

Development of Student Worksheets Based on Problem-Based Learning Integrated HOTS Social Science Subjects

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Abstract: This research and development aim to (1) Assess the feasibility of PBL-based LKPD integrated HOTS social studies material; and (2) Assess the effectiveness of the PBL-based LKPD integrated HOTS for IPS material. This research method is research and development (R&D) in class VIII SMPN 1 Sei Suka, Batubara. The test results prove that there is a significant difference between student learning outcomes who are taught using the HOTS-integrated PBL-based LKPD and the results of the regular LKPD. The development is carried out through expert validation tests: material, learning design, graphic design experts, and trials: individuals, small groups, and the field. The data on the quality of this development product was collected using a questionnaire and analyzed using qualitative descriptive analysis techniques. The results showed; (1) the material expert test is on very good criteria and is suitable for use, (2) the learning design expert test is on the very good criteria and is suitable for use, (3) the learning media expert test is on the very good criteria and is suitable for use, (4) individual trials are on very good criteria, (5) small group trials are on very good criteria, and (6) field trials are on very good criteria. The effectiveness of the developed product shows that students' social studies learning outcomes are more effective using the HOTS-integrated PBL-based LKPD than the regular LKPD.

Keywords: student worksheets; problem-based learning; HOTS; social science

1. INTRODUCTION

The development of science, technology, and changes in society at the local, national, and international levels are the main foundations in the development of the 2013 Curriculum. (Information and Communication Technology) students to face global challenges in the 21st century. As part of the world community, students must understand the environment and society locally, nationally, and globally, be aware of cultural diversity (multicultural), develop social skills, and master technological developments [1].

Social Studies subject is one of the compulsory subjects in SMP/MTs which integrates the concepts of geography, sociology, economics, and history. Social Studies subjects use geography as a starting point (platform) for studies by considering all places, objects, resources, and events tied to location. The aim is to emphasize the importance of space as a place of life and resources for humans, recognizing the potential and limitations of space, that's why space is always interconnected (inter-space connectivity) to complement each other. As a result of the interaction between nature and humans, as well as connectivity between spaces, the conditions of space are constantly changing according to time and the development of technology used by humans.

Social studies learning is organized with an interdisciplinary, multidisciplinary, or transdisciplinary approach from Social Sciences, Humanities, and Psychology according to the development of students [2]. In the context of social studies learning, space is defined as the space of life in the Unitary

State of the Republic of Indonesia (NKRI). Social studies learning is expected to develop a sense of love for the homeland, and strengthen the unity and integrity of the Unitary Republic of Indonesia. As for the context of the formation of Indonesian people, social studies learning in SMP/MTs is expected to provide an understanding of the environment and society in the national and international scope so that they can develop knowledge, attitudes, think logically, systematically, critically, analytically, and socially. All of that, in the end, can increase understanding of the potential of Indonesia's territory, also develop nationalism, strengthen national attitudes, and be able to work together in a pluralistic society as citizens, citizens, and citizens of the world.

The 2013 curriculum expects teachers to be able to make Higher Order Thinking Skill (HOTS) questions and can create their own HOTS question bank for students to study. The purpose of the HOTS questions is to test students' abilities from the level of analysis to creating. The ability from the level of analysis to creation is very important in today's era of globalization, where world barriers no longer exist, in the context of work various people from various countries are very likely to become our competitors. Therefore, as the next generation, students must have competent cognitive abilities in terms of analysis, evaluation, and the creation of new things.

Higher order thinking skills are one of the thinking processes that do not only remember and convey information received, but also require being able to connect, manipulate, and transform knowledge and experience that has been received to think critically and creatively to make decisions and solve

problems in situations. new [3]. Students can be said to have higher-order thinking skills if these students obtain new information from the results of manipulating existing information in their way [4]. Higher order thinking skills are closely related to Bloom's Taxonomy.

Weak LKPD on students causes students' understanding when working on questions, especially HOTS questions to find problems. From the results of preliminary research conducted in class VIII using interview instruments, it is known that students have low higher-order thinking skills. Based on the author's observations, the LKPD used for class VIII students of SMPN 1 Sei Suka, Batubara is not completely PBL-based as well as the questions contained in the LKPD have not been made students have higher-order thinking skills. In fact, in the 2013 curriculum, teachers are expected to be able to arrange HOTS questions so that students do not only answer at levels C-1 (knowing), C2 (understanding), and C-3 (applying), but also level C-4 (analyzing), C-5 (evaluate), C-6 (create) [5]. 84% of the teachers of SMP N 1 Sei Suka, Batubara have not been able to make questions that make students think at a higher level. This is in stark contrast to the demands of the 2013 curriculum.

Thus, PBL-based worksheets like this indirectly facilitate the achievement of learning objectives. Because through things that are often seen, experienced, and found in the lives of students, if they are properly linked to the learning content, they can create meaningful learning [6]. This was before the researchers developed learning tools in the form of PBL-based worksheets. Researchers consider several things including the suitability of PBL-based LKPD with the characteristics of the material to be taught. The PBL-based IPS LKPD which will be developed by researchers is in the form of a product and synchronized with the characteristics of the material on the topic of discussion according to the Basic Competencies.

This subject is one of the interesting materials in the Social Studies subject for class VIII semester 2. This is because of each component of the subject matter such as; The Arrival of Western Nations to Indonesia; Conditions of Indonesian Society during the Colonial Period; and the Growth and Development of the National Spirit. This material change activity is often seen and also carried out by students. For this reason, researchers plan to implement the PBL concept in social studies learning which is realized in PBL-based LKPD and is associated with the daily activities of students (contextual) at the junior high school level by the subject matter of "Changes in Indonesian Society in the Colonial Period and the Growth of Spirit". Nationality". In addition, class VIII junior high school students are just starting to think logically in solving problems, so they still need intensive guidance from the teacher in learning [7]. This is the background of the researchers who set students in class VIII as objects in this study.

1.1 Learning Outcomes of Social Sciences (IPS)

Learning outcomes are a measure or level of success that can be achieved by a student based on the experience gained after an evaluation in the form of a test and is usually manifested by certain values or numbers and causes cognitive, affective, and psychomotor changes [8].

The cognitive, affective, and psychomotor areas as learning outcomes are formulated by Bloom [9] where each aspect has

an educational goal. The cognitive area includes educational goals related to the remembrance or recognition of knowledge and the development of intellectual skills and abilities. The effective area includes educational goals that describe changes in interests, attitudes, values, and the development of appreciation. The psychomotor area includes learning outcomes related to manipulation and limb movement skills. In this study, learning outcomes were measured using Bloom's taxonomy which was revised by Anderson and Krathwohl.

The scope of development of HOTS-based PBL-based LKPD in social studies material includes: (1) understanding spatial changes and interactions between spaces in Indonesia and ASEAN countries caused by natural and human factors (technology, economy, land use, politics) and their effects on sustainability economic, social, cultural, political life; (2) spatial changes and interactions between spaces in Indonesia and ASEAN countries caused by natural and human factors (technology, economy, land use, politics) and their influence on the sustainability of economic, social, cultural, political life; (3) the influence of social interaction in different spaces on socio-cultural life and the development of national life; (4) the influence of social interaction in different spaces on social and cultural life as well as the development of national life; (5) analyze the advantages and limitations of space in supply and demand, technology and its influence on the interaction between spaces for economic, social, cultural activities in Indonesia and ASEAN countries; (6) presents the results of an analysis of the advantages and limitations of space in demand and supply, technology and its influence on the interaction between spaces for economic, social, cultural activities in Indonesia and ASEAN countries; (7) analyze the chronology, changes and continuity of space (geographic, political, economic, educational, social, cultural) from the colonial period to the growth of the national spirit; and (8) presenting a chronology of changes and spatial continuity (geographical, political, economic, educational, social, cultural) from the colonial period to the growth of the national spirit.

Thus, what is meant by learning outcomes in this study is the level of success that can be achieved by a student based on the experience gained after an evaluation in the form of a test that causes changes that include remember (remember), understand (understand), apply (apply), analyze (analyze), evaluate (evaluate), create (create). In addition, it is also seen with practical assessments.

1.2 Student Worksheets Based on PBL

LKPD is a learning tool developed by teachers as a facility for improving learning activities. LKPD is prepared by design and can be developed according to the situation and conditions of the learning activities to be carried out [10]. The teacher himself understands and understands the conditions of learning, both in the classroom and in the learning environment of his students.

According to the Ministry of National Education, LKPD (student worksheets) are sheets containing tasks that must be done by students, usually in the form of instructions, and steps to complete a task by referring to the Basic Competencies (KD) that will be achieved. This is in line with the opinion of another expert Majid [11] who stated that; "Student worksheets are sheets containing assignments that must be done by students. LKPD is usually in the form of instructions, and steps to complete a task. The tasks ordered in the LKPD must be clear about the basic competencies to be achieved". Meanwhile, according to Katrina, and Laila [12] Student Worksheets are

sheets containing work steps that must be done by students. LKPD is in the form of sheets in which there are activities to be carried out by students equipped with work steps so that students can carry out activities according to the instructions. In the use of LKPD, the teacher acts as a facilitator for students so that it can stimulate students to be more active. The utilization of LKPD must look at the conditions and needs of the learning activities to be carried out.

LKPD is a learning tool that plays an important role in learning. According to Relia, and Lika [13], LKPD has printed teaching materials in the form of sheets of paper containing material, summaries, and instructions for implementing learning that must be done by students, which refers to the achievement of a basic concept that must be achieved. So, according to the opinion above, it can be seen that LKPD is a collection of sheets of paper containing material, tasks that must be carried out in learning activities, and steps that must be taken in learning. The tasks given in the LKPD must be clear and by the material so that the basic competencies and learning objectives to be achieved can be achieved properly as expected.

LKPD is one of the learning resources known in the 2013 curriculum which is used to assist teachers in training students' skills in finding concepts through work steps and problems provided along with assessment techniques. Teachers are required to be able to carry out learning according to the applicable curriculum. Therefore, it is necessary to have learning tools that actively develop students. LKPD is a means to assist and facilitate teaching and learning activities so that effective interaction is formed between students and educators, which can increase student learning activities and achievements.

LKPD can be developed referring to the PBL strategy. The PBL strategy requires the teacher to help students find their data, information, and facts from various sources so that this activity becomes an experience for students to solve other problems [14]. And so that students understand and can apply knowledge, students must work to solve problems, find things on their own, and try hard with their own id [15]. So that

students' creative thinking skills can be honed through problem problem-solving of phenomena or facts that occur.

The main problems in this study are: (1) how is the feasibility of the PBL-based IPS LKPD integrated HOTS in Social Studies subjects for Class VIII SMP; (2) how is the effectiveness of the HOTS-based PBL-based IPS LKPD in Social Studies subjects for Class VIII SMP.

2. METHOD

This research includes Research and Development. In this study, a valid, practical, and effective station rotation blended learning model was developed, and learning tools and Instrumente nts needed for the development process of the HOTS-based PBL-based IPS LKPD. The development process uses the Borg & Gall model.

The place for this research is in class VIII of SMPN 1 Sei Suka, North Sumatra. The subjects of this study were teachers and students in the second semester of the 2021/2022 academic year. At the stage of developing the HOTS-based PBL IPS LKPD, the targeting, in this case, is lecturers, learning experts, the field of study experts, and students who assess learning teaching materials that have been developed based on the following criteria: (1) evaluation of learning experts (expert judgment) is determined based on the expertise it has, (2) the evaluator who carries out the evaluation is determined based on the ability of the experts with the classification of experts in the field of study.

Data collection in research and development is divided into three parts, namely preliminary research, development, and verification testing. At each stage of the study, certain data collection techniques were selected according to their respective objectives. In the preliminary study, in addition to the literature study, questionnaires, observations, and document recording techniques were also selected. Generally, these three technologies can be used simultaneously and complement each other.

Table 1. Grid of the HOTS-based Integrated PBL LKPD IPS Assessment Instruments

Aspect	Component	Indicator
Contents	Learning approaches	Emphasis on the learning process
		Emphasizes the relationship between science and technology and life
		The suitability of learning activities with the applied approach
		Inviting students to be active in learning
	Concept truth	Conformity of the concept with the concept put forward by the experts
		The truth of the material arrangement
	Concept depth	The depth of the material according to the ability of students
	Concept suitability	Conformity of the concept with the classification material and material changes in the curriculum
	The suitability of the experimental activities with the material in the curriculum	
	The information presented follows the times	
Presentation	Learning Activities	Student involvement in learning activities Student-centred
		Suitability with learning characteristics
		Ability to stimulate students' depth of thinking through illustrations, case analysis, and practice questions
	Experiment activity	Providing hands-on experience
		The student activities are carried out to encourage students to conclude the concepts, laws, or facts being studied
		Practical activities/trials are easy to implement
	Execution	The subject matter is by the time allocation at school
		The relationship between learning activities
Evaluation	The assessment instructions used are easy to understand, precise and clear	

		Measuring cognitive, affective, and psychomotor abilities
		Measuring the achievement of learning success indicators
Appearance language	Contents	The suitability/accuracy of the illustration with the material
		Presentation of text, tables, images, and attachments accompanied by references/reference sources
		The balance between text and illustrations
		Glossary clarity
	Visualization	The accuracy of the color selection in the image
		Print images and clear writing
		LKPD physical appearance can encourage students' reading interest
language	Sentence clarity	Sentences are easy to understand and do not cause double meaning
		The language uses standard language
		The language used is communicative

Rajagukguk [16]

The method used is a quasi-experimental method using a non-equivalent control group design. This design was used because of the limited population of the research sample and in this design the experimental group was not chosen randomly, then a pretest was given to determine whether there was a difference between the experimental group and the control group in the initial state.

Table 2. Experimental diagram (non-equivalent control group design).

Group	Pretest	Treatment	Posttest
Experimental group	O1	X	O2
Control group	O3	-	O4

The arrangement of the scale used in this questionnaire or questionnaire is based on a Likert scale (interval 1 to 5) and the average score for each question item in the questionnaire and evaluation sheet will be calculated. After that, the average score is converted into scores on a scale of 5.

Table 3. Assessment criteria for HOTS-based IPS LKPD IPS

Score	Criteria	Scoring	
		Formula	Calculation
5	Very Worthy	$X > Mi + 1,8 SBi$	$X > 4,24$
4	Worthy	$Mi + 0,6 SBi < X < Mi + 1,8 SBi$	$3,4 < X < 4,2$
3	Decent enough	$Mi - 0,6 SBi < X < Mi + 0,6 SBi$	$2,6 < X < 3,4$
2	less worthy	$Mi - 1,8 SBi < X < Mi - 0,6 SBi$	$1,8 < X < 2,6$
1	Very less worthy	$X < Mi - 1,8 SBi$	$X < 1,8$

Data collection techniques in this study use tests. The test is used for Pretest and Posttest. Analysis technique with t-test. This analysis is measured based on the effectiveness of learning using a question instrument and hypothesis testing using the t-test. The significant level used is 5%. After the t-test, the two classes were compared with the number of students who experienced an increase in effectiveness between the two classes.

3. RESULTS AND DISCUSSION

The product development of the HOTS-based PBL IPS LKPD shows a high level of validity and feasibility so that the model

product can be used in the learning process of social studies subjects.

3.1 Feasibility of integrated PBL-based IPS LKPD HOTS

The next stage of the results of the PBL-based HOTS-based IPS LKPD Trial to students in social studies learning was carried out with 32 students with varying abilities (randomly) as respondents. The selection of individual trial subjects worked with subject teachers to guide the use of the HOTS-based integrated PBL IPS LKPD. The purpose of the first trial was to find out the extent to which students' responses to the HOTS-based PBL-based IPS LKPD were integrated. The results of student respondents from the trial I / small groups are as follows:

Table 4. HOTS-based integrated PBL-based LKPD IPS trial data

No	Indicator	Score Rating	Total Score	%
1	Face/Layout Aspect	4,02	5	80,4
2	Design Aspect	3,75	5	84,5
3	Content Feasibility Aspects	3,64	5	83,1
4	Aspects of Feasibility of Presentation	3,69	5	88,9
5	Language Aspects	3,73	5	87,3
	Average	3,71	5	82,5

Based on the results of the trial I/small group, the average value was 3.71. With Good criteria. Overall, the results of the student assessments for the first trial obtained an average value of 3.71, which means that the HOTS-based integrated PBL IPS LKPD is feasible to be used as a learning resource in social studies learning.

3.2 Effectiveness of Student Learning Before Implementing HOTS-based IPS LKPD IPS

To determine the effectiveness of student learning between the experimental class and the control class before being given treatment, the t-test was carried out with pretest data. To find out t table use: $dk = n1+n2 - 2$. Criteria for acceptance of H_0 and H_a are if $t_{count} > t_{table}$ then H_0 is rejected and H_a is accepted, and if $t_{count} < t_{table}$ then H_0 is accepted and H_a is rejected. The results of the pretest t-test calculation can be seen in table 5 below:

Table 5. Uji t-tes Data Pretest

Class	Mean	Variant	t _{count}	t _{table}	Decision
Experiment	56,44	67,74	0,44	2,01	t _{count} < t _{table}
Control	66,30	76,72			

Based on Table 5 above, it can be seen that the magnitude of the tcount is 0.44. Then the tcount score was consulted with the ttable value at a significant level of 5% and dk 51. The ttable score at a significant level of 5% and dk 51 was 2.01. This shows that the ttable score is smaller than the ttable score (t_{count} = 0.44 < t_{table} = 2.01). Based on the calculation results, it can be concluded that there is no difference in early learning ability between the experimental class and the control class. If the students' post-test results show differences, then the difference in learning outcomes is due to the treatment process using the HOTS-based integrated PBL LKPD IPS that has not been applied.

3.3 Effectiveness of learning after implementing the HOTS-based integrated PBL IPS LKPD

To determine the effectiveness of student learning between the experimental class and the control class after being treated using the HOTS-based integrated PBL IPS LKPD, it was carried out using a t-test of posttest data. To find out t table using: dk = n1+n2 - 2. Criteria for acceptance of Ho and Ha are if t_{count} > t_{table} then Ho is rejected and Ha is accepted, and if t_{count} < t_{table} then Ho is accepted and Ha is rejected. The results of the pretest t-test calculation can be seen in table 6. below:

Table 6. t-test Data Posttest

Class	Mean	Variant	t _{count}	t _{table}	Decision
Experiment	76,55	92,49	4,02	2,01	t _{count} > t _{table}
Control	69,30	70,02			

Based on Table 6. above, it can be seen that the magnitude of the tcount is 4.02. Then the tcount score was consulted with the ttable value at a significant level of 5% and dk 51. The ttable score at a significant level of 5% and dk 51 was 2.01. This shows that the tcount score is greater than the ttable score (t_{count} = 4.02 > t_{table} = 2.01). Thus Ho is rejected and Ha is accepted. So that there is a significant difference in the value of student learning effectiveness after being treated using the HOTS-based integrated PBL IPS LKPD.

The relationship between the HOTS-based integrated PBL IPS LKPD in this study helps students in higher-order and creative thinking, so what Arends, Richard I said. [17] states that there is a relationship between PBL and creative thinking because PBL is a learning approach where Students are faced with authentic (real) problems so that students are expected to be able to construct their knowledge, develop higher-order thinking skills, and make students independent and increase their self-confidence. Yusuf, M. [18] also stated that PBL can develop students' thinking skills, practice problem-solving skills, and improve subject matter mastery because PBL is applied to stimulate higher order thinking in problem-oriented situations, including learning how to learn.

HOTS-based PBL-based IPS LKPD according to the research results. The PBL strategy requires teachers to help students find their data, information, and facts from various sources so that this activity becomes an experience for students to solve other problems. And so that students understand and can apply knowledge, students must work to solve problems, find things on their own, and try hard with their ideas [18]. So that students' creative thinking skills can be honed through problem-solving analysis of phenomena or facts that occur.

Other research shows that the HOTS-integrated PBL-based Social Worksheet LKPD requires students to develop knowledge significantly, so according to Nuriyah, and Siti [18], the PBL learning model supports chemical equilibrium material because it has learning characteristics that begin with a problem, usually, the problem has a context with In the real world, students in groups actively formulate problems and identify gaps in students' knowledge, study and find material related to the problem themselves, and report solutions to problems.

Sofyan, Herminarto [19] in his research states that student learning outcomes in the realm of knowledge, attitudes, and skills of students with the PBL model equipped with LKPD are categorized as good with the percentage of students who achieve the core competencies of the 2013 curriculum respectively are 78%, 81.24 %, and 78.13%, indicating that there is a positive influence on the application of the PBL learning model to the student's understanding of concepts in SMAN 1 Paraung on Chemical Balance material. Based on the above background, PBL-based worksheets were developed to train students in creative thinking on chemical equilibrium material. The objectives to be achieved in this research are: (1) Knowing the feasibility of PBL-based LKPD to train students' creative thinking. (2) knowing students' responses to the developed LKPD and (3) knowing the role of PBL-based LKPD in training students' creative thinking.

4. CONCLUSION

The feasibility of the HOTS-based integrated PBL IPS LKPD is declared suitable for use in learning social studies subjects, based on assessments from material experts, learning design experts, and graphic design experts getting good grades. The results of trial I and trial II got a very good average value. So based on the results of the data obtained from the assessment of material experts, media experts, lecturers, trial I, and trial II it was stated that the PBL-based LKPD IPS was integrated with HOTS with Good criteria.

The effectiveness of student learning has increased in the experimental class that uses the HOTS-based PBL IPS LKPD compared to learning in the control class where the learning process does not use the usual LKPD. The use of the HOTS-integrated PBL-based IPS LKPD is highly expected by students in the learning process, so that it can improve social studies learning outcomes for class VIII SMPN 1 Sei Suka, North Sumatra.

5. REFERENCES

- [1] Sipuan, S., Warsah, I., Amin, A. and Adisel, A.: Pendekatan Pendidikan Multikultural, Aksara J. Ilmu Pendidik. Nonform., vol. 8, no. 2, p. 815. doi: 10.37905/aksara.8.2.815-830.2022 (2022)
- [2] Nasution, M. A. L. T.: KONSEP DASAR IPS, 1st ed.

- Yogyakarta: Penerbit Samudra Biru (2018)
- [3] Saraswati, P. M. S., and G. N. S. Agustika, G.N.S.: Kemampuan Berpikir Tingkat Tinggi Dalam Menyelesaikan Soal HOTS Mata Pelajaran Matematika, *J. Ilm. Sekol. Dasar*, vol. 4, no. 2, p. 257. doi: 10.23887/jisd.v4i2.25336 (2020)
- [4] Rofiah, E. Y, Aminah, E. N. S., & Ekawati.: Penyusunan Instrumen Tes Kemampuan Berpikir Tingkat Tinggi Fisika pada Siswa SMP, *J. Pendidik. Fis. Univ. Sebel. Maret*, vol. 1, no. 2, pp. 17–22 (2013)
- [5] Sumar, W. T., and Sumar, S. T.: Implementasi Program Pengembangan Keprofesian Berkelanjutan Guru melalui Peningkatan Kompetensi Pembelajaran Berbasis Zonasi, *PEDAGOGIKA*, vol. 10, no. 2, pp. 84–94, Apr. doi: 10.37411/pedagogika.v10i2.60 (2020)
- [6] Pamungkas, A.: Pengembangan Bahan Ajar Berbasis Literasi pada Materi Bilangan bagi Mahasiswa Calon Guru SD, *J. Pendidik. Sekol. Dasar*, vol. 3, no. 2, doi: DOI: 10.30870/jpsd.v3i2.2142 (2017)
- [7] Bujuri, D. A.: Analisis Perkembangan Kognitif Anak Usia Dasar dan Implikasinya dalam Kegiatan Belajar Mengajar,” *LITERASI (Jurnal Ilmu Pendidikan)*, vol. 9, no. 1, p. 37, doi: 10.21927/literasi.2018.9(1).37-50 (2018)
- [8] Wulandari, B., and H. D. Surjono, H. D.: Pengaruh problem-based learning terhadap hasil belajar ditinjau dari motivasi belajar PLC di SMK, *J. Pendidik. Vokasi*, vol. 3, no. 2, pp. 178–191. doi: 10.21831/jpv.v3i2.1600 (2013)
- [9] Hasan, J.: ANALISIS PENGUASAAN DOMAIN KOGNITIF, AFEKTIF, DAN PSIKOMOTORIK TERHADAP KEPUTUSAN PILIHAN BERWIRUSAHA MENGHADAPI MASYARAKAT EKONOMI ASEAN-2015 (Studi Pada Mahasiswa Pendidikan Ekonomi FKIP Universitas Syiah Kuala) *Ishak, J. Kebangs.*, vol. 4, no. 7, pp. 19–26 (2015)
- [10] Wandari, A. Kamid, K., and Maison, M.: Pengembangan Lembar Kerja Peserta Didik (LKPD) pada Materi Geometri berbasis Budaya Jambi untuk Meningkatkan Kreativitas Siswa,” *Edumatika J. Ris. Pendidik. Mat.*, vol. 1, no. 2, p. 47. doi: 10.32939/ejrpm.v1i2.232 (2018)
- [11] Majid, A.: Perencanaan Pembelajaran Mengembangkan Kompetensi Guru. Bandung: PT Remaja Rosda Karya (2011)
- [12] Katriani, L.: Pengembangan Lembar Kerja Siswa,” *Pros. Math. Sci. Forum*, pp. 819–824 (2016)
- [13] Relia, L.: Keterkaitan antara Lembar Kerja Peserta Didik (LKPD) Matematika dengan Model Pembelajaran Kreatif , Inovatif , dan Produktif (KIP),” *Prism. Semin. Nas. Mat.*, pp. 97–103 (2012)
- [14] Sutrisno, “Problem Based Learning Sebagai Suatu Strategi Pembelajaran untuk Menumbuh-Kembangkan Atmosfer Kebebasan Intelektual,” *J. Inov. Pendidik. Sains*, vol. 2, no. 1, pp. 1–12, 2011.
- [15] Syam: The relationship between the Problem Based Learning (PBL) model with student learning outcomes,” vol. 3, no. 3, pp. 2050–2055, 2006, [Online]. Available: <https://jurnal.uns.ac.id/shes> (2020)
- [16] Rajagukguk: Pengembangan Lembar Kerja Peserta Didik (LKPD) Berbasis Discovery Learning Untuk Meningkatkan Hasil Belajar IPA Pada Materi Tata Surya Di SMP Negeri 10 Satap Torgamba,” *Universitas Negeri Medan* (2017)
- [17] Arrends, R. I.: *Learning To Teach*. Yogyakarta: Pustaka Pelajar (2008)
- [18] Yusuf, M.: Model Problem Based Learning Membangun,” *Cakrawala Pendas*, vol. 3, no. 2, pp. 57–63 (2017)
- [19] Sofyan, H., and Komariah, K.: Pembelajaran Problem Based Learning Dalam Implementasi Kurikulum 2013 Di Smk,” *J. Pendidik. Vokasi*, vol. 6, no. 3, p. 260. doi: 10.21831/jpv.v6i3.11275 (2016)