

The Development of Problem-Based Learning LKPD to Improve Students' Critical Thinking Ability in The Fifth Grade of Primary School

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Abstract

The objective of the study is to create a PBL-based LKPD product that is feasible to improve critical thinking skills and determine the effectiveness of PBL-based LKPD products in enhancing critical thinking skills using T-test value analysis from pretest and posttest data. The research was conducted in the fifth grade of SD Negeri 4 Candimas consisting of 33 students. The type of study used Research and Development (R&D) carried out referring to the Borg & Gall design model. The results of this study were following the results of the development feasibility test to get results > 86, so it can be categorized as very good. In the t-test value, the value of Sig. (2-tailed) of 0.000 < 0.05, so as the basis for decision making in the independent sample t-test, it can be concluded that H₀ was rejected and H₁ was accepted. Thus, it is concluded that the implementation of PBL-based LKPD is effectively used to improve students' critical thinking skills. Implication of the research shows that the development of LKPD makes it easy for students to understand the subject matter and practice their independence in doing questions, and for educators to assist develop lesson plans and as a guide for educators in adding information about the concepts being studied.

Keywords: *LKPD, PBL, Critical Thinking Skill, feasible, effective*



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INTRODUCTION

Critical thinking skill is needed by students in the 21st century. Many things can affect critical thinking skills including having open-mindedness, high curiosity, high motivation, and so on. Critical thinking skill needs to be trained so that students can get used to and continue to develop their critical thinking skills, for example by solving problems that occur in their daily life. Having the ability to think critically allows students to analyze their thinking to ensure that they have made choices and draw smart conclusions.

Many teaching materials can be used in the thematic learning process, one of the materials is a Student Activity Sheet (LKPD). Prastowo (2011) suggests that LKPD is a teaching material in the form of sheets containing a summary of the material and instructions for activities that must be carried out by students, including activities to do tasks that must be done by students following existing competencies. Making an LKPD must meet the criteria related to the competencies that must be achieved and understood by students. However, the LKPD used in schools tends to be boring, which should be able to increase the competence of students with many activities that are relevant to the material it is only used to add value to students' assignments in a formality. The role

of educators plays an essential role in realizing the principles of this fun thematic learning. In addition to mastering the material, educators are also required to have creativity in determining various learning models and strategies. One of the learning models that are expected to assist in developing LKPD so that learning objectives are achieved properly to use a Problem Based Model or Problem Based Learning (PBL) Model.

The PBL model is one of the learning models following the Kurikulum 2013. The PBL model raises cases (problems) as a focal point in a lesson with the objective that students can solve the problems so that students gain new knowledge. This PBL model is a model that focuses on students, so the role of educators here is only as a facilitator so that students can further develop their thinking skills. The advantages of the PBL Model have been stated by experts, Sumarmi (2012), they are 1) being able to assist students to develop critical thinking skills and skills in solving a problem, 2) being able to improve attitudes and analytical skills both individually and groups, 3) able to assist students to deal with problems that occur in the surrounding environment. Based on the advantages of the PBL model that have been mentioned, this model can be applied to develop students' critical thinking skills in overcoming problems that occur around their environment. So that students will better understand and be able to apply the knowledge gained at school into the daily lives of students. Observation results showed that learning tended to be conventional so that it was teacher-centred characterized by the dominance of the activeness of educators who presented learning and educators were also not optimal in using learning models that direct students to think critically about problems included in learning. In addition, educators assumed that learning in class was only to complete the material in the book so that students were less active in exploring knowledge.

LITERATURE REVIEW

There are related studies that have relevance to this study, first the relevant research was conducted by Astuti et al. (2018) with the title "Development of PBL-Based LKPD (Problem Based Learning) to Improve Students' Critical Thinking Skills in Chemical Equilibrium Materials" which obtained PBL-based LKPD results can improve students' critical thinking skills because the results of the N-Gain Test analysis are 0.824 with high category. In addition, this study also results that the quality of PBL-based LKPD is effective because the activities of students are at the tolerance interval limit, and this development received a positive response from both students and educators.

Second, research conducted by Yildırım, Kurt, & Ayas (2011), found that the results of research by collaborating LKPD with an active, effective and fun learning approach. LKPD was proven to be able to assist students in understanding a subject matter, actively participated during the learning process and increase learning effectiveness and achievement of student learning outcomes, both cognitive, affective and psychomotor aspects.

Third, research conducted by Turgut, Gurbuz, Salar, & Toman (2013), found that the perspective of prospective physics educators at the undergraduate level on the concepts of special relativity theory and the interpretations they make regarding the concepts investigated. The perspective of prospective educators on concepts in the special theory of relativity is based on six open-ended questions prepared by the authors who are also Physics educators. This research was qualitative research and the research was conducted on eighteen prospective educators. In this study, case studies, one of them is a qualitative research method, are used. The research group was selected by convenience sampling. Data collected through open-ended questions were analyzed by the descriptive analysis method. Based on the results of the study, it was revealed that most of the students had not been introduced to the special theory of relativity and the concepts related to it. It could be argued that the candidates had difficulty with the relativity of time and its frame of

reference. Most aspiring Educators cannot interpret that the speed of light was the limiting speed and that nothing else can reach that speed.

Fourth, research conducted by Arifin (2013), shows that the final score of the worksheet was 83% or in the very good category. The quality of vocabulary elements was categorized as good with a score of 71%. It included vocabulary precision with vocabulary archiving levels, vocabulary and vocabulary, correct spelling of speech, and more. Meanwhile, the quality of structural elements was categorized as very good with a value of 84%. These include difficulty levels, grammatical errors, logical order of sentences, etc. Moreover, the quality of the practice elements was very good by scoring 100%. This included exercises to develop student understanding, apply for different work, exercises appropriate to the level of learners, and so on. The last is the quality of the illustration elements that score 80% and are categorized as very good. This includes all the pictures are clear, all the pictures are interesting, all the pictures are on topic, all the pictures are relevant to their instructions, and all the pictures are colourful.

Fifth, research conducted by Handal & Bobis (2004), states that teaching Mathematics through themes has been recommended because mathematics is directly related to real-life situations. However, research shows that the implementation of thematic teaching of Mathematics has not been widely adopted. In this study, the instructional, curriculum and organizational factors that educators perceive as barriers in implementing the thematic approach to teaching Mathematics are explored. Findings from interviews with 10 secondary Mathematics educators who are currently implementing the curriculum requiring thematic instructional approaches are reported. The findings of the study broaden the literature on educators' beliefs and practices in mathematics learning and broaden their understanding of issues surrounding the implementation of thematically taught mathematics curricula.

Based on the results of research in journal articles from national and international above, it can be concluded that thematic learning as a model in developing LKPD is believed to be an approach that is oriented towards learning practices that are following the needs of students. Effective thematic learning will assist create broad opportunities for students to see and build interrelated concepts thereby, providing opportunities for students to understand complex problems that exist in the surrounding environment with a complete view. Through this thematic learning, students are expected to have the ability to identify, collect, assess and use the information around them in a meaningful way. LKPD is an integral part of a teaching material that is used as a learning model of choice for educators, by collaborating LKPD with an active, effective and fun learning approach, so that LKPD is proven to be able to assist students to understand a subject matter, actively participate during the learning process and improve learning outcomes. learning effectiveness and achievement of student learning outcomes, both cognitive, affective and psychomotor aspects.

RESEARCH METHODS

This research used to research or development research and development (R&D) methods. Sugiyono (2013: 407) explains that R&D is a research method used to produce certain products and test the effectiveness of these products. This study aims to develop Problem Based Learning-based worksheets to improve the critical thinking skills of fifth-grade primary school students. Research activities were carried out to obtain information about user needs, while development activities were carried out to produce PBL-based LKPD. The model used in this study was the development of the R&D method according to Borg and Gall (in Sukmadinata, 2013). The number of students in this study was 33 students in class A as the experimental group and 33 students in class B as the control group. Validity and reliability in this research adopted qualitative validity and reliability perspectives such as membercheck and correspondence confirmation.

RESULTS AND DISCUSSIONS

Findings

Based on the pre-research on the distribution of the needs questionnaire, the results of the questionnaire analysis on critical thinking skills were carried out on September 21-26, 2020 with the target of 110 students in the fifth-grade elementary school in Nusa Indah Group implementing the 2013 Curriculum. Based on the analysis of students' critical thinking skills in thematic learning (Data: appendix page 86) the results showed that the aspects of critical thinking skills of students who got a percentage below 50% in the aspect of asking questions and making conclusions were 23.56% and 29.09%, respectively. The low percentage was because educators had not provided many opportunities for students to ask questions, practice, discuss and make decisions. Monotonous learning activities and did not use a variety of learning models make learning activities boring. While the low aspect of making conclusions was thought to be because learning had not constructed students' knowledge and supports students in actualizing their academic potential, personality, and creativity so that they had not brought up students' critical thinking skills.

The results of the needs analysis regarding the LKPD were also carried out with the subject of 4 fifth grade elementary school educators who were carried out through filling out a questionnaire on September 21-26 2020. The results showed that 100% of educators had not made their LKPD and the LKPD used had not guided students to get direct experience so that students cannot develop their critical thinking skills because the worksheets used were from publishers, so they were not following the needs of students (complete data: attachment page 89). So that problems could be identified in this study including the lack of innovations for LKPD so that LKPD was only used as a formality in the learning process in elementary school, learning was done teacher-centred and tends to be monotonous, so that students played less active roles in learning, students' critical thinking skills still low, judging from the analysis of student needs, namely the indicators of asking questions and making conclusions of 23.63% and 29.09%, respectively, the LKPD provided by the school was not the result of the development of the school's educators.

Discussion

Feasibility

The Feasibility test was carried out by a validating test using a validation instrument. The validation tests of the LKPD products were: 1). Validation test by one material expert lecturer; 2). Validation test by one media expert lecturer; 3). Validation test for linguist lecturers, 4). Validation test by class V educators. Based on the validation sheet data, the results obtained are as table 1

Table 1. Result of LDP Validation

No	Name	Expert	Score	Category
1	Dr. Alben Ambarita, M.Pd	Material	88.09	Very good
2	Dr. Adelina Hasyim, M.Pd.	Media	92.00	Very good
3	Dr. Mulyanto Widodo, M.Pd.	Linguistic	92.30	Very good
4	Sukanah, S.Pd., SD	Classroom teacher	92.24	Very good

Source: Validation result of LPD 2021

Results of LKPD product validation.

Based on table 1 the results of the LKPD product validation, it can be seen that the validation tests of the LKPD products are: 1). Validation test by one material expert lecturer; 2). Validation test by one media expert lecturer; 3). Validation test for linguist lecturers, 4). The validation test by class V educators got results >86, so it can be categorized as very good. Thus, the results of the first hypothesis test and H1 are accepted that the realization of PBL-based LKPD is feasible to use to improve student's critical thinking skills.

Effectiveness

The effectiveness test was carried out by the N-Gain test and the t-test with the results of the experimental group N-Gain and the control group in tables 4.13 and 4.14 showing relatively balanced results with the average N-Gain in the medium category with a score of 0.30 0.63 0.70. The t-test aims to determine the differences in student learning outcomes from the results of the pretest and posttest there are significant differences or not. Based on the output above, it is known that the value of Sig. Levene's Test for Equality of Variances is 0.209 > 0.05, which means that the data variance between the pre-test and the pre-test is homogeneous. So that the interpretation of the Independent Samples Test output table is guided by the values contained in the "Equal

Based on the "Independent Samples Test" output table in the "Equal variances assumed" section, the Sig value is identified. (2-tailed) of 0.000 < 0.05, so as the basis for decision making in the independent sample t-test, it can be concluded that H0 is rejected and H1 is accepted. Thus, it can be concluded that there is a significant (significant) difference between the average pre-test and post-test results. So it can be concluded that the realization of an effective PBL-based LKPD is used to improve students' critical thinking skills.

Discussion

Analysis of the collection in this initial step the researchers analyzed the needs of students. The results of the analysis of student needs through initial observations identify problems related to conventional learning activities as according to Astuti et al (2018) in the preparation of teaching materials, to adjust the problems faced by students, the material can be packaged in such a way that students can learn independently so that students are more active in solving existing problems through group discussion activities, practicum, and activities to answer problems related to daily life. The results of the analysis of product development that produce PBL-based LPKD were carried out with the stages of preparing learning materials, compiling manuals, and evaluation tools. It was followed by initial product trials carried out with expert validation which aimed to determine the suitability of PBL-based LKPD products. The validation results stated by three experts, were material experts, media experts, and linguists stated that the results were >86, so it could be categorized as very good. Thus, the results of the first hypothesis test and H1 are accepted that the realization of PBL-based LKPD is feasible to use to improve student's critical thinking skills. This statement is following the revelation of Sugiyono (2013) that design validation is an activity to assess whether the product design that will be developed rationally will be effective from the previous one or not. The product validation test was carried out by expert subjects with the target of material expert lecturers, media experts, linguists and validation by classroom teachers. According to Emzir (2011) to identify the effectiveness of the teaching materials developed can be done by asking respondents' opinions. However, in this validation test, it was not perfectly accepted by the experts, but by going through the revision stages so that it reached the point where it was feasible to

be given to students. This is in line with research conducted by Irlani Apriada Delima Sari (2017) with the title "Development of Problem Based Learning-Based LKPD to Improve Critical Thinking Ability in Thematic Learning of Grade IV Elementary School Students. The results obtained from the validity test of media experts obtained a score of 88, 54 in the very good category, and the material expert validity test obtained a score of 96.59 in the very good category, while for the practitioner test (teacher response) a score of 2.25 was obtained with interesting criteria.

Based on the results of the analysis of critical thinking skills In addition to testing the effectiveness of the product on learning outcomes, the objective of product development is to improve critical thinking. The product developed is said to be able to successfully improve critical thinking if the test results show a significant difference between the experimental class and the control class. Aspects assessed in critical thinking include (1) providing simple explanations, (2) building basic skills, (3) providing further explanations, being able to set strategies and tactics, (4) concluding (5). The test results of the difference between the experimental class and the control class can be seen in Table 4.8. In addition to testing the effectiveness of the product on learning outcomes, the purpose of product development is to improve critical thinking. The product developed is said to be able to successfully improve critical thinking if the test results show a significant difference between the experimental class and the control class. Aspects assessed in critical thinking include (1) providing simple explanations, (2) building basic skills, (3) providing further explanations, being able to set strategies and tactics, (4) concluding (5). The test results of the difference between the experimental class and the control class can be seen in Table 4.8. The results of the critical thinking ability test in Tables 4.8 and 4.9 can be described that there are two groups, are the experimental group and the control class, each of which amounts to 33 people. The average of the experimental class is 88 and the control class is 87, which means that there is a significant difference in critical thinking ability between the experimental class and the control class. Thus it can be concluded that the product developed successfully can improve students' critical thinking skills. This is in line with research conducted by Nur Arifin (2013), showing that the final score of the worksheet is 83% or in the very good category. The quality of vocabulary elements is categorized as good with a score of 71%. This includes vocabulary precision with vocabulary archiving levels, inter vocabulary, correct spelling of speech, and more. Meanwhile, the quality of structural elements is categorized as very good with a value of 84%. These include difficulty levels, grammatical errors, logical order of sentences, etc. Moreover, the quality of the practice elements is very good by scoring 100%. This includes exercises to develop student understanding, implement different work, exercises appropriate to the level of learners, and so on. The last is the quality of the illustration elements that score 80% and are categorized as very good. This includes all the pictures are clear, all the pictures are interesting, all the pictures are on topic, all the pictures are relevant to their instructions, and all the pictures are colourful.

From the results of the analysis of the first and second hypotheses, it can be said that based on table 4.12 the results of the validation of the LKPD product can be seen that the validation test of the LKPD product is: 1). Validation test by one material expert lecturer; 2). Validation test by one media expert lecturer; 3). Validation test for linguist lecturers, 4). The validation test by class V educators got results >86, so it can be categorized as very good. Thus the results of the first hypothesis test and H1 are accepted that the realization of PBL-based LKPD is feasible to use to improve student's critical thinking skills. The results of the N-Gain analysis show that the results of the experimental group and control group in Tables 4.13 and 4.14 show relatively balanced results with average The average N-Gain in the medium and high categories is with a score of 0.30 G 0.70 (medium), and 0.70 g 1.00 (high). Thus H1 is accepted, which means the realization of a PBL-based LKPD that is feasible to use to improve student's critical thinking

skills. This is in line with research conducted by Dewi Wulansari (2017) entitled "Development of Student Activity Sheets (LKPD) based on the Problem Based Learning Model of the Environment Theme of Our Friends for Class V Primary School students." The results of the study state that PBL-based LKPD products for thematic learning on the theme of Our Friendly Environment can improve student learning outcomes by moderate criteria, as evidenced by the test results increasing the mean gain of the experimental class of 0.7 in the high category and the average value of gain of the control class of 0.5 in the medium category and the significance value of the difference in the average value (t test) of 0.000. Based on the t-test output, it is identified that the value of Sig. Levene's Test for Equality of Variances is $0.209 > 0.05$, that means that the data variance between the pre-test and the post-test is homogeneous. So that the interpretation of the Independent Samples Test output table is guided by the values contained in the "Equal variances assumed" table. In the "Independent Samples Test" output table in the "Equal variances assumed" section, the Sig value is known. (2-tailed) of $0.000 < 0.05$, so as the basis for decision making in the independent sample t test, it can be concluded that H_0 is rejected and H_1 is accepted. Thus, it can be concluded that there is a significant difference between the average pre-test and post-test results. So it can be concluded that the realization of an effective PBL-based LKPD is used to improve students' critical thinking skills. This is following the opinion of the research conducted by Bakirci (2011). This finding shows that the use of simulations and developed worksheets have an impact on the development of hypotheses, correlational and critical thinking skills of students who are among the features of their formal stage. The results of the analysis show that the average rating and the number of differences in scores between pretest and posttest are realized that the enhancement in students' recall of their knowledge. Thus, PBL-based worksheets are effectively used to improve students' critical thinking skills, this is in line with research conducted by Lee (2014) with research results revealing that worksheets can be useful in terms of academic achievement, as support for textbooks, worksheets can be used by students to construct knowledge.

ADVANTAGES AND LIMITATIONS

The advantage of this study is the use of the LKPD method as a learning resource in the form of sheets containing learning activities for instance materials and assignments to assist and facilitate the learning process. It has been proven to improve student learning achievement. LKPD can also provide full opportunities for students to express their abilities in thinking process development skills. The development of LKPD makes it easy for students to understand the subject matter and practice their independence in doing questions, and for educators to assist develop lesson plans and as a guide for educators in adding information about the concepts being studied. Students can also think critically about problem-solving activities that occur in the environment around students. At first, educators have not made their LKPD and the LKPD used has not guided students to get direct experience, by being given the application of the LKPD model independently students can develop their critical thinking skills because the LKPD used comes from publishers, so it is not following the needs of students.

Limitations in this study are limited to the development of PBL-based LKPD to improve students' critical thinking in thematic learning of class V Elementary School with Theme 6 Heat and Its Transfer Subtheme 3 the Effect of Heat on Life. This also cannot be applied in all subjects so that this becomes a limitation for educators in developing methods that are following the needs of students and suitability for subjects.

CONCLUSION

The results of the validity by 3 experts and 1 fifth grade educator got results >86, so it can be categorized as very good. Thus, the results of the first hypothesis test and H1 are accepted that the realization of PBL-based LKPD is feasible to use to improve student's critical thinking skills.

The second hypothesis shows a relatively balanced result with the average N-Gain in the medium category, namely with a score of 0.30 0.63 0.70. In the t-test value, the value of Sig. (2-tailed) of $0.000 < 0.05$, so as the basis for decision making in the independent sample t-test, it can be concluded that H0 is rejected and H1 is accepted. Thus, it can be concluded that there is a significant (significant) difference between the average pre-test and post-test results. So it can be concluded that the realization of an effective PBL-based LKPD is used to improve students' critical thinking skills.

REFERENCES

- Abimanyu, S. (2008). Strategi Pembelajaran. Jakarta: Direktorat Jenderal Pendidikan Tinggi Departemen Pendidikan Nasional.
- Agus, S. (2013). Cooperative Learning Teori & Aplikasi Paikem (Edisi Revisi). Yogyakarta: Pustaka Pelajar.
- Agustin, M. (2014). Permasalahan belajar dan inovasi pembelajaran. Bandung: Refika Aditama.
- Arend, R. I. (2008). Learning to Teach (H. Parjitno, Trans.). Yogyakarta: Pustaka Pelajar.
- Arifin, N. (2013). An Analysis Of The Quality Of English Student Work Sheet Used By Second Year Of Junior High School Arranged By MGMP Team In Trenggalek. American Jurnal Expert.
- Arikunto, S. (2010). Prosedur Penelitian Suatu Pendekatan Praktik. Jakarta: Rineka Cipta.
- Astuti, S., Danial, M., & Anwar, M. (2018). Pengembangan LKPD Berbasis PBL (Problem Based Learning) Untuk Meningkatkan Keterampilan Berpikir Kritis Peserta Didik Pada Materi Keseimbangan Kimia. Chemistry Education Review (CER), 90–114.
- De Porter, B. (2013). Quantum Learning: Membiasakan Belajar Nyaman dan Menyenangkan. Bandung: Kaifa.
- Demir, M., Bacanlı, H., Tarhan, S., & Dombaycı, M. A. (2011). Quadruple thinking: Critical thinking. Procedia-Social and Behavioral Sciences, 12, 545–551.
- Depdiknas. (2008). Panduan Pengembangan Bahan Ajar. Jakarta: Dirjen PMPTK.
- Emzir. (2011). Metodologi Penelitian Kualitatif Analisis Data. Jakarta: Rajawali Pers.
- Hamalik, O. (2013). Proses Belajar Mengajar. Jakarta: Bumi Aksara.
- Handal, B., & Bobis, J. (2004). Teaching mathematics thematically: Teachers' perspectives. Mathematics Education Research Journal, 16(1), 3–18.
- Kadir, A., & Asrofah, H. (2015). Pembelajaran Tematik. Jakarta: Raja Grafindon Persada.
- Lee, C.-D. (2014). Worksheet usage, reading achievement, classes' lack of readiness, and science achievement: A cross-country comparison. International Journal of Education in Mathematics, Science and Technology, 2(2).
- Lukitasari, D. R. (2013). Upaya meningkatkan kemampuan berpikir kritis siswa melalui model pembelajaran berbasis masalah dengan berbantuan film sebagai sumber belajar pada pokok bahasan sikap pantang menyerah dan ulet kelas X PM SMK N 1 Batang. Universitas Negeri Semarang.
- Majid, A. (2013). Perencanaan Pembelajaran Mengembangkan Profesionalisme Guru. Bandung: Remaja Rosdakarya.
- Majid, A., & Firdaus, A. (2014). Penilaian autentik proses dan hasil belajar. Bandung: Remaja Rosda Karya.
- Mariya, L. (2016). Pengembangan LKPD Learning Cycle 7-E Materi Pemanasan Global Untuk Menumbuhkan Keterampilan Berpikir Kritis Peserta didik. UNILA.

Min, K. C., Rashid, A. M., & Nazri, M. I. (2012). Teachers understanding and practice towards a thematic approach in teaching integrated living skills (ILS) in Malaysia. *International Journal of Humanities and Social Science*, 2(23).

Muslam, H. (2011). Globalisasi dalam Pendidikan (Desain Kurikulum yang Harus Dikembangkan dalam Pendidikan Di Era Globalisasi). *Wahana Akademika: Jurnal Studi Islam Dan Sosial*, 12(1), 3–12.

Muslich, M. (2007). *KTSP dasar Pemahaman dan Pengembangan (pedoman bagi pengelola lembaga pendidikan, pengawas sekolah, kepala sekolah, komite sekolah, dewan sekolah dan guru)*. Jakarta: Bumi Aksara.

Nurhadi, B. Y., & Senduk, A. G. (2004). *Pembelajaran kontekstual dan penerapannya dalam KBK*. Malang: Universitas Negeri Malang Pres.

Prastowo. (2014). *Panduan Kreatif Membuat Bahan Ajar Inovatif*. Yogyakarta: Diva Press.

Prastowo, A. (2011). *Metode Penelitian Kualitatif dalam Perspektif Rancangan Penelitian*. Yogyakarta: Ar-Ruzz Media.

Prihadi, B. (2014). Penerapan Langkah-Langkah Pembelajaran Dengan Pendekatan Saintifik Dalam Kurikulum 2013. In *House Traning Implementasi Kurikulum*, 23–24.

Purwanto. (2009). *Evaluasi Hasil Belajar*. Yogyakarta: Pustaka Pelajar.

Raharja, S. (2013). *Konfigurasi Pendidikan antara Keluarga, Sekolah, dan Masyarakat: Pengaruhnya terhadap Kualitas Pendidikan Sekolah Menengah Pertama di Kabupaten Bantul*. Universitas Negeri Yogyakarta.

Rusman. (2012). *Model-Model Pembelajaran*. Jakarta: Raja Grafindo Persada.

Rusman. (2013). *Model-model Pembelajaran; Pengembangan Profesionalisme Guru*. Jakarta: Rajawali Pers.

Rusman. (2015). *Pembelajaran Tematik Terpadu: Teori, Praktik dan Penilaian*. Jakarta: Raja Grafindo Persada.

Rusmono. (2012). *Strategi Pembelajaran dengan Problem Based Learning itu Perlu*. Jakarta: Ghalia Indonesia.

Sagala, S. (2014). *Konsep dan makna pembelajaran*. Bandung: Alfabeta.

Sani, R. A. (2014). *Inovasi pembelajaran*. Jakarta: Bumi Aksara.

Sanjaya, W. (2007). *Strategi pembelajaran berorientasi standar proses pendidikan*. Jakarta: Kencana.

Sari, I. A. D., Ambarita, A., & Darsono, D. (2017). Pengembangan LKPD Berbasis PBL untuk Meningkatkan Kemampuan Berpikir Kritis Pada Pembelajaran Tematik Kelas IV Sekolah Dasar. *Jurnal Pedagogi*, 5(8).

Sudjana, N. (2010). *Penelitian Hasil Proses Belajar Mengajar*. Bandung: Remaja Rosdakarya.

Sugiyono. (2013). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif dan R&D*. Bandung: Alfabeta.

Sukmadinata, N. S. (2013). *Metode Penelitian Pendidikan*. Bandung: Remaja Rosdakarya.

Sumantri, M. S. (2015). *Strategi Pembelajaran Teori dan Praktik di Tingkat Pendidikan Dasar*. Jakarta: Rajawali Pers.

Sumarmi. (2012). *Model-Model Pembelajaran Geografi*. Malang: Aditya Media.

Sundayana. (2015). *Evaluasi Pembelajaran*. Bandung: Alfabeta.

Susanto, A. (2013). *Teori Belajar dan Pembelajaran di Sekolah Dasar*. Jakarta: Kencana Prenada Media Group.

Susanto, A. (2014). *Teori belajar dan pembelajaran di sekolah dasar*. Kencana.

Trianto. (2010). *Model Pembelajaran Terpadu dalam Teori dan Praktek*. Jakarta: Prestasi Pustaka.

Trianto, M. P. (2013). *Desain pengembangan pembelajaran tematik: Bagi anak usia dini*. Jakarta: Prenada Media.

Trilling, B., & Fadel, C. (2009). *21st Century Skills, Improved Edition: Learning for Life in Our Times*. John Wiley & Sons.

Turgut, U., Gurbuz, F., Salar, R., & Toman, U. (2013). The Viewpoints of Physics Teacher Candidates towards the Concepts in Special Theory of Relativity and Their Evaluation Designs. *Online Submission*, 5(4), 481–489.

Wijaya, C. (2010). *Pendidikan Remedial*. Bandung: Remaja Rosda Karya.

Wulansari, D. (2017). *Pengembangan Lembar Kegiatan Peserta Didik (LKPD) Berbasis Model Problem Based Learning Tema Lingkungan Sahabat Kita Peserta didik Kelas V Sekolah Dasar*. Universitas Lampung.

Yamin, M., & Ansari, B. I. (2008). *Taktik mengembangkan kemampuan individual siswa*. Jakarta: Gaung Persada Pers.

Yıldırım, N., Kurt, S., & Ayas, A. (2011). The effect of the worksheets on students' achievement in chemical equilibrium. *Journal of Turkish Science Education*, 8(3), 44–58.

Yusuf, M. (2014). *Metode Penelitian*. Jakarta: Kencana.