International Conference on Education 2019
Volume 2 (2019)
ISSN 2655-0687

Development of Thematic Modules on My Ideas Based on Constextual Teaching and Learning (CTL) to Improve Learning Outcomes of Class IV Students

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Abstract: This development research aims to describe the process development of modules and produced thematic module products "My Ideas" suitable for fourth grade students of Elementery School I Gergunung, North Klaten, which can be used as a support for independent learning resources for students. This development procedure refers to Borg & Gall's research and development model. The development of this thematic module was carried out with 9 stages. The pilot subjects were fourth grade students of SD Negeri I Gergunung, North Klaten consisting of the initial field trials of 3 students, 8 student field trials, trials for the implementation of 30 student fields. Techniques and data collection use interviews, observations, and question naires. Data were analyzed using quantitative descriptive methods. This research begins with the first phase of research and collection information obtained through teacher interviews and observations, the second stage planning, namely analysis of learning and analysis of products to be produced then plan the contents of the module development, literature study, prepare tools and materials for designing the Corel Draw X7 and Microsoft Word 2010 software, the third stage of the initial product development form, namely compiling module components, making module designs, then developing the initial product form by material experts and media experts, the fourth stage of the field trial, the fifth stage revised the results of the initial field trials, the sixth stage of field trials, the seventh stage of product improvement results from the field trials, the eighth stage of field implementation, the ninth stage of final product improvement. In this study, the final product was obtained in the form of a module aku 'My Cues' that are feasible to use. Learning by referring to learning based on Constextual Teaching and Learning (CTL) (i.e. 47) produces a higher average than standard learning in schools (i.e. 45). So the conclusion is Constextual Teaching and Learning (CTL) based learning is effective learning.

Keywords: Modul, constextual teaching and learning (CTL), learning outcomes

1. Introduction

The biggest challenge facing humans is to demand humans to master science and technology in order to be able to compete internationally. The development of science and technology is characterized by increasing competition [1] Life in the era of reform and industry is filled with very tight competition. To face the challenges of changing times, education which is the forerunner to producing quality human resources must be built with a solid foundation in order to bridge the demands of an increasingly complex era. The development of the life of a nation is very much determined by education A well-organized education can create a generation that is superior, intelligent, adaptive and confrontational. To achieve the above objectives, the Ministry of National Education has conducted various ways to improve quality. Some of the ways taken by the government to improve the quality of learning are: (1) upgrading teachers (training) related to the learning system, (2) improving curriculum according to the process learning (3)

procurement of teaching materials (4) Provision of facilities and infrastructure that support the learning process (5) implementation of the Subject Teachers' Consultation (MGMP) activities.

School activities are the interaction of educators and students in learning subject matter arranged in a curriculum. The failure of educators in delivering teaching material is not because he lacks mastery of the material, but because he does not know how to deliver the subject matter properly and precisely so that students can learn with an exciting atmosphere and of course with a conducive environment, educators need to have knowledge about good teaching strategies and techniques.

One thing that is enlightenment in our current education, because of the development of thinking among education experts that children will learn more when the environment is created naturally. Learning is more meaningful if [2] is carried out in the teaching and learning process in a learning concept that helps teachers to correlate the subject matter and life of students. So, it can motivate a connection between knowledge and implementation in social life. By using *CTL*, the teaching and learning process will be more meaningful, the lecturer becomes the facilitator who can help students find the meaning of learning. The learning concept that is world-wide and motivates self-making relationshipsWith understanding, learning outcomes are expected to be more meaningful for students. learning takes place naturally in experiencing, not transferring knowledge from teacher to student. Learning strategies take precedence over results.

In CTL learning students are not just listening but must have direct experience. Through this experience, it is expected that the development of students takes place intact, not just cognitive aspects, but also affective and psychomotor aspects. Besides that in learning not to be stacked in the brain and then forgotten but as a provision for them in navigating real life. Contextual Learning Model is a learning strategy that emphasizes the process of full student involvement to find the material learned and real life, so students are encouraged to be able to apply it in themselves. Satriani explained that the purpose of implementing Contextual teaching and Learning is for students to see the relationship between what they see and real life. Contextual Teaching and Learning in this case focuses on knowledge that is very contextual and relevant to students. Students will adapt new information to existing knowledge to build new knowledge with the help of social interaction Contextual Teaching and Learning Contextual Learning Model is a learning strategy that emphasizes the process of full student involvement to find the material being studied and relate it to situations in real life, so students are encouraged to be able to apply it. Education with teaching characteristics enables learning in which students use their academic understanding and abilities in school and out of context to solve problems in the real world.

Contextual learning does require students to capture and associate with their lives. A new one is not given by the teacher but is found by students themselves. Thus, in essence contextual learning (CTL) has seven main components, namely: constructivism (find out) (questioning), learning community (learning community), modeling (reflection), reflection (reflection), and actual assessment (authentic assessment). In the contextual learning practice based on constructivism, there is aquiring knowledge, namely the acquisition of knowledge by learning in Understanding knowledge, that is understanding knowledge by (1) formulating hypotheses, (2) exchanging opinions (sharing) with others in order to obtain responses (validation), and (3) revising and developing concepts that have. Applying knowledge, namely applying their knowledge and experience in the

development of knowledge. Contextual learning does require that students can catch

2. Material & Methodology

2.1. Data

This module development research will be carried out in SD Negeri I Gergunung, North Klaten

2.2. Method

This study uses research and development types, or commonly known as (R & D). This research method does not aim to find / make theory, but this study aims to make a particular product. According to [3] Research And Development is a research method used to produce certain products, and test the effectiveness of these products. The use of R & D is new in the world of education, because R & D first emerged and developed in the military / defense world. [4] says that R & D has provided a great innovation in the world of education. R & D has introduced technology-based education, one of which is elearning and virtual learning. This innovation is able to change the paradigm and learning process. Learning activities are no longer carried out on limited classes with time and space. This revolution triggered the birth of an innovation, products that helped realize the ease of learning. In this case, the researcher develops a learning product in the form of a module.

2.3. Development Procedure

The development procedure in this study adapted and modified the development model of Borg and Gall cited by [5]. There are 10 steps of development research, namely as follows:

1. Research and information collection (conducting initial research and gathering initial information
2. Planning (doing planning
3. Develop Preliminary form of Product (developing initial product form)
4. Preliminary Field Testing (initial field trial)
5. Main Product Revision (revision of trial results)
6. Main Field Testing (field trial)
7. Operational Product Revision (revised product results from field tests)
8. Operational Field Testing (field implementation test)
9. Final Product Revision (final product revision)
10. Dissemination and Implementation (deploym ent and implementation)

From the 10 steps of development according to Borg and Gall, only 9 steps of development were adapted by researchers, namely only up to the final product revision. The following are the development steps that the researcher has adapted and modified, namely:

1) Preliminary Research and Collection of Initial Information

At this stage, the developer makes observations to obtain initial information which is used as a basis and consideration in developing the product. The developer collects information through interviews with teachers and students, observes the learning process in the classroom, and provides a questionnaire related to the needs analysis of fourth grade students of SD Negeri 1 Gergunung, North Klaten.

In addition, the developer also conducts literature studies by looking for references that support product development, including: syllabus and lesson plans, books and modules of class IV about my dreams, study of developments and characteristics of fourth grade students of elementary school, learning media studies, module studies learning, to learning theories that underlie development.

2) Planning

The planning phase includes the design of module development, namely as follows: a) Planning learning objectives and content of module development based on Competency Standards, Basic Competencies, and Module Indicators My goal is grade IV SD. b) Make syllabus and

lesson plans. c) Prepare module development tools and materials. Tools and materials needed are notebook or personal computer, application (software) Ms. Word 2010, Corel Draw X4, and Adobe Photoshop CS3.

3) Developing the Initial Form of Product

At this stage, things are done as follows:

a. Component Preparation. The compilation of components used includes introductory words, table of contents, concept maps, introduction, study instructions, learning activities, tests or exercises, glossaries, and bibliography.
b. Design. The design that must be made is the module cover design and module content design. Making characters that will become icons or guiding figures of students in using modules, then is the selection of bright colors, proportional layout, selection of letters (typography), and presentation of communicative and easy to understand languages.
c. Product Finishing. Products are packaged in booklets. On the cover, the paper used is 230gr Ivory with B5 size Whereas in the content, the paper used is HVS 150gr with size B5.
d. Expert Validation. At this expert validation stage, the initial form of the product will be validated to be assessed by experts, namely material experts and media experts. Material experts provide assessments Media experts provide assessments of products covering aspects of learning and material aspects. While media experts provide an assessment based on the principles of module development, namely the display aspect and programming aspects. Expert validation aims to test the feasibility of the product before testing the user, the student.

4) Initial Field Trials

At the initial field testing stage, researchers conducted limited trials regarding the initial form of the product. This stage is carried out in order to obtain constructive reviews and criticisms / suggestions regarding the module being developed. The initial field trial was carried out limited to 3 students of SD Negeri 1 Gergunung, North Klaten, who were selected based on high, medium, and less cognition levels.

5) Revision of Try Out results

At the revision stage of the trial results, the researcher made improvements based on the results of the initial field test, which will then be re-tested with greater coverage than the previous field test.

6) Field Trials

At the stage of field trials, trials were conducted with a greater number of subjects than previous field trials. The field trial involved 6 fourth grade students from SD Negeri I Gergunung, North Klaten. selected based on high, medium, and less cognition levels. Trials are conducted in the classroom.

a. Revision of Field Test Results Products
   He product revision stage as a result offield testing is the stage for revising or repairing products based on the results of field trials. The field implementation test involved 17 fourth grade students of SD Negeri I Gergunung, North Klaten as the trial subject in this development research.
b. Final Product Revisions
   The final product revision stage is the final stage in this development research. This stage is a product revision or improvement based on field test. In the development step developed by Borg and Gall, there was a dissemination of products (dissemination) as the final step of development. In accordance with the objectives to be achieved, which is to produce modules that can facilitate students learning My goal is in class IV SD Gergunung, Klaten Utara. researchers did not use product

dissemination as a final However, the researchers modified the step of elimination to be a step to test learning outcomes as the final step of development. Tests of learning outcomes are carried out in order to provide an overview and knowledge to the researchers regarding the modules developed to facilitate students learning in Contextual Teaching and Learning-based learning themes My Dreams or vice versa

7) Test Learning Outcomes

The learning outcomes test involved 30 fourth grade students of SD Negeri I Gergunung, North Klaten as the module user. Test of learning outcomes is done by comparing student learning outcomes when not using the module after using the My Citizens module. Research activities are carried out through pre-experimental by using the first group pretest-posttest design to get answers to research questions related to data regarding improving student learning outcomes before and after being given treatment. The results of the treatment can be known more accurately because it can compare with the conditions before being given treatment [6]

2.4. Data Collection Instrument

In this study, it is necessary to have reliable truth data sources and appropriate techniques in order to obtain data that meets established data standards. The following are data collection techniques that will be used by researchers: a). Questionnaire method (questionnaire) b) Interview method c) Test method d). Observati

2.5. Data Analysis Technique

Data analysis technique is a way of analyzing data after conducting research. The process of data analysis begins with examining all available data from various sources after conducting research with observations, interviews, questionnaires, and documentation. The analytical method used in this research and development is an analysis that is able to support the achievement of the objectives of research and development activities, namely the effectiveness of using my Citizenship module in Contextual Teaching and Learning based on achieving expected competencies

a. Expert Validation Test

This expert validation test is carried out by expert lecturers in contextual learning to find out whether the development of the My Story module based on Contextual Teaching and Learning (CTL) is feasible to use. Validation test results can be calculated using the following formula:The above formula is used as a provision in providing meaning and decision making with provisions.

Table 1. Conversion Level of Achievement

Level of Achievement	Category	Information
81% - 100%	Very Good	No Need to be Revised
61% - 80%	Good	Need to be Revised
41% - 60%	Revised	Enough
21 % - 40%	Less	Revised
0% - 20%	Very Less	Revised

b. Test Instrument

The test tool in this study uses content validation. Content validation is validation that is viewed in terms of the contents of the evaluation instrument, which can be used as a measure of learning outcomes where the contents have been able to represent representative of the overall material or teaching material that should be evaluated. Content validation analysis in research and development is carried out by discussion and filling out questionnaires by experts who are considered to have expertise in the field of evaluation as well as expertise in the subjects to be evaluated. The results of the discussion and filling in the questionnaire were analyzed to perfect and improve the test device. The results of validating

aspects of content and learning from experts can be calculated the level of achievement using the formula:

c. Effectiveness Test

The effectiveness of the module in my research and development is seen from the evaluation of the expert team validators and on three aspects, namely cognitive, affective and psychomotor aspects

1) Cognitive Aspects
   Assessment of the cognitive aspects of students in schools can be seen from the learning outcomes of these students. The success that you want to see is how much students understand the material. In this study the cognitive aspect target is the level of completeness of students which is 75%
2) Affective aspects
   Affective assessment of students in this teaching material is an assessment of characters using value analysis
3) Psychomotor aspects
   Psychomotor assessment of students using value analysis. Value analysis can be formulated as follows: The target of psychomotor aspects is the level of completeness of students which is 75%.

Percentage of Students' Responses to Modules Based on Contextual Myorie. The data obtained through questionnaires will be analyzed and processed so that the percentage of students' responses to the module is contextually based, so that the product's feasibility can be known.While the data analysis technique used for student instruments is the Guttman scale, with the assessment criteria in table 2 according to [7], namely: In calculating the instrument students use the Guttman scale and are calculated using the following formula:

Table 2. Trial Product Assessment Criteria

No	Interval	Categori	Converti
1	$0,5 < X \leq 1$	Yes	Wordly
0	$0<X\leq0,5$	No	Not Feasible

If the analysis of student response data generated shows the conversion of layak 'worthy' or obtaining a score with a range of values of $0.5 < X \leq 1$, the thematic module media with the theme My Citizens can be used and feasible to use. If the student response data generated shows the conversion of 'inappropriate' category 'or obtains an average score range of $0 < X \leq 0.5$, the thematic module media with the theme My Story is not feasible to use and must be revised.

3. Research Results And Discussion

3.1. Results

At this stage it aims to obtain information to look for problems to begin research. Information acquisition results through teacher interviews, questionnaires, and observing the learning process in the classroom. The following is the presentation of the information obtained:

a. Interview Results of Class IV of SD Negeri I Gergunung, North Klaten
   Interview with homeroom teacher about student learning process, constraints faced by students when learning, student learning outcomes, efforts to improve learning, characteristics, and facilities and infrastructure for student learning. Based on the results of the interview, information was obtained, among others, the fourth grade students had difficulty in understanding the theme of my Citizens which later had an impact on student learning outcomes. According to data obtained from classroom teachers there are still some students whose learning outcomes are still below the KKM average, which is 70. In addition, student learning outcomes at the time of learning the themes of My Word are still not maximal, students often chat with other students, and students tend to be bored. The homeroom teacher also expressed the concerns of the module. My goal which is available in schools as a learning resource has not helped students to overcome difficulties in

understanding the theme of my ideal because there are still few examples and images.

b. Questionnaire Distribution Results
The distribution of questionnaires in the form of questionnaires was distributed to students to obtain data on the condition or enthusiasm of students learning modules My learning constraints faced by students, students' independence of learning, student interest in learning media, to facilities that students already have as supporting learning activities. Questionnaires are only given to one class, namely class IVA as a sample of data acquisition

c. Data analysis technique
1) Normality Test
Based on the normality test with the Kolmogorov-Smirnov test type, a significance level of 0.197 was obtained for the posttest value of the control class and 0.110 for the posttest value of the experimental class. It can be concluded that the posttest value of the control class and experimental class is greater than α = 0.05 (sig> 0.05) then H0 is accepted. This means that the sample comes from a population that is normally distributed.

Table 3. Tests of Normality

	Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Postes	Control	,147	30	,197	,938	30	,149
	Eksperimen	,161	30	,110	,935	30	,126

Table 4. Lilliefors Significance Correction

Data	N	Min	Max	Rata-rata	Std. Deviasi
Gain	30	2	30	10,50	6,27
N-*gain*	30	0,09	0,79	0,35	0,17

2) Homogeneity test

Table 5. Postes Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
0,822	1	46	0,369

The homogeneity test obtained a significance level of 0.369 indicating that it is smaller than α = 0.05 (sig> 0.05) then H0 is accepted. So, the variance of each sample is homogeneous.

Table 6. Independent Samples Test

Levene's Test for Equality of Variances		Test for Equality of Means							
F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	F	95% Confidence Interval of the Difference	
								Lower	Upper
Valeu	Equal variances assumed	,833	369	-4,653	46	,000	-4,792	1,032	-6,869	-2,714

Results:Levene's Test results show that the variance of the two groups is the same (P value 0.369> 0.05 (α)), then the analysis of the T test uses the Equal variance assumption that is by looking at t count or P value. The results of t count show -4,653 with P value 0,000 <0,05 (α).

It can be concluded that H0 is rejected and H1 is accepted, meaning that there are significant differences between learning outcomes using contextual Teaching and Learning based learning and standard learning in schools.

Based on data analysis obtained significant differences between learning

outcomes using CTL-based learning with standard learning in schools. This can be seen from the independence test which shows the results of significance less than 0.05 (sig <0.05).

Then viewed from the mean, learning by referring to integrative thematic learning based on Constellation teaching and Learning (CT) (ie 47) produces a higher average than standard learning in schools (i.e. 45). So the conclusion is Constextual Teaching and Learning (CTL) based learning is effective learning.

3) Ga*in* dan *N-gain*

Gain and N-gain aim to determine the increase in pretest and posttest of the experimental class. The results of gain and N-gain were the pretest and posttest scores of the students' learning outcomes in the experimental clas.

Table 7. Gain Results and N-gain Experimental Class Learning Results

Data Type	N	Min	Max	Average	Std. Deviation
Gain	30	1	22	6,96	6,78
N-*gain*	30	0,04	0,51	0,20	0,15

Viewed from the table above, the results obtained are the minimum gain value of 2, which means that students experience the lowest increase of 3 digits, while the maximum gain value is 25, meaning that students experience the highest increase of 25 points. N-gain gets a minimum result of 0.09 (low criteria), and N-gain gets maximum results of 0.79 (medium criteria), and an average of 0.35 (medium criteria).

Table 8. The following table determines the criteria for the gain score normalization value.

Nilai <g>	Criteria
<*g*> ≥ 0,7	Hight
0,7 > <*g*> ≥ 0,3	Is being
<*g*> < 0,3	Low

Tabel 7. Criteria Normalitation Gain Score [8]

Nilai <g>	Criteria
<*g*> ≥ 0,7	Hight
0,7 > <*g*> ≥ 0,3	Is being
<*g*> < 0,3	Low

N-gain criteria for student learning outcomes in the experimental class can be seen in Table From Table 7 it can be seen that the distribution of N-gain scores is spread from low criteria and medium criteria. This means that there is an increase in learning outcomes after using the learning device developed. gain and N-gain aim to determine the increase in pretest and posttest of the control class. The results of gain and N-gain value of the pretest and posttest of the learning outcomes of the control class students

Table 9. Gain Results and N-gain Learning Outcomes of the Control Class

value	Criteria	N-*gain*	
		Frequenst	(%)
<*g*> ≥ 0,7	Hight	0	0
0,7><*g*>≥0, 3	Is being	7	39,17
<*g*><0,3	Low	23	60,83
Total		30	100

Seen from the table above, the results obtained are the minimum gain value of 1 means that students experience the lowest increase in value of 1 number, while the maximum gain value of 22 means that students experiencing the highest increase is 22 numbers. N-gain gets a minimum result of 0.04 (low criteria), and N-gain gets maximum results of 0.51 (medium criteria), and an average of 0.20 (low criteria).The following table determines the criteria for the gain score normalization value. N-gain criteria for student learning outcomes in the experimental class can

be seen in Table. From the Table it can be seen that the distribution of N-gain scores is spread from low criteria and medium criteria. This means that there is an increase in learning outcomes after using the learning device developed. It was also concluded that there was an increase in the pretest and posttest experimental class greater than the control class.

4. Conclusion

The results of the study showed that developing a module for my dreams in SD Negeri I Gergunung, North Klaten, was worth using the 9 stages of development according to Borg & Gall. This research begins with the first stage of research and information collection obtained through teacher interviews and observations, the second stage of planning is analysis of learning and product analysis to be produced and then planning the contents of module development, literature study, preparing tools and materials for designing the corel draw software x7 and microsoft word 2010, the third stage of developing the initial form of the product is compiling module components, making module design, then the results of developing the initial form of the product were carried out by the material experts and media experts, the fourth stage of the field trial, the fifth step revised the trial results the initial field, the sixth stage of the field trial, the seventh stage of product refinement as a result of field trials, the eighth stage of the trial implementation, the ninth stage of the final product improvement.

Based on data analysis obtained significant differences between learning outcomes using *CTL* with standard learning in schools. This can be seen from the independence test which shows the results of significance less than 0.05 (sig <0.05).

Then seen from the mean, learning by referring to learning based on Constellation teaching and Learning (*CTL*) (i.e. 47) produces a higher average than standard learning in schools (i.e. 45). So the conclusion is Constextual Teaching and Learning (*CTL*) based learning is effective learning.

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