Using Probem based Worksheet to Enhance Secondary School

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Using Probem based Worksheet to Enhance Secondary School Students' Performance

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Abstract: The main objective of Social Science as an educational program is to develop learners' potential to be aware of social problems that occur in society. In the Social Studies learning context, it is necessary to develop students' worksheet that could develop students' critical ability in looking at the social problem. This study aimed to design, test, evaluate, and revise the PBL based Students' Worksheet for Social Science subject. Development research was used as the method of the research. Development activities were carried out with the following stages; analysis, design, development, and evaluation. The evaluation adopted the Tessmer formative test with these following stages: self-evaluation, expert review, one to one, small group, and field test evaluation. The prototype was validated by experts in the fields of materials, language and instructional design. The result of the study shows that the students' worksheet developed is stated valid by learning design experts through the experimental stage of review, one to one and small group evaluation. Furthermore, it is also effectively improving the concept of Social Science and students' activeness through the stages of field trials.

1 INTRODUCTION

The main purpose of Social Science as an educational program is to develop the students' potential to be aware of social problems that occur in society, have a positive mental attitude towards the improvement of all inequalities which occur in the community, and skilfully overcome everyday problems which afflicts either himself or the society (Mutakin, 1998). In order to achieve the learning objectives, a learning process that makes it easier for students to understand the material taught by the teacher and good learning resources for students is needed. The learning process itself according to Raymond (2009: 19) consists of several components, namely learning objectives, learning materials, learning methods or strategies, resources, media, and evaluation.

Through the learning process components, it can be seen that learning resources are one of the important components in the learning process because good learning resources will be able to stimulate students to participate actively, present their knowledge, and provide direct experience to them. To be associated with the purpose of Social Science as an educational program that aims to develop learners' social and intellectual skills, it is needed a learning resource which is able to encourage students to think critically, analytically and argumentatively both individually and in groups in understanding the phenomena and social problems in society. Learning resources are all things that lead to learning processes and can be used as teaching materials.

One of teaching material is the Students' Worksheet (LKPD). The function of the Students' Worksheet according to Andhin, (2016: 8) is a teaching material that can minimize the role of educators, encourage students to be active, as teaching materials that facilitate students to understand the material provided, as a brief teaching material and provide a lot of task for the students to practice their analytical and argumentative thinking. Social studies as an educational program aims to encourage students to think critically, analytically and argumentatively. So, Students' Worksheets which are used as teaching materials are the worksheets that are able to facilitate learners to reach their social studies goals through the task they have been done. For this reason, it is necessary to develop Students' Worksheet that is able to develop their thinking skills. The intended Students'

Worksheet is the worksheet which derived from the Problem Based Learning approach.

Problem based learning is learning by exposing students to practical problems as a foundation in learning or in other words students learn through problems (Wena, 2009: 91). According to Sudarman (2007) Problem Based Learning is an approach that uses the real world as a context for students to learn about critical thinking and problem solving skills, as well as to obtain important insights and concepts from the subject. Learning by using PBL based Students' Worksheet is a learning activity using the Students' Worksheet which emphasizes the problem solving process faced in real life and encourages students to play an active role in the teaching and learning process. This study aims to design, test, evaluate, and revise Students' Worksheet based on Problem Based Learning on Social Science subject in a Junior High School in Palembang. Specifically, the objective of this study is to produce a product in the form of a valid, practical Students' Worksheet and the effectiveness of product utilization on learning outcomes and the activeness of students in Social Science learning.

2 RESEARCH METHOD

The study was conducted in the even semester of 2017/2018 academic year with the students of Junior High School as the subject of the research. The working procedures in this research are analyzing, designing, developing, and evaluation activities combined with Tessmer Formative Evaluation including self-evaluation, expert evaluation, one to one evaluation, small group evaluation, and field test. In the analyzing phase, the researcher identified the need analysis to identify the state and gap which occur in the learning. Need analysis was done before the designing process. This analysis was conducted toward the curriculum, learning material, student characteristics, learning facilities, and learning situation to identify all needs in the development of Problem-based Students' Worksheet. The data were collected through interviews of Social Science teachers and students which then completed with direct observation in schools. In addition, the data were also obtained through literature analysis and related documents. At the designing stage, the researcher prepared the materials to make Students' Worksheet product design based on Problem Based Learning. The design was done on the purpose of learning, subject matter, exercise task, assessment

instrument, learning format, and others. The designing phase should be systematic and specific.

In the developing phase, researchers develop learning objectives, learning material, exercises, assessment instruments, learning formats, etc. Then assemble all components to create prototype products 1. In the developing process, researchers conducted prototype feasibility tests using formative evaluation. Then, the prototype was revised based on the evaluation and self-evaluation stage; the researcher evaluated his own Problem-Based Students' Worksheet that had been developed, before entering the validation stage by experts and product trial. The researcher asked for advice from colleagues to improve product design. This evaluation was done when researchers designed and developed early prototypes. Expert review was performed by the instructional design experts and material experts. The material feasibility test was conducted to evaluate the content of Students' Worksheet product material while pedagogical feasibility was tested to assess the learning design in the product in accordance with the principle of Problem Based Learning. The language feasibility test was performed to assess the accuracy of the language used in the Students' Worksheet product. Feasibility test results from this expert review were used to make improvements to the prototype before entering the next stage. The process and results of the revisions in this stage produced prototype 1.

During one to one evaluation stage the product was tested to three students. At this stage, questionnaires were given to the students to know their responses to prototype 1. This process aimed to determine the practicality of using the product in the learning process. Students' comments at the evaluating stage were guided in making revisions to produce prototype 2.

In the small group evaluation stage, prototype 2 was piloted in small groups aiming to see the weaknesses that were then corrected before entering the next test phase. Prototype 2 was tested toward nine students. At the end of the activity, a questionnaire was given to the students to measure the practicality of the prototype 2. The students' comments on this small group evaluation stage were used in revision of prototype 2 to produce prototype 3. Field Test was performed on prototype 3 which was the result of revision after small group evaluation stage. In the field evaluation phase, classroom learning was conducted using Problem-Based Students' Worksheet. Before and after the learning activities, test results of cognitive learning to measure the effectiveness of product use in

learning. Field test activity was conducted to the students of Junior High School 18 Palembang. Field test activity was also done to see the activity and student learning outcomes.

3   RESULT AND DISCUSSION

The result of this study was valid, practical, and effect PBL based Students' Worksheets to be used in learning Social Science in Junior High School. This research used Hannafin and Peck development model which included three phases of activities that are analysis, design, development, and also implementation phase which is accompanied by evaluation and revision process. From the results of researchers' observations and interviews with Social Science teachers on the course of Social Science learning in the first grade of Junior High School students were identified the interest and participation of student learning and mastery of Social Science concepts which were indicated lo by learning outcomes and learning motivation. In the learning process, teachers and students were used teaching materials in the form of textbook that have not been able to facilitate, trigger and encourage students to be sensitive to understand, assess, criticize and find solutions to social problems of that occur in society. This problem will be solved by developing Problem-Based Student Worksheets.

During the design phase, the initial step is curriculum analysis which aims to determine which material requires Students' Worksheet, arranging the Students' Worksheet needs map to find out the number and sequences of Students' Worksheet and determine the Students' Worksheet title based on the Basic Competencies of the curriculum. After analyzing, drawing up a map of needs and determining the Students' Worksheet title was the next step in this design is to create Students' Worksheet with title structure, learning instructions, basic competencies, indicators, learning objectives, material descriptions, the worksheet supporting information, assignments and work steps that systematically include problem identification activities, assign temporary answers (hypotheses), collect or search for relevant data to support the hypothesis, test the truth of the answers and draw conclusions as the implementation point of problem based learning.

Students' Worksheet products that have been completed in the design phase are then developed into a teaching material product in the form of PBL based Students' Worksheet. During the development

process, an evaluation and revision of the shortcomings of the produced Students' Worksheet was carried out. Products that have been developed before which were implemented in the field are evaluated first. The evaluation used was the Tessmer evaluation model which includes stages of self-evaluation, review experts, one to one evaluation, small group evaluation and field tests. In the stage of self-evaluation, developed Students' Worksheets based on Problem Based Learning were evaluated by the research team themselves. Evaluation was focused on design, layout, and content. Some improvements made after this stage of self-evaluation are; black and white Students' Worksheets were printed in color to make them more attractive; front cover image which was originally a picture of a polluted river was replaced with urban images; in the material description of the ASEAN countries competency was added a picture of the countries symbol next to the flag images.

In the experimental stage of review, the Students' Worksheet based on problem based learning product had been revised through self-evaluation stage validated by expert and teacher practitioners who have experience in social science learning. Validation focused on design, layout and content. The result of the improvement of product will be called prototype 1.

In the expert review stage, Problem-Based Students' Worksheet products which have been revised through the self-evaluation stage are validated by expert and teacher practitioners who have experienced in teaching Social Science. Validation focused on the design, layout, and content. The product improvement result after getting input from the validator will be prototype 1.

The evaluation of design expert validator and practitioner teacher on the worksheets was assessed based on three aspects of assessment; *first,* content feasibility, which consisted of material suitability with Competency Standards and Basic Competencies, material accuracy, material support, and material updates, *second,* presentation feasibility which consists of four indicators; presentation techniques, supporting presentation, learning presentation and completeness of presentation, *third,* language feasibility consisting of six indicators; logical, communicative, dialog and interactive, conformity with the level of student development, clarity in the flow of thought and the use of term symbols.

The average score of two validators on content feasibility is 4.30, which means that the developed PBL based Students' Worksheets is very feasible to

be seen from the indicator of content feasibility. The average score of the assessment of two validators on the presentation feasibility is 3.90, which means that the developed Students' Worksheet is appropriate to use as seen from the indicators of presentation feasibility. Furthermore, the average score of two validators on language feasibility is 4.20, which means that the developed worksheets are appropriate to be seen from the indicator of language feasibility. Combined with the results of the assessment of two design validators on the three indicators, it was obtained an average of 4.13 which means that the developed Students' Worksheet products based on Problem Based Learning are Valid.

For more details, the results of expert assessment and learning design practitioners on Students' Worksheet based on Problem Based Learning developed can be seen in table 1 below.

For more details, the results of the experts and learning design practitioners assessment on the developed Students' Worksheet products of Problem-Based Learning can be seen in Table 1.

Table 1: The results of design expert validation on PBL based students' worksheet.

Aspect of Assessment	Expert (validator)	Validation Result	Average of Validation Result	Category
Proper of Contents	Validator 1	4,23	4,30	Very Valid
	Validator 2	4,38		Valid
Proper of Presentations	Validator 1	3,80	3,90	Valid
	Validator 2	4,00		
Proper of Language	Validator 1	4,10	4,20	Valid
	Validator 2	4,30		
	Average		4,13	Valid

Furthermore, the assessment of the material expert validator on PBL based Students' Worksheet was assessed based on three aspects of assessment; *first,* content feasibility, which consisted of three indicators; clarity of learning objectives, suitability of PBL based Students' Worksheet with Curriculum and supporting material, *second,* presentation consists of seven indicators; presentation techniques, supporting presentation, learning presentation, conformity with the level of student development, suitability and regularity of the flow of ideas, presentation completeness, *third,* language feasibility consists of three indicators; straightforward, communicative, dialog and interactive.

The average result of the assessment of two experts material to the feasibility of the content is 3.97, which means Students' Worksheet based problem based learning developed very used seen from the content feasibility indicator. The average result of the appraisal assessment of two expert material experts to the feasibility of presentation is 4.03 which means that Students' Worksheet based on problem based learning developed feasible to be used seen from the indicator of feasibility of presentation. Furthermore, the average result of the assessment of two experts material validator to the feasibility of language is 3.92, which means Students' Worksheet based problem based learning developed feasible to be used seen from the language feasibility indicator. When combined the assessment results of two expert material experts validator to the three indicators obtained an average of 3.97 which means Students' Worksheet based on Problem Based Learning products developed Valid. For more details, the results of expert assessment of the material on Students' Worksheet based on Problem Based Learning developed can be seen in table 2 below.

The average score of two material expert validators on the feasibility of content is 3.97, which means that the developed Students' Worksheet is feasible to be seen from the indicator of content eligibility. The average score of the assessment of two material expert validators on the presentation feasibility is 4.03, which means that developed PBL based worksheet is appropriate to use as seen from the indicators of the feasibility of presentation. Furthermore, the average score of the assessment of two material expert validators on the feasibility of language is 3.92, which means that Students' Worksheet which has developed is appropriate to use seen from the indicators of language feasibility. By combining the results of the assessment of two material expert validators on the three indicators, it was obtained an average of 3.97 which means that the PBL based worksheet products was Valid. For more details, the results of the PBL based Worksheet assessment can be seen in Table 2.

Table 1 and Table 2 above show the developed PBL based Students' Worksheet has been declared valid at making various improvements to the product based on the suggestion from the validator. The results of the development in this review phase became prototype 1 of product development for PBL based Students' Worksheet, which was then tested through one to one evaluation.

Table 2: Expert material validation results on PBL based students' worksheet .

Aspect of Assessment	Expert (validator)	Validation Result	Average of Validation Result	Category
Properness of contents	Validator 1	3,88	3,97	Valid
	Validator 2	4,06		
Properness of presentation	Validator 1	4,20	4,03	Valid
	Validator 2	3,87		
Properness of language	Validator 1	4,17	3,92	Valid
	Validator 2	3,67		
	Average		3,97	Valid

In the one to one evaluation phase, prototype 1 was tested on three students of grade VIII in Junior High School who possess medium and low achievement. Trials were conducted to find out the difficulties which may arise during the process of using the Students' Worksheet in the lesson. After learning by using the PBL based Students' Worksheet, the three students were asked to give some comments by filling in the given questionnaire. Highly skilled student said, Social Science learning becomes more interesting, because he has already heard the discussed cases in the Television and newspapers which make him easier to understand the topic since it was the actual cases and displayed in the Students' Worksheet.

Moderate-skill student said that learning using the Students' Worksheet is fun, the colourful worksheet made it more interesting. The task was challenging him to think more critical and deep, only the description of the material is too long, so it takes time to read it. While, low-ability students say, learning Social Science became fun because the assigned tasks were in the form of problems that are often seen and heard. this one to one evaluation phase data collection about students' responses to the LKPD products developed, besides being collected through questionnaires also conducted unstructured interviews. The results of the interview show that LKPD products developed are very practical to be used in social studies learning.

After Students' Worksheet was revised through the experimental stage of review and one to one evaluation the result was prototype 2 which will be tested in the small group evaluation stage. During the small group evaluation stage, prototype 2 was tested on nine Junior High School students who were not subjects with heterogeneous ability. Students were asked to work on the PBL Students' Worksheet that has been developed. From the results of their work on the worksheet, it appears that they all can use the Students' Worksheet. The Students' Worksheet usage at this small group stage shows the

developed Students' Worksheet product was generated practical.

After testing prototype 2, students were asked to fill out a questionnaire and provide comments and suggestions regarding Students' Worksheet in the learning process. Questionnaires are used to see the practicality of the developed worksheet product and suggestions that may be needed to improve the product prior to a field trial.

Based on the results of recapitulation of questionnaire data responses 9 students at the small group evaluation stage got an average score of 55.67 in the highest score range 75 lowest 15 which means the practical category. This means that Students' Worksheet based on problem based Learning products are practically developed.

The result of improvement on prototype 2 based on input and evaluation from one to one evaluation stage resulted in prototype 3 which will be tested in field test stage.

Some suggestions and comments of students in the small group evaluation stage can be seen in Table 3.

Table 3. Student comments on the small group stage toward PBL based students' worksheet and revision decisions.

Last Score	Frequency	Percentage	Being Active Category
80 – 100	23	57.5	Very Active
66-79	12	30.0	Active
56-65	4	10	
40-55	1	2.5	Active Enough
0-39	0	0	Not Active

Table 3 above shows most (87.5%) students are active and very active in the process of defending. This means that the use of Students' Worksheet based on problem-based learning products effectively improve students' learning activities.

Furthermore, the gain value between the pre-test and post-test was analyzed. The result shows an increase in student grade. The average pre-test score of students was 52, while the average post-test score was 84; there is an increase in the average score of students after using PBL based Students' Worksheet. Based on the calculation of the gain value obtained at 0.62, the effectiveness criteria of the Students' Worksheet on student learning outcomes is categorized in the medium category.

Through this field test activity, it was concluded that the PBL based Students' Worksheet was effective in increasing student participation and learning outcomes in Social Science learning

4 CONCLUSION

The developed PBL based Students' Worksheet products were declared valid after experts review was conducted by learning design experts and material experts who tested the content feasibility, presention feasibility, and language feasibility. From the results of the learning design expert validation obtained an average value of 4.13 (valid category). While from the results of material expert validation obtained an average value of 3.97 (valid category).

The PBL based Students' Worksheet products were declared practical after trials were conducted in the stages of one to one evaluation and small group evaluation. From the results of the questionnaire data processing from nine students in the small group evaluation stage, it was obtained an average score of 55.67 (practical category).

Furthermore, PBL based Students' Worksheet which is developed effectively increase student learning participation, 87.5% of students are in the very active and active category in the learning process. The developed Students' Worksheet products also effectively improve students' learning outcomes with an N-gain value of 0.62.

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