitability of design components, such as objectives, activity steps, approaches, models, and assessments in accordance with the characteristics of the developed E-LKPD so that it can be used effectively and systematically. The results of the assessment from the learning design experts are presented as follows.

Table 2. Learning Design Validation Results

Yes	Aspects	Score
1	Completeness of teaching module components	8
2	Suitability of learning objectives	10
3	Suitability of learning activities	11
4	Suitability of the steps of the approach and learning model activities	8
5	Assessment suitability	8
6	Project task suitability	10
Total Score obtained		55
Maximum score		60

The score is then calculated using a validity formula to determine the percentage of the product's validity rate.

$$Vah = \frac{Tse}{Tsh} \times 100\%$$

$$Vah = \frac{55}{60} \times 100\%$$

$$Vah = 91,7\%$$

Remarks

Vah : Expert validation

Tse : Total score obtained

Tsh : maximum total score

Validation of Teaching Materials

Validation of teaching materials is carried out to assess the validity of the components in the developed E-LKPD. This activity aims to test the validity level of teaching materials as well as identify parts that need to be revised or improved. The validation results are used as a basis for improvement so that a valid and suitable E-LKPD can be obtained, so that it can be continued at the target trial stage.

Table 3. Results of Validation of Teaching Materials

Yes	Aspects	Score
1	Suitability of teaching material components	11
2	Suitability of student characteristics	11
3	Suitability of E-LKPD activities with learning	15
4	Suitability of assessment presentation	8
5	Language use	11
Total Score obtained		56
Maximum score		60

The score is then calculated using a validity formula to determine the percentage of the product's validity rate.

$$Vah = \frac{Tse}{Tsh} \times 100\%$$

$$Vah = \frac{56}{60} \times 100\%$$

$$Vah = 93,3\%$$

Remarks

Vah : Expert validation

Tse : Total score obtained

Tsh : maximum total score

Validation of Learning Materials

Validation by learning material experts is carried out to assess the validity of the content of the material presented. This process aims to ensure that the material in E-LKPD is in accordance with the depth of the material in the learning objectives that have been formulated.

Table 4. Learning Material Validation Results

Yes	Aspects	Score
1	Suitability of the material with the curriculum	14
2	Suitability of the material with student development	12
3	Material suitability to time allocation	4
4	Suitability of the material with the characteristics of the student	18
5	Concept of material preparation	7
Total Score obtained		55
Maximum score		60

The score is then calculated using a validity formula to determine the percentage of the product's validity rate.

$$Vah = \frac{Tse}{Tsh} \times 100\%$$

$$Vah = \frac{55}{60} \times 100\%$$

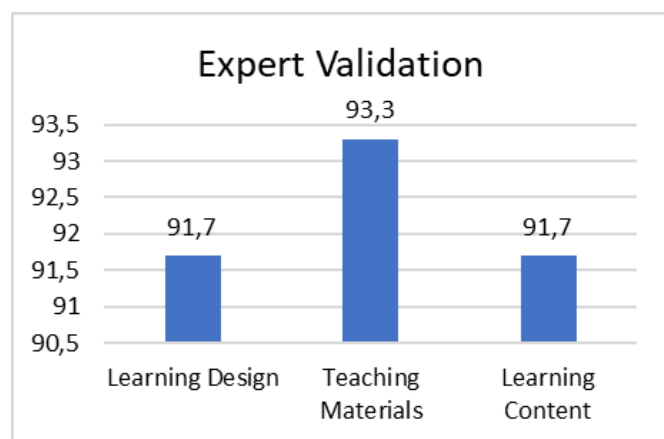
$$Vah = 91,7\%$$

Remarks

Vah : Expert validation

Tse : Total score obtained

Tsh : maximum total score

**Figure 2.** Expert Validation Results**The Effectiveness of E-LKPD Teaching Materials**

The effectiveness of E-LKPD based on Culturally Responsive Teaching was reviewed through indicators of learning outcomes and processes. Outcome indicators include learning outcomes and student creativity after participating in learning, while process indicators are reviewed from teacher activities and student activities during the implementation of E-LKPD. The analysis of these two indicators provides an overview of the

effectiveness of E-LKPD in the Indonesian language learning process in elementary schools.

Learning Outcomes

The learning outcome test is used as an instrument to measure the effectiveness of student learning after the use of Culturally Responsive Teaching-based E-LKPD teaching materials in Indonesian subjects. Measurement is carried out through an objective test in the form of 10 multiple-choice questions given at the end after the entire learning series is completed. The learning completeness criteria refer to the standard Learning Goal Achievement Criteria (KKTP) that applies in schools, which is 70. The results of the student learning test are presented in the following section.

Table 5. Student Learning Test Results

Remarks	Conclusion	Incomplete
Number of Students	20	0
Average		84,5

Based on the results of the analysis, all students have achieved scores above the KKTP so that they are included in the complete category. Furthermore, the percentage of classical learning completeness is calculated using the following formula.

$$KK = \frac{\sum ST}{JS} \times 100\%$$

$$KK = \frac{20}{20} \times 100\%$$

$$KK = 100\%$$

Description :

CD : Classical Learning Completeness

$\sum ST$: Number of students completed

JS : Number of students

Creativity Results

The student creativity test is used as an instrument to assess the effectiveness of learning in practicing creative thinking skills after the application of E-LKPD teaching materials based on Culturally Responsive Teaching in Indonesian subjects. Creativity assessment refers to the indicators of creative thinking that have been set. The results of the student creativity test are presented in the following section.

Table 6. Results of Student Creativity

Remarks	Very Creative	Creative	Less Creative
Number of Students	14	6	0
Average Score	82,2		

The determination of creativity refers to the criterion of creativity percentage, students are declared creative if they get a score of ≥ 62.5 . Furthermore, the percentage of creativity is classically calculated using the following formula.

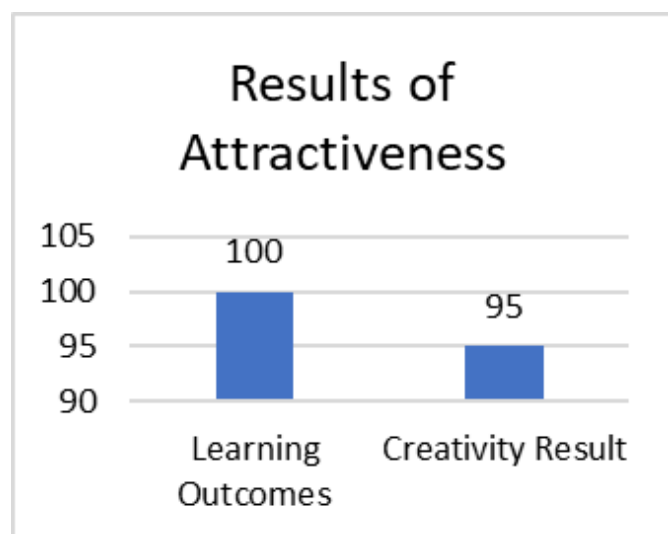
$$Kk = \frac{\sum SK}{JS} \times 100\%$$

$$Kk = \frac{20}{20} \times 100\%$$

$$Kk = 100\%$$

Description :

CD : Classical Creative Criteria
 $\sum SK$: Number of creative students
 JS : Number of students

**Figure 3.** Effectiveness Results**The Attractiveness of E-LKPD Teaching Materials**

The attractiveness of the products in this study was reviewed from the responses of teachers and students after using E-LKPD in learning Bahasa Indonesia. Analysis of user responses was carried out to obtain an overview of the attractiveness of E-LKPD, both in terms of appearance, ease of use, and benefits in supporting the learning process. Thus, the results of the teacher and student response questionnaire can be used

to assess the extent to which E-LKPD is able to create an interesting and meaningful learning experience.

Teacher Response Questionnaire

A response questionnaire was given to the teacher after all learning activities were completed. This instrument is used to assess the level of attractiveness of E-LKPD based on *Culturally Responsive Teaching* in Indonesian language learning.

Table 7. Results of the Teacher Response Questionnaire

No.	Name	Score obtained
1.	Classroom Teacher	58
Maximum score		60

Furthermore, the data is analyzed using the following formula for calculating the percentage of attractiveness.

$$Arg = \frac{Tse}{Tsh} \times 100\%$$

$$Arg = \frac{58}{60} \times 100\%$$

$$Arg = 96,7\%$$

Description :

Arg : Results of the teacher's response questionnaire
 Tse : Total score obtained
 Tsh : maximum total score

Student Response Questionnaire

The response questionnaire was distributed to students after the implementation of learning using E-LKPD based on *Culturally Responsive Teaching* in Indonesian subjects.

Table 8. Student Response Survey Results

Student Response Questionnaire	Value
Score obtained	761
Maximum score	800

Furthermore, the data obtained was analyzed using the following attractiveness formula:

$$Ars = \frac{Tse}{Tsh} \times 100\%$$

$$Ars = \frac{761}{800} \times 100\%$$

$$Ars = 95\%$$

Description :

Ars : Results of student response questionnaire

Tse : Total score obtained

Tsh : maximum total score

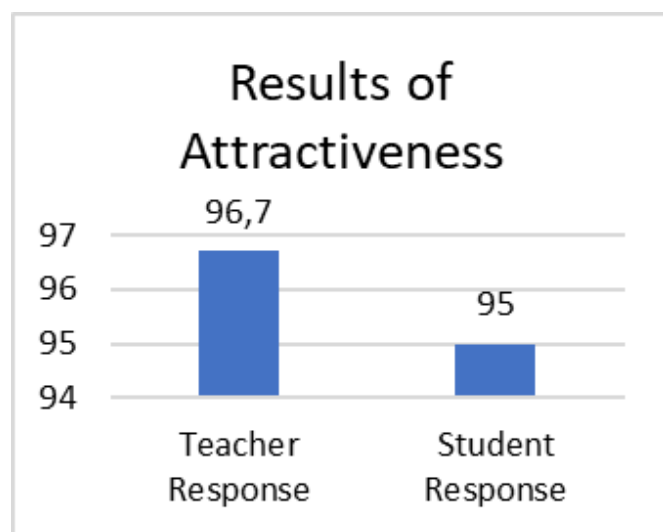


Figure 4. Results of Attractiveness

Validity of E-LKPD Teaching Materials

The validation of the learning design obtained a score of 91.7% with a very valid category. This achievement shows that the learning design developed has met the validity criteria and is suitable for use in learning Bahasa Indonesia. This validity is supported by the integration between teaching modules, learning activities, and assessments that are systematically prepared and aligned with the learning objectives. The formulation of clear and measurable learning objectives facilitates the process of evaluating the achievement of student competencies, both in terms of material understanding and creativity. Principle integration *Culturally Responsive Teaching* with model *Project Based Learning* enabling the creation of contextual, meaningful, and encouraging students' active involvement in the learning process. These findings are in line with Malikah (2023), which states that learning design must contain an integration of objectives, strategies, and evaluations, and be supported by research results Saliya et al. (2024), which shows that the integration of CRT and PjBL is able to improve the quality of students' learning experience.

The validation of learning materials obtained a score of 91.7% with a very valid category. These results show that the material developed has met the aspects of content accuracy, suitability with learning objectives, depth of material, and relevance to student characteristics. The presentation of material that is close to students' lives helps to connect academic concepts with the reality they encounter, so that learning becomes

more meaningful. In addition to supporting the understanding of the material, the presentation provides a space for students to explore ideas and develop creativity in writing poetry. These findings are in line with Saliya et al. (2024), which emphasizes the importance of material that is relevant to the student's experience, and supported by Irpan et al. (2024), which states that the integration of local culture is able to increase the meaning of learning.

In the validation of teaching materials, a validation score of 93.3% was obtained with a very valid category. These results show that the teaching materials have met the validity criteria from component aspects, suitability with student characteristics, learning activities, and language use. E-LKPD is systematically prepared through complete components, ranging from learning objectives, instructions for use, learning activities, to evaluation instruments that are in line with the intended competencies. The suitability of these components allows the E-LKPD to function not only as a learning resource, but also as a guide that helps students build a gradual understanding of the material. In addition, the preparation of learning activities that follow the *Culturally Responsive Teaching* stage provides a more targeted learning experience and in accordance with the needs of students. The use of clear, communicative, and appropriate language in accordance with the level of development of students also supports the effectiveness of the delivery of material during learning. These findings are in line with Cosmic (2021), which states that good teaching materials must be systematic, communicative, and relevant to the learning objectives, and supported by Magdalena et al. (2020), which emphasizes the importance of matching teaching materials to the characteristics and learning needs of students.

The Effectiveness of E-LKPD Teaching Materials

Student learning outcomes show a high percentage of student learning outcomes, which is 100% of students achieve the learning completeness that has been set, so it is in the "complete" category, which indicates that the student has reached the level of completeness set by the teacher. In accordance with the statement Efendi (2025), which states that the completeness of learning outcomes can be used as a reference in determining the effectiveness of the product developed. These achievements show that learning objectives have been effectively realized. In addition, students also show high enthusiasm and active involvement during the learning process. These findings are in line with opinion Apreasta et al. (2023) which states that the use of E-LKPD can improve student learning outcomes because it is able to facilitate more structured and interactive learning activities. Thus, the

use of E-LKPD teaching materials plays an important role in improving learning outcomes while encouraging active student participation in the classroom.

In addition, the Creativity Results show that 100% of students have reached the minimum creative category. Students are able to generate ideas smoothly, both in expressing ideas and responding to learning stimuli. This is in line with the statement Andini et al., (2022) that the use of E-LKPD can support students in exploring and producing ideas independently. Furthermore, it is the ability of students to develop a variety of ideas, viewpoints, and alternative solutions in a variety of ways. In line with this, Efendi (2025) mentioned that the use of E-LKPD that is integrated with local culture can provide opportunities for students to develop their creativity. Students have been able to detail and enrich ideas by adding relevant details, although they still need reinforcement so that the development of ideas becomes more in-depth and systematic. Students are able to produce original and varied ideas. Overall, the achievements in these four aspects show that E-LKPD based on *Culturally Responsive Teaching* is effective in developing students' creative thinking skills comprehensively, especially in encouraging the emergence of original ideas and expanding the diversity of ways of thinking through the integration of cultural context and students' real experiences.

The Attractiveness of E-LKPD Teaching Materials

The results of the analysis of the teacher's response questionnaire showed that E-LKPD was based on *Culturally Responsive Teaching* obtained a percentage of 96.7% with the category of very interesting, while the student's response obtained a percentage of 95% with the same category. From the teacher's perspective, the level of attractiveness of E-LKPD is supported by the ease of access and use of products during learning. This convenience provides flexibility in the use of teaching materials and supports student involvement in learning, as stated by Apreasta et al. (2023) that an easily accessible E-LKPD can increase students' motivation to learn. In addition, the teacher assessed that the integration of local culture in the poetry material made learning more contextual and relevant to the students' experience. This finding is in line with Saliya et al. (2024) who stated that integrating local culture is able to increase the meaning and attractiveness of learning. From a student's perspective, the attractiveness of E-LKPD is supported by attractive visual design, the use of images and videos, and the presentation systematics that are easy to follow. These conditions are in accordance with the opinion Cosmic (2021) which emphasizes that teaching materials need to be presented with an attractive appearance and in accordance with

the characteristics of students. In addition, project-based activities contained in E-LKPD provide opportunities for students to actively participate and express creativity in writing poetry. This is in line with Prastowo (2015), which states that E-LKPD functions as a teaching material that is able to encourage student activity in the learning process.

Overall, the results of teacher and student responses show that E-LKPD based on *Culturally Responsive Teaching* has a very high level of attractiveness. This attractiveness is not only influenced by the visual aspects and ease of use, but also by the ability of E-LKPD to provide contextual learning through the integration of local culture and activities that encourage active student participation. Thus, the developed E-LKPD is able to create a more meaningful, fun, and in accordance with the characteristics of elementary school students.

Conclusion

Based on the results of the research, E-LKPD based on *Culturally Responsive Teaching* has been proven to be a valid, effective, and attractive Indonesian language learning innovation for elementary school students. The validity of the product is shown by the results of the assessment of learning design experts, teaching material experts, and material experts who obtained percentages of 91.7%, 93.3%, and 91.7%, respectively, so that it meets the criteria of being very valid. E-LKPD has also been proven to be effective in increasing students' creativity and learning outcomes, which is shown by 100% of students being in the creative category and the completeness of cognitive learning outcomes classically reaches 100%. In addition, the level of attractiveness of E-LKPD is classified as very high based on the positive response of teachers of 96.7% and students of 95%. By integrating local culture into poetry materials, E-LKPD is able to create more contextual, meaningful, and fun learning and support the optimal development of students' understanding of the material and creativity.

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