

# The Development of the Thematic Student Worksheets (LKPD) Based On Cooperative Learning to Improve Collaborative Skills of Students

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*The purpose of this research was to produce learning products in the form of thematic student worksheets (LKPD) based on cooperative learning to improve collaboration skills up to the expert test stage by adjusting the conditions during the Covid-19 pandemic. This research was a development research (R&D) following the Borg and Gall model. The research activity was carried out in six stages, namely 1) needs analysis consisting of initial observations and curriculum analysis; 2) model development consisting of the development of blue prints, flowcharts, story boards, lesson plans, and supporting media; 3) expert test consisting of material, linguist, and design expert; 4) product revision; 5) limited tests and report preparation; 6) main test. The results showed that 1) the thematic LKPD based on cooperative learning has been produced to improve students' collaboration skills that have been validated by experts, 2) the developed LKPD has proven to be effective in improving students' collaboration skills at junior high school (SDN) 1 Teluk Betung, Bandar Lampung.*

**Keywords:** Thematic student worksheets (LKPD), cooperative learning, collaboration skills

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## I. Introduction

This research is motivated by the mandate of the Ministry of Education and Culture (2017) which states that learning in the 21st century must reflect and be nuanced critical thinking and problem solving; creativity and innovation, communication, and also collaboration. These four competencies must be explored and developed by the teacher in learning so that students are able to develop themselves and play an active role in their future lives. This research focuses on one of the competencies that are expected to be maximally formed from basic education, namely the ability to collaborate.

The ability to collaborate for students is essentially the ability of students who demonstrate a number of abilities with mental skills that are realized both as individuals and as members of their groups on an external scale. Students are trained with self-awareness of certain conditions as part of members of society, nation, and state even as citizens of the world (global). The global situation can be said to be a blind force that needs guidance and skills to be able to live in this era properly. One of the guiding principles is the ability to collaborate. The ability to collaborate is important when the demands of the times in the 21st century require humans to be and be able to live skillfully in global life. All aspects of life that are diverse have united in one life, namely citizens of the world. The unification of all aspects of life, such as social culture, technology, and even the arts has forced every individual to skillfully master a number of competencies in order to be able to live well. The ability to collaborate is believed to be the guide for the global situation.

Various evidences of these demands are the development of industry and the business world is getting faster. With these developments, it is hoped that all human resources will be able to follow and fulfill a number of required competencies. The industry requires skilled, broad-minded and competitive human resources (Putri et al., 2019; Turistiati & Ramadhan, 2019). For this reason, a number of skills that need to be improved are communication and collaboration skills. So that a person is not easily swayed in global life as it is today.

In fact, based on the results of preliminary research, needs analysis, and curriculum analysis, the following information was obtained :

1. Some of the skills required in the 21st century have not yet fully emerged in students, including the skills to collaborate with students was low.
2. Students are only limited to learning objects, students' habits are only to receive the material, not be critical of the material and information received from the teacher or other sources they get. Furthermore,

individual attitudes dominate behavior, do not have the fighting power, were weak in creativity and tend not to be independent.

3. Students find it difficult to accept things that were different, different from their group, even difficult to accept the presence of other people or difficulty being present in other groups outside of themselves.
4. The learning that students did was only as a routine.
5. The 21st century requires several skills that must be mastered by students which results in a change in the teacher's teaching paradigm.
6. LKPD that should be developed by teachers still focuses on fulfilling cognitive aspects or understanding concepts, not yet fully directing the formation of attitudes including strengthening students' collaboration skills.

The ability to communicate must be balanced with the ability to collaborate. The higher the skills to work together, the easier it will be to get a job and become a workforce that will be sought after in the 21st century (Reevy et al., 2013). Ability is something that is always needed in any job, even being a guide in living a global life. On the other hand, as an effort to prepare educational patterns for millennial students, it is necessary to adjust teachers in designing learning so that they are able to provide services that are in accordance with the characteristics of students and the times. One of the ideas proposed to achieve the competence of the 2045 golden generation education is education that develops skills (Nafilah et al., 2020).

Thus, we need teachers who are able to innovate, be creative and consider the needs that students must have in facing the times. On the other hand, it is also necessary to maintain and strengthen the nation's character so as not to lose its identity. The development of human civilization from time to time certainly brings an extraordinary impact, this impact can be a positive current for individuals, a society and even a nation and state. On the other hand, it is also very possible for negative currents to also change and even eliminate the national identity of a country. Moving from concerns and anticipation of the future of the Indonesian nation, through a mental revolution program, the government rolled out a program to strengthen the nation's characters. It is believed that with mental strength and good character will be able to face and anticipate all possible changes in the times and also be able to respond well to progress (Yanzi et al., 2019).

The next consequence is that the learning process carried out by teachers in schools must transform quickly to adapt to the needs of the times so that student preparation efforts will be more maximal and meaningful. The learning and innovation skills that are expected in the 21st century direct students to be able to think critically and creatively in solving a number of problems faced, to be capable of multi-directional communication and to be able to coexist peacefully by upholding the values of togetherness in the ability to collaborate.

This study aims to develop a learning product in the form of LKPD which was developed with a cooperative learning paradigm to improve students' collaboration skills. The LKPD that is designed to actually explore and develop collaboration skills is presented with various learning alternatives so that students gain real experience which in the end increases students' collaboration skills including other skills that follow such as communication skills and students' social skills.

## **II. Research Methods**

This type of research was Research and Development (R&D) referring to the Borg and Gall design model. This research was conducted in an atmosphere of the Covid-19 pandemic so that research activities were carried out with 7 stages of development, namely: 1) Initial data collection, 2) planning, 3) product development, 4) initial product testing, 5) initial product revision, 6) main field trials and 7) major product revisions.

The research subjects were fifth grade students of SDN 1 Teluk Betung Bandar Lampung with the dependent variable being the skills to collaborate and the independent variable being the LKPD which was developed based on cooperative learning. Data collection techniques used observation, expert validation sheets, documentation, questionnaires, and tests. For the test instrument, validity test, reliability test, level of difficulty, and differentiating power were carried out. Then the data is analyzed to determine the feasibility and effectiveness.

### **Development Procedure**

The research and development procedure basically consists of two main objectives, namely (1) product development, and (2) testing the effectiveness of the product in achieving the objectives. This study takes nine steps from the Borg & Gall model (1983: 775), in this study only the development of products that have been validated by experts on the grounds that this research was conducted in an atmosphere of the Covid-19 pandemic, which are as follows.

### **Preliminary Study and Data Collection**

The preliminary research stage of the activity carried out was a needs analysis to find out what learning problems students face in learning using thematic LKPD so far, especially in terms of sharpening collaboration skills, so it was necessary to develop cooperative learning-based thematic LKPDs to improve collaboration skills and what is expected achieved by students after they complete the learning process. This information was obtained from observations and interviews with several students and teachers in fifth grade students of SDN 1 Teluk Betung for the 2020/2021 academic year. In addition, conducting a literature study on the importance of collaboration skills for students, reviewing the curriculum, learning strategies used, teaching materials used including how to assess student learning outcomes.

### **Planning**

Based on the results of the previous needs assessment, it was assumed that one of the factors that affect the low ability of students to collaborate was the thematic LKPD factor used in learning that was not in accordance with the needs and characteristics of students. Students want worksheets that were more interesting, fun, and easy to understand based on everyday life problems. Thus, it is necessary to provide activities to practice collaboration skills in learning. At this stage, the researcher begins the product development design. The things planned include: the development of thematic LKPD based on effective cooperative learning.

### **Initial Product**

The development of the thematic LKPD based on cooperative learning to improve the ability to collaborate, it was stated in this research that LKPD as a learning resource has distinctive characteristics: 1) the smallest and most complete learning package, 2) contains a series of learning activities in the form of student activities that were planned and systematic, 3) contains learning objectives (KI and KD) that are formulated explicitly and specifically, 4) enabling independent learning for students, 5) implementing activities in honing and developing collaboration skills. The worksheets developed include: pedagogic requirements, innovative materials and designs in the form of: 1) concept discovery flow, 2) learning activity instructions, (3) competencies to be achieved, (4) supporting information, (5) work instructions or worksheets, (6) strengthening indicators of the skills to collaborate. The LKPD construction requirements contain linguistic aspects that were adapted to the developmental level of students in fifth grade, including: (1) sentence structure, clear, and uncomplicated, 2) systematic, 3) learning objectives, 4) LKPD identity, 5) paying attention to time and place, 6) motivating active students, 7) the breadth and scope of the content or material, and 8) the accuracy of the concept. Meanwhile, the technical requirements for LKPD are: 1) writing, 2) pictures/graphs/tables, 3) interesting covers, 4) topic selection according to the theme, 5) product size, 6) page density, 7) numbering, and 8) clarity/attractiveness. /easy and complete. The development of this LKPD began with peer discussions in the teacher working group (KKG) forum at SDN 1 Teluk Betung to get input and suggestions. After that, it was discussed with the adviser and validated by material, design, and language experts.

### **Initial Trial**

The initial trial of the developed LKPD product was carried out at SDN 1 Teluk Betung with 3 students as the subject. The results of the small group trial are used as the basis for improving the LKPD product which will later be tested on a wider subject.

### **Initial Trial Product Revision**

At this stage, the revision process was carried out based on the needs analysis of small group trials. Then the LKPD was compiled based on the criteria for the preparation of the thematic LKPD based on cooperative learning. Furthermore, the LKPD was tested on students.

### **Field Trial**

Field trials involve a wider range of subjects. Then the data analysis was carried out based on the student assessment questionnaire on the LKPD developed. At this stage, a pre-test was used to compare the conditions before being treated and post-test after being treated to make it more accurate by using an observation sheet.

### **Revision of Field Trial Products**

At this stage, the LKPD revision process was carried out based on the deficiencies and weaknesses identified after field trials. Then prepared LKPD which will later be tested in the field test.

### III. Research Results and Discussion

#### Product Eligibility Results

Product feasibility results were feasibility results that have been assessed by material experts, design experts, and linguists. Validation of product feasibility includes an assessment of the aspect of integrating indicators of collaboration skills, and the technical aspect of the thematic LKPD based on cooperative learning.

#### LKPD validation from material experts

The material expert in evaluating the development of the LKPD in this research was the lecturer of the elementary school teacher study program, taking into account competence in the field of elementary school education materials. After the material test has been carried out, the material expert provides general suggestions and comments on the learning materials in the developed LKPD. The data interpretation of the material expert validation results on the LKPD was developed using 4 technical criteria, namely very good, good, quite good, and not good. The results of the material expert validation show that in general the LKPD was feasible and fits the criteria very good and good. The following are the results of the evaluation that has been carried out:

**Table 1.** Recapitulation of Product Validation Results of Material Expert Development

No	Aspect	Criteria	Description
1	Learning objectives	Very Good	No revision needed
2	Sufficiency and depth of material	Good	No revision needed
3	Questions and summary	Good	No revision needed

Source: Primary Data Year 2021.

#### LKPD Validation from Design Experts

The learning design experts who evaluate the LKPD designs were lecturers of the Master of Educational Technology and Masters of Social Studies Education. The validator has a suitable scientific background to validate from the design aspect of product development. After testing, suggestions and suggestions for improvement are obtained as follows:

**Table 2.** Recapitulation of Design Expert Validation Results

No	Description of Assessed Aspect	Evaluation result	Suggestions/Feedbacks for Improvement
1	Content Description LKPD	Good	No revision needed
2	Presentation	Good	No revision needed
3	Graphics	Good	No revision needed

Source: Primary Data Year 2021

Based on the table, it can be explained that the focus of the LKPD design developed includes; a systematic description of the contents of the LKPD, clarity of content, completeness of coverage and depth of material on good criteria, presentation of images, tables, and charts on fairly good criteria, graphics relating to readability of material descriptions and attractiveness of appearance in LKPD are scored on good criteria. Some improvement notes such as layout, use of pictures and colors should pay more attention to the condition of students at the fifth grade level, thus also being linked to Piaget's level of cognitive development and Kolhberg's level of moral development.

#### LKPD Validation from Linguists

The linguistic aspect was validated by a lecturer in the Master of Indonesian Language and Literature Education who has an expert background in the appropriate field. After testing from the language aspect, the following data were obtained:

**Table 3.** Recapitulation of Design Expert Validation Results

No	Description of Assessed Aspect	Evaluation Result	Suggestions/Feedbacks for Improvement
1	Sentence Structure	Good	Revision
2	Language Aspect	Good	Revision
3	Aspects of Constancy of Form and Choice of Words	Good	No revision
4	Aspects of Sentence Effectiveness	Good	No revision

Source: Primary Data Year 2021

Based on table 3, it can be explained that the focus of the thematic LKPD language based on a cognitive approach to improve students' collaboration skills includes; sentence types, use of punctuation marks, sentence structure on good criteria, aspects of correct spelling and punctuation on good criteria, and sentence effectiveness on good criteria. The linguist's assessment of the developed worksheets was considered good or generally very appropriate and takes into account the level of cognitive and moral development of students. So, it was feasible to use with improvements to sentence structure and linguistic aspects.

Based on the results of the evaluation or assessment as well as suggestions from material, language and learning design experts, the researchers revised the product. Disadvantages of writing LKPD, preface, table of contents, description, concept map, instructions for using LKPD, learning objectives, illustrations in the form of image and color suitability as well as appearance, summary, and formative tests. Based on the evaluation of the expert's revision, further revisions have been made to the development product, especially those related to weaknesses. It aims for student learning to be more meaningful and able to develop a number of skills that are in accordance with the times.

**Field Trial Results**

**1. Individual trial**

After being tested on 3 experts, namely media experts, linguists, and design experts, a revision was made, namely criticism and input. Then it was tested on students, namely the individual trial was tried on 3 students selected from students who had high, medium, and low abilities and student profiles in general.

**Table 4.** Recapitulation of Individual Test Results

No	Rated Aspect	Respondent Rating								Total
		Very Good		Good		Enough		Not Enough		
		F	%	F	%	F	%	F	%	
1	Contents Coverage	2	66,67	1	33,33	-	-	-	-	3
2	Appearance	1	33,33	2	66,67	-	-	-	-	3

Source: Primary Data Year 2021

Based on the results of individual trials, respondents stated that the LKPD developed was considered easier to understand than the LKPD used so far. Students were more interested in learning to use the developed LKPD. Schematics and drawings are easier to understand. The systematic order and arrangement of the contents of the learning material has very good criteria. Thus, the LKPD developed was systematic and in accordance with the character of the students to practice the ability to collaborate because examples are presented in the lives of students close to them. In general, the appearance of the LKPD were attractive and easy to understand.

**2. Peer Assessment**

Peer assessment was needed to determine the effectiveness and feasibility of the steps in implementing the developed LKPD. This activity was carried out to get input on product design, completeness of content and attractiveness. The teacher's assessment as a respondent as well as a collaborator was Herida Dahlia, S.Pd and Tis'ah, S.Pd. as a fifth grade teacher at SDN 1 Teluk Betung can be seen in the following table:

**Table 5.** Recapitulation of Peer Assessment Questionnaire Results

No	Description of Aspects to be Assessed	Evaluation Result	Suggestions/Feedback for Improvement
1	Description of the contents of the LKPD package	Good	No revision needed
2	The suitability of KI and KD, in Accordance with the Cognitive Approach to Improve Collaboration Skills	Good	No revision needed
3	Improve collaboration skills	Good	No revision needed

Source: Primary Data Year 2021

The results of the teacher's assessment of the LKPD based on a cognitive approach to improve collaboration skills are in well category for field trials or class-level trials and it was necessary to add product images that were made to be more interesting and examples of activities that train collaborative activities.

**3) Student assessment of LKPD**

The effectiveness of the LKPD was seen from the skills to collaborate with students through learning activities and the achievement of the specified learning competencies, besides that it can also be seen from its impact on students' motivation and interest in learning. For this reason, the researcher gave a questionnaire to the test class students to see how they assessed learning by using LKPD based on a cognitive approach to

improve collaboration skills. The small group test was carried out in fifth grade students of SDN 1 Teluk Betung which represented the high ability of 3 students, moderate 3 students and low 3 students, the sampling procedure was by drawing lots based on the previous daily score. Based on this activity, the following data were obtained:

**Table 6.** Recapitulation of the Results of the Small Group Student Assessment Questionnaire

No	Rated Aspect	Respondent's Average Answer								Total
		Very Good		Good		Good Enough		Not Good		
		F	%	F	%	F	%	F	%	
1	Scope of LKPD Contents	3	33,3	4	44,4	2	22,2	-	-	9
2	Design and Display of LKPD	3	33,3	6	67	-	-	-	-	9

Source: Primary Data Year 2021

Based on the data, it can be explained that students stated that LKPD was easier to understand compared to printed books at school, students were more interested in learning to use the developed LKPD, schemas and pictures were easier to understand, and also systematic order and composition of the content of learning materials. In general, students expressed interest in learning by using the LKPD that had been developed.

#### 4) Field trial results

Field test activity (limited test) was a trial conducted to determine the benefits and effectiveness of LKPD based on cognitive approach to improve collaboration skills developed by researchers. The trial was carried out after the initial product was revised according to the evaluation results of material and design experts.

##### 1. Implementation of the Trial

This limited test was carried out in fifth A and fifth B grade students of SDN 1 Teluk Betung in June 2021 for the 2020/2021 academic year. Class determination using cluster random sampling technique obtained the results that will be the research sample is fifth A grade as the experimental class and fifth B as the control class. The control class uses existing textbooks, while the experimental class was given learning using the developed worksheets.

##### 2. Learning Evaluation Results

To measure the effectiveness of the LKPD product based on a cognitive approach to improve collaboration skills, a comparison of pretest and posttest results was used, as well as by measuring the level of achievement of the minimum completeness criteria (KKM). To determine the effectiveness of the product, the researchers used the same test instrument, both in the pre-test and post-test activities. The results of the pre-test and post-test of experimental class students and control is as follows:

Table 7. Pretest and Posttest Control Class Results

Class	Test Type	Cognitive Measurement Results			Total of Student
		Lowest Sore	The Highest Score	Average Score	
V-A	Pretest	20	70	41,92	36
	Post test	40	80	67,47	
V-B	Pretest	20	60	35,72	36
	Post test	60	90	83,78	

Source: Researcher Calculation in 2021

Based on the results of the pre-test and post-test in table 7, that there was an increase in the competence of students in fifth B grade after learning with LKPD based on a cognitive approach to improve collaboration skills. This can be seen from the increase in student competence compared to those in fifth A grade who use pre-existing printed books at school.

#### Normality test

Before the t-test test, the learning outcomes must first be tested for normality and homogeneity tests, namely as follows:

**Table 8.** Normality Test

	Tests of Normality					
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Thematic LKPD	,125	36	,166	,932	36	,030

Collaboration Skills	,094	36	,200	,960	36	,208
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

From table 8, the significance value (p) for the Collaboration Skills variable in the Kolmogorov-Smirnov test is 0.200 ( $0.200 > 0.05$ ) and the significance value (p) in the Shapiro-Wilk test is 0.208 ( $0.271 > 0.05$ ), so based on the Kolmogorov- normality test smirnov and Shapiro-Wilk test data are normally distributed. Furthermore, homogenization test was carried out with the following results:

**Table 9. Homogeneity Test**

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
LKPD Tematik	Based on Mean	2,979	8	11	,048
	Based on Median	,832	8	11	,593
	Based on Median and with adjusted df	,832	8	3,890	,620
	Based on trimmed mean	2,759	8	11	,061

From table 9, the significance value was 0.061 ( $\text{sig} > 0.05$ ), so it can be concluded that learning outcomes to measure critical thinking skills have the same variance or homogeneity.

**Table 10. Test of T-Test**

Group Statistics						
	Description	N	Mean	Std. Deviation	Std. Error Mean	
Score	Pretest	36	57,14	11,131	1,855	
	Posttest	36	80,39	5,813	,969	

Independent Samples Test											
		Levene's Test for Equality of Variances				t-test for Equality of Means				95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
Score	Equal variances assumed	30,336	,000	-11,109	70	,000	-23,250	2,093	-27,424	-19,076	
	Equal variances not assumed			-11,109	52,768	,000	-23,250	2,093	-27,448	-19,052	

Based on the Independent sample t-test column, it shows that the t-count value was  $10.928 > 1.688$  or a significance value of 0.000 ( $\text{sig} < 0.05$ ) so that t-count  $>$  t-table which means  $H_0$  was rejected and  $H_a$  was accepted, thus it can be concluded that statistically the thematic LKPD using a cognitive approach to improve the collaborative ability of fifth grade students at SDN 1 Teluk Betung proved to be effective.

#### IV. Discussion

The final product of this research and development was to produce learning products in the form of cooperative learning-based worksheets to improve students' collaboration skills, on Theme 9 and Sub Theme 1 for fifth grade of elementary school for the 2020/2021 academic year. The results of the expert assessment showed that the LKPD which was developed in terms of the aspect of integrating students' collaborative abilities, pedagogical aspects, construction aspects according to material and curriculum experts showed feasibility with "good" scores and the LKPD was ready to be applied in research. The feasibility of LKPD can be seen from the aspect of content, language that is easy to understand, and attractive presentation from the design aspect.

The implementation of the LKPD as a result of this development has several background problems, including: a) Teachers do not have a variety of accompanying teaching materials other than printed books from the government such as LKPD; b) Demands for developing skills and competencies that must be achieved by students in the 21st century include the ability to collaborate; c) there are no teaching materials in the form of LKPD based on cooperative learning and other learning problems causing the low ability of students to collaborate.

The learning process has a great influence on the achievement of learning objectives. The goals to be achieved must be supported by the creativity of the teacher to be able to present creative and innovative learning so that the learning process becomes interesting and ultimately easy to understand. The teacher as one of the

components in learning activities has a position that will determine the success of learning, because the main functions of the teacher in learning include designing, managing, implementing and evaluating learning. One of the stages that the teacher must go through is to develop a lesson plan. The planning prepared by the teacher basically aims to determine the direction of learning activities, give meaning to learning, determine how to achieve the goals set, and measure how far the goals have been achieved. One of the efforts that can be made to increase interest in learning and student competence is to select, design, and determine teaching materials such as LKPD that will be used, appropriate and in accordance with the abilities, characteristics of students, and environmental conditions during learning activities.

The hypothesis of this development research was "to produce development products in the form of cooperative learning-based worksheets to improve students' collaboration skills". LKPD was developed using a research development design adopted from the development research steps popularized by Borg & Gall.

Based on the current state of the research and currently still in the atmosphere of the Covid 19 pandemic, this research and development was only carried out in six stages of the entire Borg and Gall stage. Namely: (1) needs analysis consisting of initial observations and curriculum analysis; (2) model development consisting of the development of blue prints, flowcharts, story boards, lesson plans, and supporting teaching materials; (3) expert test consisting of material expert and design expert; (4) initial product revision; (5) limited test and report preparation; and (6) the main trial.

The development of cooperative learning-based worksheets to improve the skills to collaborate was based on several learning theories and learning principles that have been developed by several learning experts including previous studies included in this research study, namely Jean Piaget's learning theory, meaningful learning theory David Asubel, Dimiyati and Mudjiono's learning theory, Sardiman's theory of learning activities, and constructivism learning theory and the principles of contextual-based economic learning.

Learning using cooperative learning-based worksheets to improve collaboration skills, the teacher develops learning designs that are in accordance with the analysis of the needs of students whose previous learning process only used the popular worksheets but did not cover the fundamental expectations for the success expected by the 2013 curriculum and the achievement of 21st century competencies. The 2013 curriculum whose learning process is scientifically based, teachers are expected to be able to spur their personal abilities in the form of making teaching materials, one of which is in the form of LKPD innovations from works made by a teacher who directly deals with students. Besides that, the demands of competence in the 21st century, including the ability to collaborate is one of the main competencies that must be developed so that students are ready for their time.

LKPD as a result of this development was used as an innovative alternative teaching material with concrete stages in accordance with the learning theory developed by Piaget and Lev's Vygotsky about the development of thinking of students at the age level of 12 to 16 years who are capable of analyzing and evaluating knowledge cognitive, behavioral changes, and apply them with a tendency to be ready to act according to the child's psychological development. In addition, according to the stages of cognitive development developed by Piaget at the stage of concrete operations (ages 7-11 years). At this stage students are able to think logically about concrete events and classify objects into different forms. At this stage also students can coordinate several characteristics, can mentally do something they previously did physically and can understand the relationship between facts. In line with that, the development of cooperative learning-based worksheets was relevant to efforts to increase students' collaboration skills.

The treatment in the implementation of learning, the syntax and design of the developed LKPD is combined with the Contextual Learning learning model, and the Concept Attainment learning approach, as well as the strategy carried out by problem solving which overall aims to develop student-centered implementation. So that with the learning scenario following the cooperative learning steps, it is very possible to develop students' collaborative abilities as demanded by the fulfillment of student competencies in the 21st century.

The problem-based contextual learning approach is an educational process that aims to help students see the meaning in the subject matter they are studying by connecting it to the context of their real, everyday life, namely to the context of their personal, social and cultural environment. This requires skills, not only individually or in groups. In line with that, it forces humans to be able to build relationships that are multi-directional and in various dimensions. For this reason, collaboration skills are needed as solutions and answer the challenges of the times. The ability of students to see meaning in learning materials that are studied in groups to be able to understand each other, unite views and respect each other are part of the indicators that students have the ability to collaborate. Contextual learning approach also means learning concepts that help teachers relate the material being taught to students' real-world situations and encourage students to make connections between the knowledge they have and their application in everyday life that encourages critical, creative and innovative thinking. This ability is also the main support for students' ability to collaborate.

Product development in this research was intended to develop student skills as part of 21st century skills known as 4C (critical thinking, collaboration, communication and creativity). These four competencies are competency demands that must be mastered by students today so that students are able to survive and play a role

in their lives. The product of teaching materials developed in this research was in the form of LKPD which were designed using cooperative learning stages to improve students' collaboration skills.

The results showed that there were differences in the competence of students who used cooperative learning-based worksheets to improve the ability to collaborate with students who used printed books and existing worksheets. This can be seen from the average competence of students in classes that use the developed LKPD with students who use pre-existing printed books and LKPD. The experimental class uses LKPD which is oriented to contextual learning which is oriented to improve collaboration skills and the control class uses learning resources for 2013 curriculum printed books and existing LKPD.

The average competence of students can be seen from the value of the post test which is carried out after the students are given treatment using the LKPD developed. The average score in the experimental class reached 83.4 while the average score in the control class was 68.2. From these data it can be concluded that there is a difference in the average value of the experimental and control class of 6.51.

The results of this research were in line with the opinion of Munadi (2008), that contextually developed worksheets can improve student achievement. There are three main components in the learning presented by Munadi, among others: 1) broadcast media; 2) practice support media; and 3) interactive individual learning media. Based on this opinion, the LKPD developed is part of the interactive individual learning media. In addition, it is also in line with the research results of Roni (2020), that problem-based worksheets can improve critical thinking skills in learning. There are 5 steps in problem-based worksheets in order to achieve critical thinking skills according to Angelo (1995: 6) and Ismailmuza (2010: 64):

1. Identify (describe the problem given)
2. Analyzing (analyzing and finding concepts in problem solving)
3. Connecting (connecting data and concepts)
4. Problem solving (Concept-based problem solving)
5. Evaluation (attracting and giving reasons for logically drawn conclusions)

The results of the student competency test in this research also showed that students who used cooperative learning-based worksheets to improve students' collaboration skills, their learning mastery levels were better than students who used printed books and existing worksheets. It can be seen that the students who finished in fifth A grade were 29 students or 80.55% and those who did not complete were 7 students or 19.45%. Meanwhile, in fifth B grade, 19 students completed or 52.77% and those who had not finished were 17 students or 47.23%. In addition, the effectiveness of LKPD can be seen from their activities in the learning process in class. This shows that there was an increase in student learning competence, student competence can be seen from the number of students who get a score of minimum completeness criteria (KKM). Thus, the use of the developed LKPD was concluded to be "effective" both in terms of the student's KKM achievement level and in terms of learning achievement, including students' ability to collaborate.

Furthermore, the contextual aspects, attractiveness (attractiveness), and feasibility of this development product were part of the advantages of the resulting product in the form of LKPD. Contextual in this research leads to the learning process that was applied referring to the steps of contextual learning including seven steps, namely constructivism, forming groups, inquiry, asking, modeling, reflection, and actual assessment. The teaching materials in the form of LKPD produced have met the applicable requirements in learning using a cooperative learning approach to improve collaboration skills.

The aspect of attractiveness (attraction) is another category of learning success that is unique and subjective according to the basics of individual views. The attractiveness of this research was obtained from the questionnaire given to students as LKPD users. The aspects assessed are the scope of the LKPD content and the design and appearance of the LKPD. LKPD was presented using language that was easily understood by students and adapted to the needs (level of cognitive development and level of moral development). In addition, LKPD has an appeal because of the compatibility of the cover color with the content, the suitability of writing, images, and the type of font used. In addition, LKPD becomes interesting to study because LKPD was made systematically, based on student needs, and was presented sequentially according to simple material to more complex material. The sequence of student activities in the LKPD was directed at training and developing the ability to collaborate among students. The activities are described according to the indicators of students' collaboration abilities.

Based on the results of the research and the review process as well as various considerations made, the researcher believes that this product developed has advantages, including:

1. LKPD was prepared based on the 2013 curriculum standards.
2. LKPD was prepared following the steps of contextual learning and cooperative learning in accordance with the demands of the curriculum and accommodates the learning paradigm of the 21st century era including developing the ability to collaborate.
3. LKPD was prepared based on the needs of students and teachers as well as the school context.

4. LKPD contains material that was arranged systematically starting from the description material, student activities in learning, sample questions, examples of solutions, independent/group assignments, ability test questions, and answer keys.
5. Using the HOTS and TPACK learning paradigms

In addition, the LKPD as a result of this development research has several advantages, namely: (1) the steps or stages in the application of cooperative learning-based LKPD to improve students' collaborating ability to grow student competence and students' desire to learn further, (2) steps the steps or stages in the application of the LKPD can foster students' self-confidence and independence in learning, (3) the steps or stages in the application of the LKPD can grow students' ability to express opinions, (4) the steps or stages in the application of the LKPD can foster interest read or dig up information from learning sources, (5) the steps or stages in the application of the LKPD are systematic, flexible and flexible, (6) the LKPD was easy to apply by all teachers by following the design of the learning steps described in flowcharts and stories LKPD implementation board and modified according to the wishes of the teacher and the school context.

However, on the other hand, researchers were very aware that the product development resulting from this research was not free from limitations. The limitations of the products developed in this research are listed as follows:

1. The limitations of the LKPD layout design which may still be less attractive, this was due to the limitations of the researcher in the field of technology and mastery of supporting applications in designing displays and images.
2. The development design according to Borg and Gall should consist of 10 steps, namely 1) research and information gathering; 2) planning; 3) product development; 4) initial trial; 5) product revision; 6) field trials; 7) product revision; 8) product operational test; 9) product revision; 10) implementation and dissemination. Due to time and cost limitations, as well as in the Covid-19 pandemic conditions, researchers can only develop the first stage to the sixth stage, so the resulting product is far from perfect.

Meanwhile, the development research conducted has the following limitations:

1. This research was limited to the use of cooperative learning-based thematic worksheets to improve students' collaboration skills and only student handbooks. There is a possibility that other LKPDs that already exist and will be developed can further improve students' collaboration skills.
2. The trial of the development product in the form of LKPD is only in the SDN 1 Teluk Betung environment only. So that it can not generalize the conclusions to other schools.

## V. Conclusion

Based on the results of research and development that has been done, it can be concluded that 1). Cooperative learning-based thematic Student Worksheets (LKPD) have been produced to improve student collaboration skills that have been expertly tested with recommendations for use. 2). The LKPD developed was proven to be effective in improving the collaboration skills of fifth grade at SDN 1 Teluk Betung. This shows that the use of the LKPD as a result of this development has a positive effect on increasing students' collaboration skills. The suggestion for the use of the LKPD product as a result of this development is expected not only to be disseminated at SDN 1 Teluk Betung but also to involve many schools.

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