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The Integrated Thematic Teaching Development based on Strengthening Character Education (PPK) for Primary School Students

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***Abstract*---*This study aims to formulate the characteristics of PPK-based integrated thematic teaching materials on an integrated thematic teaching material based on PPK which combine the thematic texts, colorful images and character scoring; thus, the messages being delivered seemed more real, interesting, loved by children and easily understood. This study was designed using the Research and Development model. The trials were carried out through quasi-experimental design-based experiments applying pre-test and post-test one group. The results showed that; (1) The integrated thematic teaching materials for Primary Schools which characterized by PPK with colorful and attractive image illustrations, and learning activities loaded with strengthening reading characters, curiosity, cooperation, discipline, self-confidence, honesty and caring for the environment; (2) integrated thematic teaching materials based on PPK are declared valid, the percentage of eligibility criteria for the first validator is 88% and the second validator is 90% (very feasible); (3) Integrated thematic teaching materials based on PPK have an influence on students' cognitive learning outcomes. This is indicated in the t test 25.36> t table 2.13, there are significant differences, thus it is effective. The gain test was as much as 0.86 with high criteria. This is due to the learning process implementing the Strengthening of Character Education and Vygotsky's social learning theory where in the scaffolding and cooperative processes emphasized more on students cooperating with peer tutoring; and (4) the percentage of practicality of teaching materials according to students is classically 94% (very positive) and the percentage of teacher responses is 91% (very positive). This study concludes that teaching materials developed with PPK characteristics were found valid, practical and effective for improving students' learning outcomes.*

Keywords*---*teaching materials; integrated thematic student book; PPK; Research and Development

I. Introduction

One of the President Joko Widodo's Nawacita points is to strengthen national character education. Character education was launched as a national movement in 2010. However, the echoes of the character education movement have not been strong enough. Therefore, character education needs to be strengthened again into a national movement of national character education through national program of *Penguatan Pendidikan Karakter* (PPK) or Strengthening Character Education. PPK is an educational program in schools to strengthen students' characteristics through harmonizing heart work, feeling, thinking, and sports through supporting public engagement and collaboration between

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schools, families, and communities, all of which are part of *Gerakan Nasional Revolusi Mental* (GNRM) (Depdiknas. 2017).

In the 2013 curriculum, the learning model applies a scientific approach combined with an integrated thematic learning model. The thematic learning is integrated learning that uses themes to link several subjects, therefore can provide meaningful experiences to students (Kemendikbud, 2013). The characteristics of thematic learning centered on students. THe integrated thematic learning activities unite several subjects in one theme. For that implications of integrated thematic learning requires creative teachers both in preparing activities / experiences, in addition choosing competencies from various subjects, therefore the learning is more meaningful , varied, interesting, and fun, therefore, students turned to be interested in learning and satisfying the learning outcomes. However, in reality there are still many students' grades under the KKM. Based on interviews and observations at Primary Schools in Semarang City, a number of teachers commented that "teachers need complementary textbooks issued by the Ministry of Education and Culture especially books / character-based teaching materials as proclaimed in 2013/2018 Curriculum 2013 version regulations that learning must integrate Strengthening Character Education (Permendikbud no 20 2018 about PPK for formal education).

It seems that teachers share similar in applying PPK in learning and need examples of PPK-based teaching materials. The conditions as explained by the speakers emphasized that the importance of examples of character-based teaching materials which are ready to be used by teachers in the learning process with the interesting integrated thematic teaching materials based on PPK and readily used by teachers in the learning process, it will make the learning process more effective and efficient.

Teaching material is an important part of the learning process. This is as Mulyasa (2006, pp.96) reinforces that teaching materials are part of teaching resources that can be defined as reflecting learning messages, both specific and general in nature that can be utilized for the benefit of learning. This is in line with Widodo and Jasmadi (cited in Ika Lestari 2013, p. 1) emphasizing that teaching materials concerns a set of learning tools which constitute learning materials, methods, boundaries, and ways of evaluating systematically and attractively designed in order to achieve the expected the goal, namely achieving competence and subcompetence with all its complexity. According to Paulina Harvest (2004, pp.11) writing teaching material is always based on students' needs, including knowledge, skills, guidance, practice, and feedback. In addition, the function of teaching materials for students among others is as a guide for student participants who will direct all activities in the learning process and its substance of competencies (Andi, 2011).

Based on the description above, the authors develop teaching materials which involve learning materials, methods, boundaries, and ways of evaluating all of which are systematically designed and interesting as a guide for student participants who will direct all activities in the learning process and substitution of competencies to be learned.Primary school age (around 6-12 years) is an important stage in carrying out character education. The qualified characters need to be formed and fostered from an early age. Early age, especially Primary school age is a critical period for the formation of a person's character. The character here is a person's character, behavior, character or personality that is formed from the results of internalization to various virtues that are believed and used as a basis for perspective, thinking and acting. These virtues are in the form of a number of moral scores, and norms, such as honesty, courage to act, trustworthy, respect for others, discipline, independent, hard work, and creative. Dwi (2007, pp. 121) emphasizes that Primary school children experience rapid growth growth in their physical and motoric, emotional, intellectual, linguistic, cultural, and moral character of childhood and Primary school age.

The government has launched character-based education as stipulated in Permendikbud no 20 2018 on Strengthening Character Education (PPK) in Formal Education Units. PPK is implemented by applying Pancasila scores in character education, especially covering religious scores, honesty, tolerance, discipline, hard work, creative, independent, democratic, curiosity, national spirit, love of the motherland, respect for achievement, communicative, love peaceful, likes to read, cares about the environment, cares socially, and is responsible. Therefore research on integrating character education in integrated thematic learning in Primary schools needs to be done. The objectives of this study are (1) developing integrated thematic teaching materials based on PPK, (2) describing the feasibility of integrated thematic teaching materials based on PPK, (4) testing the effectiveness of integrated thematic teaching materials based on PPK; and (5) describe the practicality of integrated thematic teaching materials based on PPK.

Similar research has been carried out in the same area, namely the Development of Integrated Thematic Learning Modules with the theme Care for Living Beings for the Fourth Grade Students at MI MIT AR Roihan Lawang Malang (Fitriyah, 2015). The results show that the module is valid and effective. Another study researched the Character Education for Primary Students in Islamic Perspectives (Aeni, 2014). The results show that the books developed are valid, interesting, practical, and effective in learning. Based on the results of observations, interviews, literature reviews, and previous research conducted to students IV grade of SDN Lesanpuro 3 of Malang, it was concluded that several problems lead to character education in schools were still lacking, among others are the (1) integration of subjects in thematic learning had not integrated character education as a whole, (2) Teachers tend to use teaching materials developed by publishers with a major emphasis on mastery of concepts. thus, the burden of character education becomes less. (3) The learning activities in the module have not yet found any character application activities.

The problems that have been described above if ignored will have an impact on the weak character of students caused by an uncontrolled environment. Weakening behavior is shown by the lack of children's respect towards elders, children prefer to play gadgets rather than playing with their peers or socializing with the surrounding environment, IT sophistication is used to access pornographic sites because of weak IMTAQ (Faith and Piety). Therefore, the strengthening of character education (PPK) needs to be instilled in accordance with the characteristics of students. The solution to this problem is to develop a thematic module based on PPK (Strengthening Character Education). PPK -based thematic modules have never been found in the field, because there are PPK customization activities and integrating thematic materials with PPK. Several characteristics strengthened in PPK are religious, nationalist, independent, mutual cooperation, integrity. The integration of character education in thematic learning i.e. the material is associated with character education and there are also habituation activities where it must be done by students so that there are character education application activities that must be carried out by students. Thus, this module clearly illustrates activities related to character education undertaken by students. The five-character scores (religious, nationalist, independent, mutual cooperation, integrity) can prepare students scientifically and personally, they are the individuals who are strong in moral, spiritual and scientific scores (Depdiknas, 2017).

The social and cultural behaviors of Javanese people constantly refer to the traditional Javanese customs that are rooted in the values of the palace (*keraton*). The palace is believed to be the center of the cosmos, which significantly influences the peaceful and harmonious life. The concept is manifested in the ideas, behaviors, as well as various forms that can be found in our environment. *Pupuh pangkur* manuscript was originally introduced in the palace. The manuscript is a creation of the palace's poets such as Yosodipuro and RNg. Ronggowarsito, as well as kings such as Paku Buwana IV (from Kasunanan Palace) and Mangkunagara IV (from Mangkunegaran Palace). The script of the *pupuh pangkur* is initially created as speech utterances delivered to the children/ancestry (*sentana dalem*) and courtiers (someone from outside *keraton* or the Javanese Palace those who work in the Palace). Next, the *pupuh* is shared with the public (*kawula*

dalem). Even though the script of *pupuh pangkur* is melodiously and tunefully chanted, it is important that the listeners understand the content/meaning of the *pupuh*. However, not many people know what messages are delivered through *pupuh pangkur*, and how it affects their life in general (Peniro & Cyntas, 2019; Li & Huan, 2019; Smith *et al*., 2018).

Method

This study was designed using Research and Development (R&D) research, which is a research and development design, which is a research method used to produce certain products. This research and development is gradual. The stages in this study include 8 stages (Figure 1).

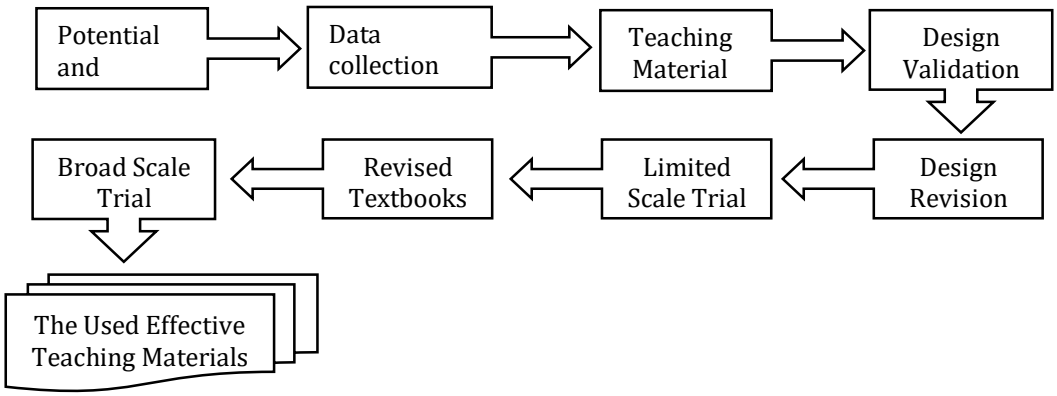

Figure 1. The steps for using the Research and Development method (Sugiyono, 2010)

Research procedure

The study was carried out with the following procedure.

1.Assessing the potential significance of the developed PPK-based Integrated Thematic Teaching Material using a questionnaire. To obtain quality teaching materials and publications, it is carried out in collaboration with Primary schools that have a good predicate of integrating PPK.

2.The data collection technique involves observation, documentation, interviews, questionnaires and tests

3.Undergoing the development

a) Developing the design of PPK-based Integrated Thematic Teaching Materials.

b) Design review and validation

PPK-based Integrated Thematic Teaching Materials that were developed subsequently are validated regarding their eligibility to material experts (Thematic), and media experts,

c) Design revision

The Integrated Thematic Learning Material based on PPK is validated and reviewed qualitatively and quantitatively to obtain input on weaknesses and shortcomings, then it is further corrected according to comments and suggestions from the respected experts.

d) PPK-based Integrated Thematic Teaching Materials will be tested on a small scale for practicality. The results of small-scale trials are used to revise the textbooks practicality.

e) PPK-based Integrated Thematic Textbooks are tested for effectiveness in large-scale trials, as textbooks help evaluate students' attitudes, knowledge, skills and 5 main characters in PPK.

The research subjects were the IV grade Primary Lab school students of UNNES consisting of 16 students. The data analysis technically used percentage analysis which is adjusted to the level of feasibility, and practicality. In improving the learning outcomes, the t-test and gain test were used, in addition to the pretest and posttest differences.

The researchers have developed an integrated thematic teaching material product based on PPK which has specifications of the integrated PPK, in a series of organizing classroom teaching and learning processes, thus teachers have free opportunities to develop student character. The teacher guides students to work on *Lembar Kerja Peserta Didik* (LKPD), a typical student activity in the learning process with specific theme Beautiful Togetherness which is integrated with students' character development. In this study, the development of integrated thematic teaching materials is substantially equipped with LKPD, including science, Indonesian and social studies. The chosen learning method can be character developments.

The process of evaluating teaching materials validity concerns a process of evaluation carried out to seek the developed product appropriateness. The validity assessment is carried out by material and expert's evaluation who refer to the lattice of validity assessment instrument.

The feasibility test at the design validation stage consists of four aspects, namely: aspects of content eligibility, feasibility of implementing and integrating PPK, the aspects of language eligibility, students' feasibility activities. The validation score, they are classified into 4 assessment criteria, including very feasible with a range of 85% -100%, feasible with a range of 65% -84%, quite feasible with a range of scores of 45% -64%, and non-feasible with a range 25% -44%. The integrated thematic teaching materials sourced from PPK are classified as valid, the eligibility criteria percentage for the first validator is 88% and the second is 90% (very feasible).

II. Research Findings and Discussion

The researchers have developed an integrated thematic teaching material product based on PPK which has specifications of the integrated PPK, in a series of organizing classroom teaching and learning processes, thus teachers have free opportunities to develop student character. The teacher guides students to work on *Lembar Kerja Pesera Didik* (LKPD), a typical student activity in the learning process with specific theme Beautiful Togetherness which is integrated with students' character development. In this study, the development of integrated thematic teaching materials is substantially equipped with LKPD, including science, Indonesian and social studies. The chosen learning method can be character developments.

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The integrated thematic teaching materials sourced from PPK are classified as valid, the eligibility criteria percentage for the first validator is 88% and the second is 90% (very feasible).

The integrated thematic teaching materials based on PPK affect the students' cognitive learning outcomes. This is indicated in the t test of 25.36> t table 2.13 there is a significant difference. The gain test is 0.86 with high criteria; (4) The percentage of teacher's practicality response is 90% (very positive) and the practicality percentage of student response is classically 94% (very positive).

Table 1. The Results of Analysis on the Teaching Material Feasibility Test

No	Names of the Experts	Assessment Aspects				Percentage (Criteria)
		Content Feasibility	Performance	Linguistics	Graphic	
1.	Dra. Sri Hartati, M. Pd.	89	88	87	88	88 (very feasible)
2.	Dr. Ali Sunarso,M.Pd	89	90	90	90	90 (very feasible)

Based on table 5.1 and figure 5.1, a conclusion can be drawn that each validator shows a score of> 85%, this means that the developed teaching material products meet the criteria for use.

Design Revision

The design revision is based on suggestions and comments both on the validation sheet and verbally, there are some suggestions received after the design validation is being conducted. A number of these suggestions are: on the appropriateness of the contents of the completeness of information added fun practical activities, the activities provided provide direct experience related to daily activities of students and encourage critical thinking. Tools and practice materials from the material in the environment closest to students.

Trial Usage

The trial run was carried out at UNESS Lab School involving fourth graders with a total of 16 students. Before learning to use integrated thematic teaching, material products based on PPK students are directed to work on the pre-test questions, thus students' abilities can be identified before using the teaching material that has been developed.

The researchers conducted learning on theme 1 sub themes 2 on learning 1 and 3. The learning was carried out in accordance with the syllabus and lesson plans that had been designed. After learning ends, the next activity is to give students questions post-test, the activity aims to find out students' understanding of learning through applying the developed teaching material.

After learning and post testing, students respond using questionnaire responses to integrated thematic teaching materials based on PPK. Besides students, the teacher also provides an assessment of the developed teaching material.

The results of the recapitulation of the students' responses to the questionnaire for use trials are presented in the following table.

Table 2. Questionnaire Results for Students' Response to Product Trial

No	The Rated Aspects	Percentage	Criteria
1.	The easily understood teaching materials	100%	Very positive
2.	The teaching materials used the easily understood language	88%	Very positive
3.	Interesting teaching materials to read	90%	Very positive
4.	The communicative teaching materials and easily to learn	90%	Very positive
5.	Teaching material with clear and interesting illustrations and drawings	100%	Very positive
6.	Teaching materials which motivates students to learn	100%	Very positive
7.	Teaching materials can improve students' reading ability	90%	Very positive
8.	Teaching material fosters character (curiosity, confidence, honesty, hard work, discipline, creative, cooperation and independence)	90%	Very positive
	Classical Percentage	94%	
	Criteria	Very positive	

Based on table 2, the conclusion can be drawn that the average student responds to teaching material products developed through a very positive response with a classical percentage reaches 94%.

Table 3. Teacher Assessment of Trial Usage

No	The Rated Aspects	Percentage	Criteria
1.	The teaching materials are easily understood	100%	Very positive
2.	Teaching materials use language that is easily understood	75%	Very positive
3.	The teaching materials are interesting to read	100%	Very positive
4.	Communicative teaching materials and easily learned	75%	Very positive
5.	Teaching materials provided with clear and attractive illustrations and drawings	100%	Very positive
6.	Teaching materials motivate students to learn	100%	Very positive

7.	Teaching material enhances students' reading ability	75%	Very positive
8.	The teaching material fosters students' character (curiosity, confidence, honesty, hard work, discipline, creative, collaboration and independent)	100%	Very positive
	Percentage	90,625%=91%	
	Criteria	Very positive	

Based on table 3, the average teacher rated the developed teaching material products with a very positive response, the percentage reaching 91%.

Final Product

In the process of making teaching materials the writer refers to the principles in making teaching materials. Ministry of National Education (1994) explains that several principles need to be considered in developing teaching materials, including: (a) relevance / relevance; (b) proportionality; (c) adequacy; and accuracy. Based on the elaborated principles, the teaching material products developed are then designed to refer to those principles. Teaching material consists of integrated thematic material content of Indonesian, social studies and natural science lessons compiled by a PPK-based scientific approach. The science experiments contained in the teaching materials are compiled based on PPK. This is in accordance with research by Yulianti, et al (2012), the development of comic teaching materials in learning can improve student learning outcomes.

In addition to using the principles of teaching materials, integrated thematic teaching material products that are developed are designed based on PPK. As stated in Permendikbud no 20 of 2018 PPK is implemented by implementing character education mainly covering religious scores, honesty, tolerance, discipline, hardworking, creative, independent, democratic, curiosity, national spirit, love of the motherland, fond of reading, care about the environment, care socially and responsibly according to the characteristics of each subject. On the content of science learning for Primary school in conducting experiments to develop characters who are fond of reading, curiosity, cooperation, honesty and discipline. On the content of learning Indonesian Language and Social Studies by holding activities to discuss character, among the developed students' characters, among others; love to read, cooperation, work hard, tolerant, responsibility and discipline.

Data Analysis

In this phase, the researcher analyses cognitive abilities based on the results of the pre-test and post-test that have been done. The data analysis process is carried out to determine the effectiveness of the developed PPK-based teaching material products with reference to students learning outcomes.

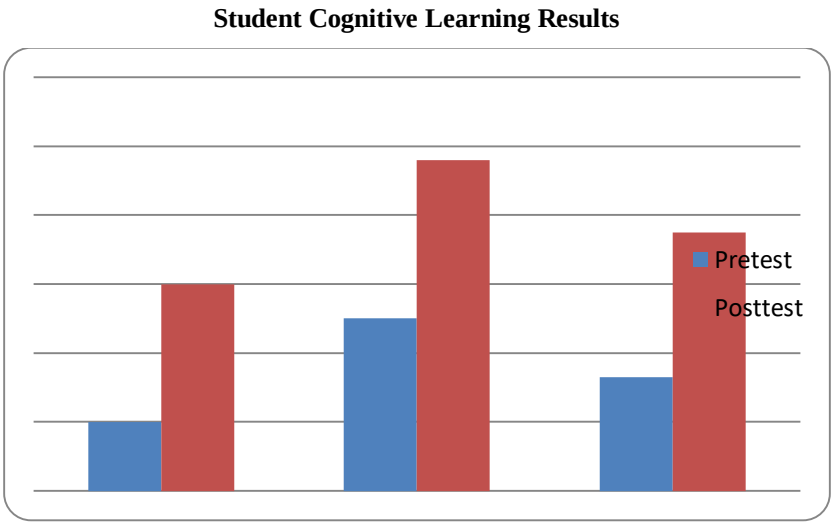
Students' Cognitive Learning Outcomes

The students' cognitive learning outcomes include pre-test scores and post-test scores. Pre-test scores are obtained from tests conducted before students carry out learning using integrated thematic teaching materials based on PPK. The post-test scores were obtained from tests conducted after learning activities using teaching material products that were developed. The results of the pre-test and post-test are presented in the following table.

Table 4. Students Cognitive Learning Outcomes

No	Information	Pretest	Posttest
1.	Total students	16	16
2.	Average score	37	91
3.	The Lowest score	30	81
4.	The highest score	50	96
5.	Number of the completed students	0	16
6.	Number of the incomplete students	16	0
The increase in average value		54	

The cognitive learning outcomes of students are presented in the following graph



The T-Test results on the pretest and posttest scores

The students' cognitive learning outcomes then conducted a t-test, from the Paired Sample Test t-test of the students' pretest and posttest scores in the Primary school of UNNES Lab school took 16 students as the research subjects, explained as follows.

Table 5. Students' cognitive learning outcomes

	Pretest	Posttest
Mean	36.25	91.13

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Variance	51.67	18.92
Observations	16	16
Pearson Correlation	-0.07	
Hypothesized Mean Difference	0	
Df	15	
t Stat (t hitung)	-25.36	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.75	
P(T<=t) two-tail	0.00	
t Critical two-tail (t tabel)	2.13	

levels of significance	5%
t count	25.36
t table	2.13
results	t count > t table
Information	Ha is accepted (there is a significant difference)

Table 6. N-Gain Test Results

No	Pretest	Posttest	Gain	Criteria
1	30	96	0.94	High
2	30	91	0.87	high
3	30	95	0.93	high
4	40	90	0.83	High
5	30	91	0.87	high
6	30	90	0.86	high
7	40	86	0.77	High
8	40	81	0.68	high
9	30	90	0.86	high
10	40	85	0.75	high

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11	50	96	0.92	high
12	30	93	0.90	high
13	30	96	0.94	High
14	40	91	0.85	High
15	50	96	0.92	High
16	40	91	0.85	high
Average	36.25	91.13	0.86	Hight

Based on the table it is known that the increase in the average (gain) of pretest and posttest data of 0.86 with an increase in height criteria.

III. Results and Discussion

The Integrated Thematic Teaching Materials Characteristics based on PPK

The integrated thematic teaching materials based on PPK constitute a series of learning process activities presented in an order that corresponds to the 2017 issue of integrated thematic textbooks of the Ministry of Education and Culture with character-based development which refers to Permendikbud No. 20 of 2018 about PPK for formal education units. In reading activity, “let's develop characters of like to read and curiosity”. In the activities themed by “let's discuss”, it develops students’ characters of cooperation, responsibility, and discipline. The activity of “Do you know giving information about deepening the material related to the concepts learned by developing characters who love to read and foster curiosity”. Let's try to develop characters who like to read, foster curiosity, cooperation, independence, and appreciate achievement. In addition to the science experiments contents, beginning from being closely related to daily life, ie, on the concept of sound characteristics, students are led to create trumpets, make simple maracas and stethoscopes. To solve such problems, students conducted investigations by designing tools, conducting experiments to conclude answers from the problem.

Other characteristics of PPK-based integrated thematic teaching materials, are easily understood, it is illustrated by easily understood language, interesting material to read accompanied by illustrations and clear color images, improve reading and communicative, therefore, make it easier for students to learn (Mulyasa, 2006)

Based on the principle behind the preparation of teaching materials (Depdinas, 2004), therefore, the compiled teaching materials are those that systematically compiled and the contents are adjusted to the competency standards and basic competencies and indicators that have been developed so as to facilitate students to achieve their learning goals.

The developed PPK-based teaching materials was carried out, additionally it is adjusted to the level of children's cognitive development. Piaget (cited in Rifa'i, 2012, p. 34) classifies stages of cognitive development according to age. Children aged between 7-11 years are classified into a concrete operational stage. At this stage, those children can operate various logics, but are still in the form of concrete objects, the ability to classify is acquired. They cannot yet solve abstract problems.

PPK can be implemented on the basis of a school curriculum that is already in place and is well established by the school, namely class-based character education, school culture, and society / community. Strengthening Class-Based Character Education aims to; (1) integrating the classroom learning process through curriculum content in subjects, both thematically and integrated in subjects; (2) strengthening classroom management, methodological choices, and teaching evaluations; and (3) developing local content according to regional needs.

The developing teaching materials is based on theories about teaching materials modified with the PPK concept, thus the developed products become attractive to students because the products developed consist of presenting problems, experimental activities and observations. This is in accordance with the advantages of KDP integration which focuses on developing reading fondness, fostering curiosity, responsibility, discipline, cooperation and self-confidence when a presentation is held, when individuals are involved, especially in using their mental processes to seek out several concepts and principles.

In the results of this study, the advantages of KDP-based teaching materials are seen from students' responses when reading and understanding teaching materials: students state teaching materials are easy to understand, interesting to read because they are equipped with clear and attractive coloured illustrations and images, increase reading fondness and foster curiosity with challenging and interesting science experiments. The activities, indeed, inculcate students' creative characters, this can be observed when students hold an activity of making simple maracas, making simple stethoscopes and making trumpets on science subjects. This will obviously foster students' creative and social care characters in carrying out activities to make posters of religious diversity in Indonesia on social studies subjects and foster creative characters, fond of reading as well as students trained to maintain discipline when activities make mind maps of main ideas and supporting ideas on Indonesian subjects. Besides forming students' critical thinking, and honest, independent and disciplined character on doing activities, let's practice the questions.

In carrying out the learning as previously done, additionally there are also a number of encouraging findings such as; students show learning experiences more than previous learning, students are able to collect data, process data, verify and draw conclusions carefully and confidently, can build communication with friends in groups, students can overcome their learning difficulties by sharing knowledge with friends in a group.

The Validity of Integrated Thematic Teaching Materials Based on PPK

The developed teaching material in this study is the development of KDP-based teaching materials. According to the Ministry of National Education (1994) it is understood in terms of the objectives of the compilation of teaching materials, namely: (1) providing teaching materials in accordance with curriculum demands by considering the needs of students, namely teaching materials that are in accordance with the characteristics and setting or social environment of students; (2) assisting students in obtaining alternative teaching materials besides textbooks which are sometimes difficult to find and; (3) make it easier for teachers to carry out learning.

Based on these descriptions, the development of teaching materials carried out aims to create learning that is different and enjoyable for teachers and students. Students are trained to develop scientific character. In addition, the development of teaching material products aims to train students to think critically in solving problems individually or in groups so as to improve learning outcomes. The development carried out by researchers is the development of teaching materials based on KDP 4 theme 1 The Beauty of Togetherness Sub Theme 2 Togetherness in diversity in learning 1 and 3.

With regard to the purpose of creating teaching materials, the evaluation of the validity of teaching materials needs to be carried out. The validation aims to obtain an assessment so that teaching materials can be justified as valid and useable in the learning process. The researchers measured validity of the developed teaching materials based on content appropriacy, presentation of the implementation, language, and students' activities feasibility. The product validation is carried out at the design validation and product trial stages.

The feasibility test was conducted by 2 lecturers, where in each aspect of the assessment then interpreted in 4 categories, the scores of the 4 categories were very good, the scores of 3 categories were good, the scores of 2 categories were enough, and the score of 1 category was lacking. The category used Likert's scale (see Sugiyono, 2015, p. 170).

Based on the validation sheet from validator I and validator II, it shows that the KDP-based teaching material product is feasible to be used as a study guide in learning with revisions, so it must be revised according to suggestions and comments before moving on to the next stage. The eligibility of each validator can be seen from the percentage of ratings that indicate> 85%. The percentage results indicate that each validator gives a score> 85%, which means the product of teaching materials that are developed is included in the very feasible criteria. The percentage score of lecturer assessment 1 is 88%, (very feasible) The percentage score of lecturer assessment 2 is 90% (very feasible).

After conducting validity assessment by the learning material, questionnaires were given to students for their responses to the developed teaching material products. It aims to find out how the applied teaching material products were used at the usage tests in larger groups. Small group product trials were conducted at Primary school students of UNNES Lab school as many as 4 students who had a variety of different cognitive abilities from less, moderate, to high. In the student's response instrument, each aspect is interpreted in 4 categories, namely the score of 4 is very good, the score 3 is good, the score of 2 is enough, and the score of 1 category is lacking. The category uses the Likert's scale (see Sugiyono, 2015, pp.170). After a small-scale product trial was conducted, the overall results of the students gave a very positive response; this is indicated by the percentage of classical scores of 92%.

The next stage is the usage test on a larger scale. The stages are carried out to find out whether the developed teaching material products meet the readability criteria for use in learning or not. Overall, students gave very positive responses, this is indicated by the percentage of classical scores of 94%.

The percentage of responses shows that the product of teaching materials developed produces very positive responses by students as applicable teaching materials in fourth grade elementary students of UNNES Lab school. The very positive response obtained from the development of teaching material products is the result of improvements made after the implementation of the design revision.

The Effectiveness of Integrated Thematic Teaching Materials based on Strengthening Character Education (PPK)

Whether or not an effective teaching material product is developed refers to students' cognitive learning outcomes, this is as Sudjana (2010, pp. 2) states that student learning outcomes are the abilities acquired by children after going through learning activities. This is considering learning itself is a process of someone who is trying to obtain a relatively permanent form of behavior change.

Student learning outcomes in this study consist of pretest and posttest scores, both of which are used as benchmarks in knowing the effectiveness of the developed teaching material products. The pretest score is obtained from student learning outcomes before using the integrated thematic teaching material product based on KDP, while the posttest score is obtained from student learning outcomes after using the teaching material products that have been developed. Learning is done in 2 meetings so it can be seen that learning using teaching material products that are developed shows

positive results. This is based on the results of the t test analysis which is strengthened by using the average score increase (gain).

Testing the effectiveness of the developed teaching material products seen based on the results of the t test analysis showed a significance score of t count 25.36> t.table 2.13 then Ho was rejected, meaning that student learning outcomes before and after the use of teaching material products developed in different learning real. The t test is then supported by the pretest and posttest gain test and get the calculated results of the average increase (gain), the pretest and posttest data of 0.86 with the criteria of increase categorized as good. In addition to mastery learning with a minimum completeness criterion {KKM} 70 in the pretest and posttest additionally experienced differences, the results of the pretest showed the number of students completing 0% and posttest totaling 16 students out of 16 students (100%).

The score calculation in this study has been adjusted to KKM (Minimum Completeness Criteria) in the natural science (IPA) subjects for IV grade students at Primary school of UNNES Lab school, where the students are considered to have accomplished their learning in case, they are able to solve problems which reaches ≥70%. The results of the analysis carried out, that the use of the developed integrated thematic teaching materials based on PPK effectively used in learning activities. In this study, cognitive learning outcomes increase along with the success of character development through PPK integration in learning. This is in accordance with Tatman's opinion, (2009) that if a school integrates characters in learning so that students have good character and habits, then these students will have high cognitive learning outcomes. This opinion is in accordance with Budiastuti (2008) and Yulianti, et al (2012) who underlined that, if character development is carried out effectively, it will improve students' academic achievement and social behavior.

The development of KDP-based teaching materials is made according to the needs and characteristics of students. The cognitive development of IV grade Primary school students who come into the concrete operational stage where these fourth-grade students are able to think logically and understand the existence of concrete objects around them as a source of learning. This is in accordance with Piaget's theory (Slavin, 2011, p. 45) which states that children ranging in age from 7-11 years have entered the stage of concrete operations where the child has experienced an improved ability to think logically and a curious attitude towards the environment. Based on this, the use of PPK-based teaching materials is in accordance with the characteristics of students, because through the steps of learning activities in these teaching materials, students are actively trained in finding themselves, helping students develop critical thinking skills, and to foster their curiosity information that is being studied.

Therefore, teachers in schools should hold the habit of applying KDP in schools. Related to how to instill good habits in various behaviors in life, thus, children have the awareness and commitment to implement policies in daily life. The students interact with their peers in solving problems regarding material in Indonesian, social studies and science subjects in class IV Theme 1, Subthemes 2 and learning 1 and 2. This is in accordance with KDP-based teaching materials with a scientific approach that has been developed because, in The product contains learning activities in groups to read texts, discuss, solve problems, design experimental tools, conduct experiments, and make conclusions. In this study students learn to understand including science subjects with sound material through stimulation and designing experiments and conducting experiments assisted by teachers and peers. This is in accordance with Vygotsky's learning theory which states that students in constructing a concept need to pay attention to the social environment and 2 important concepts, namely the Zone of Proximal Development (ZPD) and scaffolding (tiered support, providing a number of assistance to students in the initial stages of learning then reducing assistance This also provides an opportunity for the child to take over greater responsibilities as soon as he is able to do it himself. Zone of Proximal Development (ZPD) is the distance between the actual level of development (which is defined as the ability to solve independently) and the level of potential development (defined as the ability problem solving under the guidance of adults or through collaboration with more capable colleagues.) Vygotsky outlines the main implications of his learning theory in cooperative classroom

settings. In this study emphasizes the role of peers to develop peer character equality, social care, responsibility, curiosity, hard work, and respect for others' work.

In using the PPK-based teaching material products, students can interact or hold hands on teaching material products so that the knowledge they gain is more meaningful. PPK-based teaching materials in activities let's try on science subject material sound properties also use teaching aids from the environment made by students themselves, among others, making simple stethoscopes, simple maracas and trumpets, all of which are the concrete learning media, there are experimental and observational activities so that students gain firsthand experience in discovering science knowledge on sound properties. This is consistent with Edgar Dale's cone theory experience which states that the more concrete the learning resources used are the easier for students to understand the knowledge gained.

The development of PPK-based teaching materials effectively improving students' learning outcomes is the theoretical implication of this study. In the process of finding concepts and practices, students are divided into a number of characters, thus, PPK on the characters want to know discipline, love to read, responsibility, thorough are highly needed.

The practicality of Integrated Thematic Teaching Material Based on PPK

Whether or a product is practical or not, it is based on the results of teachers and students' responses when the learning process is carried out on the test usage phase on the developed teaching material products. Based on table 4, the questionnaire results from 16 students of IV grade at the State Primary school of UNNES Lab school, there was a very positive response to the teaching materials product. It is shown from table 5, that the average students respond to the developed teaching material product with a very positive response that classically reaches 94%. It can be seen from the maximum percentage which reaches 100% found in the aspects of 1, 5 and 6 that the teaching materials are easy to learn, teaching materials provided with illustrations and clear and colorful images and motivate to foster enjoyable learning. While a minimum percentage of 88% is found in the second aspect of teaching changes using easily understood language, from students information on the material process of sound from the source of sound to the ear, there are some students who encounter difficulty with biological terms such as eustachian tubes, cochlea and types of sounds such as infrasonic, audio sonic and ultrasonic. However, all responded to 'very positive' category.

As for the next indicator concerns practicality of the developed teaching material products based on teachers' responses on testing the usage. Based on table 5.5, the conclusion was drawn that the average teacher rated teaching material products with very positive responses, on average it reached 91%. It can be seen from the maximum percentage reaching 100% found in all aspects no 1,3,5,6, and 4. From the practicality of teaching materials shows that teaching materials can be used as good learning materials to interpret knowledge and skills because with teaching materials interesting, easy to learn, teaching material with illustrations and clear and colorful images can motivate to enjoy learning

IV. Conclusion

Based on results of the study and discussions, the conclusions, therefore, can be drawn, that the integrated PPK-based thematic teaching materials constitute of materials that have been adjusted to the Fourth Grade Students' Basic Competencies network. Integrated thematic teaching materials based on PPK-combined thematic texts, colorful images and character scores, thus the delivered messages look more real, interesting, popularly known to children and easily understood, thus students can enjoy the learning. Teaching materials that have been compiled can improve learning outcomes and develop the character of reading fondness, curiosity, confidence, responsibility, honesty, discipline,

working collaboratively, caring socially and working hard. Additionally, the compiled teaching materials practically both students and teachers love to use.

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