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Development of LKPD Based on Contextual Teaching and Learning (CTL) to Increase Learning Motivation in Algebra Form Material for Class VII MTs Thawalib Tanjung Limau Students

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Abstract. The purpose of this study is to create a product that is CTL-based LKPD to increase students' learning motivation that is valid, practical, and effective. This study uses the Research and Development research method with a 4-D model, which has 3 stages, namely the define, design, and develop stages. The validation sheet, student response questionnaire, and learning motivation questionnaire served as instruments in this study. The data analysis technique used was the percentage formula for validity and practicality analysis, while the N-Gain formula was used for effectiveness analysis. The results of this research show that the CTL-based LKPD design designed is valid, practical, and effective.

Key Words: LKPD, Contextual Teaching and Learning, Learning Motivation.

1. Introduction

Learning motivation is a term often used to indicate the success or failure of almost any complex task. Rahman (2021) explains that learning motivation is a state in which a person desires to do something to achieve a learning goal, which serves as a driving force for achieving better results.

A person will engage in an activity because they are motivated. Through direct observation, research results show that most students with strong learning motivation are diligent, persistent, and read diligently to improve their learning outcomes and solve problems. Conversely, students with low learning motivation appear indifferent, easily discouraged, and unfocused, resulting in learning difficulties. Safitri et al. (2025) found a lack of motivation in learning Algebra among Phase D students. Hasna et al. (2025) revealed low learning motivation among students in integers. The results of a preliminary study on student learning motivation at MTs Thawalib Tanjung Limau also showed the same thing (see Table 1).

Table 1. Learning Motivation Questionnaire Results

Number of Students	Category		
	Low	Moderate	High
36	22,22%	63,88%	13,88%

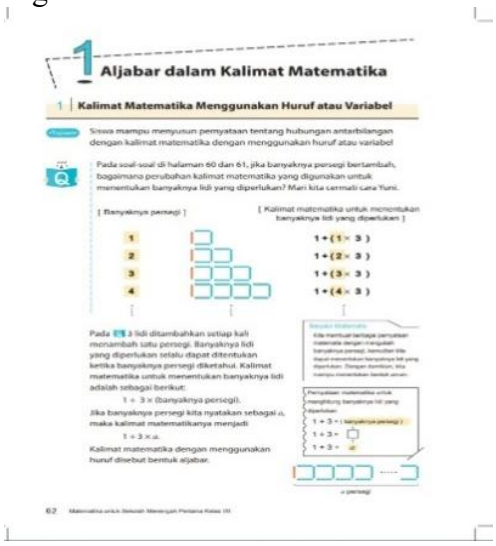
(Source: Data processed independently from validated questionnaires)

Based on Table 1, student learning motivation for mathematics is predominantly in the moderate category. The percentage of students with low learning motivation is higher than that of students with high learning motivation. Thus, student motivation in mathematics is still relatively low.

Factors contributing to low student motivation include the student's desire, proficiency, circumstances, local environment, dynamic elements in education, and the teacher's teaching

methods (Niswah & Malasari, 2023). Furthermore, the lack of additional learning resources is another factor that can contribute to low learning motivation. This finding aligns with the research of Hatimah et al. (2024), who noted that the provision of additional learning resources can facilitate students' in-depth learning outside of class hours and support their independent learning development.

Based on preliminary studies and interviews conducted at MTs Thawalib Tanjung Limau, it can be inferred that students are not very motivated to learn mathematics. The low learning motivation of students is caused by the limited learning resources provided at school, which are only used when learning mathematics. Apart from that, each student cannot take home these learning resources, as shown in Figure 1.


1 Aljabar dalam Kalimat Matematika

1 | Kalimat Matematika Menggunakan Huruf atau Variabel

Siswa mampu menyusun pernyataan tentang hubungan antarbilangan dengan kalimat matematika dengan menggunakan huruf atau variabel

Pada soal-soal di halaman 60 dan 61, jika banyaknya persegi bertambah, bagaimana perubahan kalimat matematika yang digunakan untuk menentukan banyaknya lidi yang diperlukan? Mari kita cermati cara Yuni.

[Banyaknya persegi] [Kalimat matematika untuk menentukan banyaknya lidi yang diperlukan]

1 → 1 + (1 × 3)
2 → 1 + (2 × 3)
3 → 1 + (3 × 3)
4 → 1 + (4 × 3)

Pada 3 lidi ditambahkan setiap kali menambah satu persegi. Banyaknya lidi yang diperlukan selalu dapat ditentukan ketika banyaknya persegi diketahui. Kalimat matematika untuk menentukan banyaknya lidi adalah sebagai berikut:

1 + 3 × (banyaknya persegi).

Jika banyaknya persegi kita nyatakan sebagai a, maka kalimat matematikanya menjadi

$1 + 3 \times a$.

Kalimat matematika dengan menggunakan huruf disebut bentuk aljabar.

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Figure 1. Learning Resources

Based on Figure 1, the explanation of the material in the learning resources has not yet generated student learning motivation because the problems presented are not contextualized for students. They are less interested in reading the explanations. Learning resources used have not trained students to build their own concepts. Another fact that researchers also encountered in the field was that the class had not used any additional learning resources to complement the lack of books.

Factors that cause low student learning motivation include students' desires, students' skills, students' conditions, students' regional conditions, dynamic elements in education, and the way educators teach students (Niswah & Malasari, 2023). Apart from that, the lack of additional learning resources is one factor that can cause low learning motivation. In line with what Hatimah et al. (2024) said, the support of additional learning resources can help students learn more deeply outside class hours and support the development of their independent learning.

To overcome this problem, researchers developed a learning resource that can be used by students not only at school, namely LKPD. LKPD is a worksheet designed and packaged to help students work on the material independently, with instructions for the work steps that follow learning strategies. According to the Ministry of National Education, LKPD provides instructions for investigative activities in the form of sheets that must include the following information at the very least: title, KD to be attained, completion time, tools or materials required, work steps, and reports carried out (in Arestu et al., 2019). LKPD is a learning resource that allows teachers to develop as facilitators in learning activities. LKPD is intended to facilitate teacher learning and enable students to learn independently, understand, and engage in writing activities that increase activeness, interest, and contextual learning (Warni & Pangaribuan, 2022).

According to Nurmala et al (2018), the Contextual Teaching and Learning (CTL) learning model is a teaching approach that is appropriate to the mind, which creates meaning by relating education to real-world situations. Pitriyanti et al. (2024) stated that learning using CTL-based media can help students gain an understanding of the topic and also increase students' motivation and involvement in the process of instruction and learning. Through the CTL, teachers try to change students' thinking patterns to become more active and creative. In this learning, the teacher acts as a facilitator in motivating students to be more active in participating in studying activities and guiding students in the problem-solving or resolution process.

From the explanation above, researchers are eager to create a CTL (Contextual Teaching and Learning) based learning resource on algebraic material in class VII. It is hoped that the CTL-based mathematics LKPD can help increase students' learning motivation and interest in reading to understand the problems in the LKPD, because this LKPD relates to everyday problems

2. Methods

The research methodology employed in this study is known as research and development or Research and Development (R&D). This study employs the 4-D development model. This research will later produce a product in the form of a CTL-based LKPD. This development model consists of 4 stages, namely the define, design, development, and disseminate stages. However, the dissemination stage was not carried out.

The first stage is the definition stage; the activities carried out at this stage are observation and interviews regarding learning, analyzing teaching modules, analyzing learning resources, analyzing student characteristics, and analyzing literature about LKPD. The second stage is the design stage, which aims to design a CTL-based LKPD that is used in research to increase students' learning motivation. The third stage is the development stage, which aims to assess the quality of CTL-based LKPD by experts and field trials. Experts are asked to complete validation sheets.

This research was conducted at MTs Thawalib Tanjung Limau on 25 September 2024 - 26 September 2024. The test subjects in this research were students in class VII.I of MTs Thawalib Tanjung Limau for the 2024/2025 academic year. During the trial, students filled out questionnaires on product practicality and learning motivation. The following data analysis methods were employed to determine the findings of this development study:

a. Analysis of the validity of CTL-based LKPD
   After validation data is collected, the data is then tabulated. Results tabulation to find the percentage using the formula:

$$P = \frac{total\ score\ for\ all\ aspects}{maximum\ score\ for\ all\ aspects}\ x\ 100\%$$

   The following table categories are then used to interpret the validation results that were acquired:

Table 2. LKPD Validity Categories

Intervals (%)	Category
0 - 20	Invalid
21 - 40	Less valid
41 - 60	Quite valid
61 - 80	Valid
81 - 100	Very valid

(Source: Riduwan, 2007)

b. Analysis of the practicality of CTL-based LKPD
   Practicality data analysis technique uses a percentage formula, namely:

$$P = \frac{total\ score\ for\ all\ aspects}{maximum\ score\ for\ all\ aspects}\ x\ 100\%$$

The practicality of the findings is then interpreted with the help of Table 3.

Table 3. LKPD Practicality Categories

Intervals %	Category
0 - 20	Not practical
20 - 40	Less practical
40 - 60	Quite practical
60 - 80	Practical
80 - 100	Very practical

(Source: Riduwan, 2007)

c. CTL-based LKPD effectiveness analysis

The effectiveness data analysis technique uses a percentage formula, namely:

$$P = \frac{final\ questionnaire\ score - \ initial\ questionnaire\ score}{ideal\ score - \ initial\ questionnaire\ score}$$

The validation results that were obtained are then interpreted through the use of Table 4.

Table 4. N-Gain Value Criteria

N-Gain Value	Category
N-gain > 0,7	Maksimum
0,3 < *N-gain* ≤ 0,7	Medium
N-gain ≤ 0,3	Minimum

(Source: Dewi et al., 2017:10)

According to the N-Gain value criteria, LKPD is said to be effective if the student learning motivation questionnaire obtained an n-gain score > 0.3 with a medium or high category (Nuniati et al., 2021).

3. Results and Discussion

Definition Stage

Researchers conducted interviews with seventh-grade mathematics teachers at MTs Thawalib Tanjung Limau. The interviews revealed that the school implements the "Merdeka Curriculum" (independent curriculum). The learning resources used are mathematics textbooks under the "Merdeka Curriculum." The school's limited availability of textbooks is limited and is only used during mathematics lessons, and students cannot take them home. There are no learning resources other than textbooks, such as worksheets (LKPD) and other learning resources. Furthermore, the teacher's teaching method tends to be teacher-centered. Students listen and take notes on what the teacher writes on the board, while the teacher explains the material in front of the class. This learning style reduces student motivation.

Researchers also interviewed several students and found that many students lack interest in mathematics and find it difficult to understand. Regarding mathematics lessons using textbooks, students reported that many formulas and instructions for working with the textbooks were unclear. They desired more engaging and easier-to-understand teaching materials, and they desired learning resources that could help them engage in more focused and directed learning.

Another problem that researchers found was that students still preferred conventional learning methods, particularly in mathematics. Students tended to listen to the teacher's explanations in front of the class, rather than seeking solutions to the problems. Students found it difficult to complete practice problems that differed from the examples given by the teacher. When the teacher gave exercises in class, students often copied their friends' work. This was

because, according to them, mathematics was too difficult to understand, leading to boredom when they had already learned mathematics.

Based on this, researchers developed CTL-based LKPD on algebra material in class VII to encourage and facilitate students' comprehension of the subject matter. The algebra material presented is the result of document review and interviews, as well as the analysis findings of the Learning Objectives Flow and teaching modules used at MTs Thawalib Tanjung Lime. The LKPD that was created complies with its components, which were adapted from the combined opinions of two experts, namely Asmaranti et al., (2020) and Prastowo (in Amir et al., 2019), namely cover, foreword, study instructions, learning achievements, and main material, supporting information, exercises, and work steps, as well as assessment.

Design Stage

At this stage, a CTL-based LKPD is designed that contains all LKPD components. Learning activities in this LKPD are presented with various color patterns and types of writing so that it can make students interested learn using CTL-based LKPD. In accordance with that stated by Ulfa et al., (2023) that LKPD is attractive in terms of appearance, Colors and pictures will make students feel happy and easily understand learning using LKPD.

The types of letters and writing that researchers use vary. For background In the LKPD, the researcher designed bright colors. This is in line with what was conveyed by Pawestri & Zulfiati, (2020) who stated that presenting material with the help of interesting writing and pictures can make the content easy for students to grasp.

CTL-based LKPD was developed, containing the following components:

1) On this page, there is the identity of the LKPD, namely the title, name of the material topic, class, student identity, as well as equipped with education level and logo UIN. On this cover, there is also an illustration of a student with a whiteboard that describes algebraic forms as Figure 2.

Figure 2. Cover LKPD

2) At the beginning of the LKPD, there is a foreword page containing a quick recap on giving thanks to Allah SWT, additionally Rasulullah SAW. as well as a string of words said by the researcher who delivered the CTL-based LKPD designed. (see Figure 3)

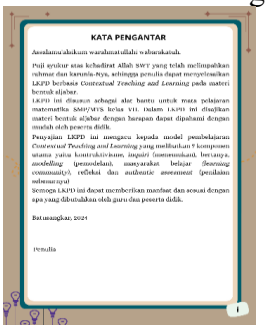

Figure 3. Foreword

3) Explanation of CTL components (see Figure 4.)

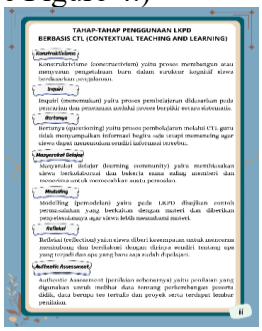

Figure 4. CTL Component

4) The instructions for using the LKPD contain directions for using the CTL-based LKPD. The direction in question is like a direction to read a prayer before studying, as well as directions for students to comprehend the content and example questions on LKPD. As seen in Figure 5.

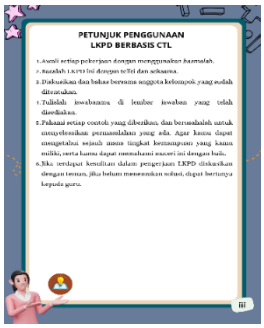

Figure 5. Instructions for Use

5) Learning Outcomes which contain descriptions of achievements and objectives learning that must be achieved. The plan is as Figure 6.

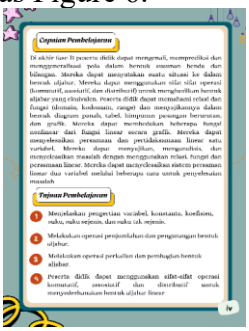

Figure 6. Learning Achievements

6) Supporting information is created to increase students' knowledge. Supporting information is provided for each related LKPD material to be studied. The design is as Figure 7.

Figure 7. Supporting Information

7) Explanation of the CTL components contained in the LKPD

In the constructivism section, an example from life is given daily regarding the material, with the aim that students can develop the ability to think creatively and discover knowledge just from a given example. The plan is as Figure 8.

Figure 8. Constructivism

Inside the inquiry section, students are requested to search for and find an answer to every problem given anywhere. Students think systematically based on searching and the results of their own discoveries, not just the process of remembering simply and memorizing a bunch of facts as Figure 9.

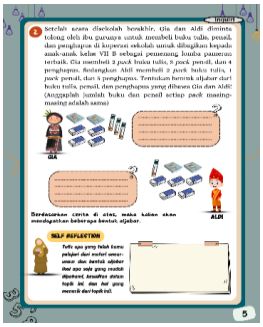

Figure 9. Inquiry

In the questioning section, it is anticipated that pupils will be able to grow curiosity and practice accepting opinions from people other than themselves. The next component is a learning community. This section aims to train students to collaborate with their groups in solving a problem. In this activity, a problem that students can collaborate with their groups to find a solution to the challenges at hand as Figure 10.

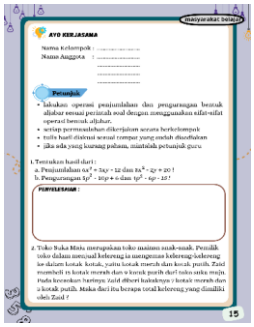

Figure 10. Learning Community

In the modeling section, an example problem is given, and completion steps related to the material for students can understand the material better. Through this activity, students can imitate what the model does. So it's in progress, and students can practice their abilities as Figure 11.

Figure 11. Modeling

Next, in the reflection section, students are asked to write a little about what is easy to understand in the material, difficulty in the topic material, and what is interesting about the topic being studied. As Figure 12.

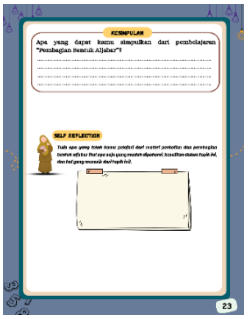

Figure 12. Reflection

Next, the actual authentic assessment is a student assessment sheet that is used to see the progress of learners.(See Gigure 13)

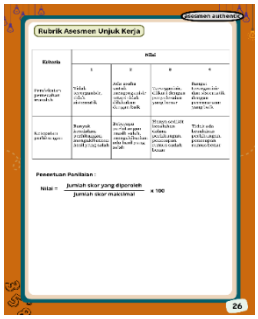

Figure 13. Authentic Assessment

Development Stage

This phase seeks to generate a revised product based on expert input, knowing the level of validity, practicality, and the effectiveness of CTL-based LKPD on algebraic material.

1) Validity

Validation of this LKPD is seen based on the criteria explained by BSNP in Textbooks and Enrichment (Ulumuddin et al., 2017) specifically the verbal, visual, and material presentation, and material components. Here you can see the outcomes of the validation that the validator performed on the LKPD-based LKPD CTL to increase students' learning motivation. According to Table 5., it shows that the results of the LKPD validation are based on CTL in algebraic material, which is classified as very valid, with percentages 83.33%. So in general, CTL-based LKPD meets the quality criteria for the suitability of a product. This is consistent with the viewpoint of Riduwan (2007), which shows that an

instrument is declared feasible if the validity value is ≥ 61% or is in the valid and very valid category.

Table 5. CTL-Based LKPD Validation Results on Algebraic Material

No	Aspect	%	Category
1	Material	83,33%	Very Valid
2	Languange	83,33%	Very Valid
3	Presentation	83,33%	Very Valid
4	Graphics	83,33%	Very Valid
	Total	83,33%	Very Valid

CTL-based LKPD on algebraic material is very valid based on the results of the assessment from the validator. The content of the CTL-based LKPD is in algebra form the content is in line with the learning goals. Examples and explanations are directly linked to natural phenomena, so they can support students' concepts in understanding of the learning material. The cover design and content design can create an attractive reader. From students' interest in CTL-based LKPD, this algebra form material will later be able to foster learning motivation in learners.

2) Practicality

The practicality of this CTL-based LKPD can be seen from the limited trials, class VII MTs Thawalib Tanjung Limau. This stage is carried out 2 times, in meetings. Data about whether the LKPD that has been designed is practical or not is obtained from the results of student response questionnaires. Researchers collect data from students regarding the ease of using the LKPD student response questionnaire sheet given to students. This response questionnaire sheet is given to students after the process learning has been completed. The practicality test results can be seen in Table 6.

Table 6. Questionnaire Analysis of Student Responses to CTL-Based LKPD

No	Indicator	Score	Category
1	Attractive LKPD display	83,33	Very Practical
2	The instructions in the LKPD are clear and easy to understand	71,52	Practical
3	Language used in LKPD is easy to understand	77,77	Practical
4	LKPD helps understand the material studied	77,43	Practical
5	LKPD adds motivation for students to learn	79,86	Practical
	Total	78,82	Practical

Based on the table above, it can be seen that the CTL-based LKPD in algebraic material design is practical, with an overall average of 78.82% in the practical category. This is in accordance with the practicality category proposed by Riduwan (2007) that a teaching material will be said to be practical if there is a questionnaire response that is in the range of > 61%.

According to Sukardi, practicality means: 1) ease of use Usage includes easy to set up, store and can be used at any time; 2) The device should be quick, straightforward, and precise to apply; 3) It should be appealing to students' motivation and interest; 4) It should be simple for instructors and experts to understand; and 5) It has the same equivalent so it may be used as a variant or alternative (in Yolanda & Laia, 2022). CTL-based LKPD with a practical category that includes an attractive LKPD display for students, instructions for using the LKPD are clear and easy to understand, language that is used in LKPD is easy to understand, helps students understand the material, and LKPD can increase students' motivation to learning (Roliza et al., 2018).

3) Effectiveness

Data about whether the CTL-based LKPD is effective or not was obtained from the questionnaire instruments are initial questionnaire and the final questionnaire. The following are the percentage results of the student learning motivation questionnaire.

Table 7. Recapitulation of Student Learning Motivation Questionnaire Results

Motivation To Learn	Initial Questionnaire	Initial Questionnaire
Max	79	94
Min	57	71
N-Gain	0,47	
Category	Sedang	

Based on Table 7., the average value of the questionnaire is also the final questionnaire on student learning motivation, with N-Gain results obtained of 0.47, which shows that the results of student learning motivation were declared effective and were in the medium category. CTL-based LKPD is said to be effective because there is an increase in the results of the initial questionnaire and the final student learning motivation.

As stated by Dinata et al., (2022) that LKPD can foster students' learning activities in improving motivation to learn. In line with what was conveyed by Arsyad (in Rahmadina et al., 2017) can use LKPD in learning to increase students' learning motivation so that students learn according to their own abilities and interests. The results of this research are supported by research conducted by Nuniati (2021) which stated that the development of HOTS integrated LKPD was declared effective with an effective level of 0.48 in the medium category.

4. Conclusions

This research produces LKPD based on Contextual Teaching and Learning (CTL) in algebra form material in class VII MTs Thawalib Tanjung Limau. This LKPD obtained validation results with a percentage of 83.33%, which was designed to be very valid in terms of material, linguistic, presentation, and graphic aspects. In practicality, the percentage score was 78.82% in the practical category. The results of the student learning motivation questionnaire were in the medium category with an N-gain value of 0.47. Based on these results, it may be inferred that the CTL-based LKPD on algebra form material in class VII MTs Thawalib Tanjung Limau is very valid, practical, and effective for use in the learning process.

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