Developing A Social Studies Module by Using Problem Based Learning (PBL) With Scaffolding for the Seventh Grade Students in A Junior High School in Malang, Indonesia

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Abstract: *The purpose of this research and development (R&D) was to develop a Social Studies module by using Problem Based Learning with Scaffolding for the seventh grade students of which is equipped with teacher's manual. The development model used is adopting a development model by Borg and Gall (2003) that has been modified into seven stages of development that is: gathering research and information, planning, product development, first field trial, the revision of the test results, major field trial and final product. During the development stage, the validation was performed by material expert, teaching materials development expert, linguist and Social Studies teachers. The early stages of product trials and major field trials is conducted in class VII Surya Buana Malang. Results of the validation experts to materials, design and language modules show a very valid criteria. The implementation test results and effectiveness test shows very high criteria. Based on these results, it is concluded that the Social Studies module by using PBL and Scaffolding is valid and feasible. It can be implemented and effectively used to support the Social Studies learning for the seventh grade students.*
Keywords: *module, problem based learning, PBL, scaffolding, junior high school*

I. Introduction

The current curriculum is designed to prepare the future generations to have the ability to communicate, ability to think clearly and critically, the ability to consider the moral aspects of a problem, and have a sense of environmental responsibility. Therefore, the classroom should be able to realize these goals, including in the Social Studies learning. Social Studies is a set of facts, events, concepts, and generalizations relating to behaviour and human action to establish itself, the community, the nation, and the environment based on past experience which can be interpreted to the present, and anticipated future (Sumantri, 2001). Social Studies learning must be able to direct the students actively in the search for, develop, construct, and use knowledge in solving a social problem and the surrounding environment. Teaching materials with appropriate learning approach will support the goals of the Social Studies learning. One form of teaching materials that can be used is a module. A module is a teaching material which is systematically arranged in an easily understood by students according to the level of knowledge and their age, so that they can learn independently with minimal assistance from teachers.

The approach can be used in the designing the Social Studies module by using Problem Based Learning (PBL) as a learning approach. PBL gives the students the chance to learn through the provision of real-world problems to be solved in groups (Cheong, 2008). There is a problem in the design of PBL that can generate creativity and cognitive abilities of students to solve the problems presented independently and in groups (Akinoglu and Tandogan, 2007; Bilgin et al, 2009; Bowe et al., 2003). Results of other studies also show that the design of problem-based learning can have an impact on improving student learning outcomes (Gonen & Basaran, 2008). The implementation of PBL consists of five steps, namely orientation problems, research organizations, and independent investigation group, the development and presentation of artefacts', analysis and evaluation (Arends, 2008).

The implementation of PBL in learning activities also has a couple of drawbacks. PBL has weakness that students' difficulties in the problem solving process (Yadav et al., 2011). PBL potentially burden the students, where students have little time for independent study (Cheong, 2008). PBL implementation must be accompanied by any element of Scaffolding that is adapted to the learning objectives to be achieved in order to be effective implementation (Jonassen, 2011; Masek & Yamin, 2011).

Scaffolding deals with the concept (ZPD = Zone of Proximal Development). Vygotsky (1978) defined the concept of zone of proximal development (ZPD) as the distance between the actual developmental level as determined by independent problem solving skills and the level of potential development determined through problem solving with the help of others who are more capable. Scaffolding is a support given during the

learning process that is tailored to the needs of students with the intent of helping students reach their potential (Amiripour et al., 2012). The support is gradually removed while students can develop learning strategies independently (Pea, 2004) classified. Scaffolding can be classified into four categories based on their functions: conceptual scaffolding, metacognitive scaffolding, procedural scaffolding, and strategic scaffolding (Hannafin et al., 1999). Students' active learning in learning environments is where students are collaborating with experts or teacher. Yet, the teacher's position may be replaced by an agent which can control the activity of learning (Tiantong & Teemungsai, 2013).

The purpose of this study is to develop a module with the presentation of the problems can be a reference in learning activities centred on students (student centred learning) and encouraging the students' ability in solving actual problems problematic through based learning PBL, where the weakness of the PBL is equipped with four scaffolding that interpreted through four kinds of cartoon characters who will guide the students during the process of solving a problem in the modules. Thus, the students feel confident learning process due to the presence of four experts such as scaffolding before they finally really can independently solve a problem. Module also equipped with a teacher guide books.

II. Method

This study uses a Research and Development model of Gall et al. (2003) that has been modified, which consists of seven stages in which information gathering, planning, product development, first field trials, the revision of the trial results, major field trial, and the final product. The research instrument used is a questionnaire validation for experts, observation sheets, exercises and competency testing, assessment rubrics, the questionnaire responses of teachers and students, as well as interview guides for teachers and students.

The try out subjects in this research were: (1) a group of experts consisting of experts design development of instructional media, materials expert for Social Studies, linguists, Social Studies teacher from the seventh grade, (2) user group for limited trial consisting of Social Studies teachers and the seventh grade students of Surya Buana, Malang, East Java, Indonesia. The data collected was in the form of quantitative and qualitative data. Quantitative data was obtained through questionnaire assessment development products prepared with Likert scale by materials experts, expert design and unlimited users as well as the assessment rubric when learning to use the modules in the pilot phase that is limited, while the qualitative data was obtained through filling the comments and suggestions, both from experts and limited users. Data collection instruments used consist of questionnaires validation, observation sheets during learning, exercises and competency testing, assessment rubrics, the questionnaire responses of teachers and students, as well as interview guides.

The data analysis technique used in this research is descriptive analysis techniques. Descriptive data analysis was used to analyze the data in the form of records suggestions, criticisms and responses/comments obtained from the validation questionnaire and interviews with teachers. Descriptive statistical analysis was used to analyze the data in the form of scores of questionnaire validation, learning outcomes, the observation of teacher attitudes and questionnaire responses. Data in the form of scores are then analyzed with descriptive percentage using the formula of Akbar and Sriwiyana (2011) where the number of respondents in the item are divided by the number of ideal answer in one item.

III. Results Of Research And Development

Research and Information Collection

Information gathering and analysis showed that the learning needs has lead to a scientific approach suggested by the curriculum, but some students have not been able to answer when there are questions which can be problematic. Students also still tend to rely completely to the teacher in the learning process. Teachers pointed out that the method used has been trying to involve students actively, but not maximized because students are not accustomed to dealing with problems that the teacher independently. Researchers conducted an analysis of core competence and basic competences for SMP / MTs for the seventh grade students of semester 2. Based on the analysis, there were in the achievement of competence by using materials that are less precise. Basic competence analysis of 3.1 and 4.1 clearly shows that the students are required to not only understand the material but also must be able to identify problems and solutions in economic activity utilization of natural resources. Discussion materials on economic activity and utilization of natural resources are just information on the economic activities and types of use of natural resources. If the discussion on the matter is not updated, it can be concluded that the competence of students has not been reached.

Based on observations, it is also known that the teaching materials that are used is still general and some parts are not in accordance with the characteristics of student residence. Therefore, the students find it difficult when understand and find solutions that suit the surrounding environment. In this case, it is recognized that the need of teaching materials companion who can fill up the weaknesses of the existing teaching materials without replacing the role. She also revealed that, although there has been a book teacher and student books that have been charged scientifically, but the teacher is still confusion as to apply them when learning because it is

still too common and sometimes the material content of less close to the students. Teachers need a companion book that is simple, make the students interested and can learn to be more independent and familiarize students solve problems more independently. Seeing some of the results as proposed, will need to establish a Social Studies module that is based on problem based learning with scaffolding.

Planning

At this planning stage, it is determined the initial product packaging draft in form of Social Studies module by using problem based learning with scaffolding equipped with a teacher's guide book as a companion book for students and teachers. After the initial product draft has been prepared, then the instruments developed products that are given to the feasibility of development experts, expert material / content, linguists, teachers and students were used as consideration product revision. In addition, it also developed the supporting instruments such as observation sheets, the questionnaire responses of teachers and students, as well as the assessment rubric interview guide for teachers and students.

Product Development

Product is developed in the form of modules which is based on problem based learning with scaffolding for students which include guidebooks for teachers. The development of this module consists of four criteria: physical design, text design, visual design, and content component. Physical design consist of outer cover and the size of the yard, where the outer cover designed to fit the theme of the module and the page size is A4 (210 mm x 297 mm) with a weight of 80 grams as standard ISO (International Organization for Standardization). Text design in the development of this module includes several elements, among others the size and typeface, text spacing and width of the paragraph. Size and typeface developed in most parts of this product are Arial Narrow and Calibri and the student module is 12 points while the size of the letters on the teacher guide books is 11 point. The spaces type used in the module and a teachers' guide book is a combination of vertical space and horizontal (combining vertical and horizontal spacing) width. The paragraph alignment used in products that is developed not too long nor short, aims to make readers, especially students feel comfortable when reading the contents of visual module. The visual designs is about the use of colours, images and illustrations. The background colour on text descriptions on products developed dominated by white colour and the writing of the text uses black colour. The image colour that are presented in the development of the module are real pictures that attract and support the learning objectives.

The Components of the contents of the module that was developed in modules include an introduction, table of contents, instructions for use, the parts of the module, module position and map modules, learning activities, independent activities, group activities, competency testing, self-assessment and peer, glossary and bibliography .Systematic preparation of modules developed according to the steps of PBL learning where the general syntax in which there are four types of scaffolding that is represented in the form of four two-dimensional figures that are described in the Table 1.

Table 1. Scaffolding Representation in this Social Studies Module by Using PBL and Scaffolding

Dr. Edi	Help students build a concept of what they have learned, introduce the concept of new knowledge related to the problems faced, what to do and categorize these concepts (Conceptual Scaffolding).
Prof. Joko	Helping students prepare the analysis, planning, decision-long learning, determine the method and choose the information that is used to connect the students' prior experience with the new student experience (Strategic Scaffolding).
Mr Abdul	Giving instructions on how to use the resources and instruments of learning, as well as giving advice to students for learning to use his intelligence (Procedural Scaffolding.)
Mrs Reni	Assist students in the process of self-thinking during learning. (Metacognitive Scaffolding)

IV. Presentation Of The Try Out Data

Data Testing Expert

The test results in for of Social Studies module by using PBL with scaffolding consists of expert trial data, the first field trials in stages from a major field trial. The test result data of experts composed of matter expert validation, materials development design experts, linguists and Social Studies teachers. The results showed that the modules are arranged to have the feasibility of materials experts of 95.71%, which means the module is valid or worthy material to be used. Results of design expert materials development obtain a percentage of 77.89%, which means that the module design is valid or worthy to be used. Results from linguists earn a percentage of 83.16%, which means that the language module is valid or worthy to be used. Results of the validation of a Social Studies teacher gained percentage of 80.80% which means the language module is valid or worthy to be used.

First Field Trial Data At An Early Stage

Field trial was conducted after the initial stages of product design revision based on the validation results of the validation test. From the expert validation, it obtained Social Studies module by using PBL with scaffolding is valid which then continued first trial. Field trial took place on the 11th of February 2015. This first test was conducted to 6 students of Surya Buana Malang who possess different academic skills. The result of initial field test phase obtains an average percentage of 85.33% which means the module is valid or worthy to be used.

Main Field Trial Data

At this stage, it will be piloted and revised draft module of the previous stage. The main subject of field trial is all seventh grade students of Surya Buana Malang in academic year of 2014/2015 that consisted of 31 students. At this stage of test results obtained that the module is effective. The module test results showed that the average percentage of Social Studies module in learning tends to increase in every meeting in which it obtained an average percentage of 84.84% and it can be concluded that the results obtained is very high. The effectiveness test results can be seen through student learning outcomes when using scaffolding-based IPS module consisting of competence attitudes, knowledge and skills.

The data is supported by the interview results. The interviews result with students showed that in general students feel happy when learning by using PBL with scaffolding module. They revealed that they could begin to learn to solve a problem. They also started confidently in issuing their opinion either written through independent or other activities in the module as well as orally through presentation activities. some of them also said they can practice to find a solution to social problems, economics and the environment in their daily lives. Data is also supported by the results of interviews with teachers. In the interview, the teacher explained that the use of this module greatly assist teachers in teaching Social Studies. According to the changes, it is apparent both in terms of liveliness, skills and attitudes of students in learning. Data change these details explain that the Social Studies module by using PBL with scaffolding is effectively used for learning Social Studies in the seventh grade students.

Revision of the Product

Revisions to the development of this for junior high school students of Class VII is divided into three stages of revision that is: first, second and third. The first revision is the analysis of material expert, instructional materials design experts, linguists and Social Studies teacher from the seventh grade students. Data revisions for the Social Studies module by using scaffolding and teacher guide books by experts are presented in Table 2.

Table 2. Response Data from Material Expert, Expert Design for Instructional Materials, Linguist and Practitioners of Social Studies Module by Using Scaffolding and Teachers' Handbook

Expert Recommendation	Revision
Module	
Colour contrast on the mind mapping should be revised clearly	Colour contrast on the mind mapping has been revised clearly.
The activity on page 2 has been related on economic activity and natural resource usage but it need to be strengthen	The activity on page 2 has been related on economic activity and natural resource usage has been strengthen
Project activities should be more geared to solving the problem (page 5) in order to better suit the learning model used.	Project activities have been more geared to solving the problem (page 5) in order to better suit the learning model used..
Display the cover, the image needs to be enlarged; Social Studies label module is minimized and sufficient title theme is enlarged; supervising name is not necessary, add UM logo and label.	Display the cover, the image has been enlarged; Social Studies label has been minimized and sufficient title theme has been enlarged; supervising name is not there, UM logo and label have been added.

Expert Recommendation	Revision
Avoid variations that are not relevant to the content of the module	Deleting irrelevant variation
Pictures can be enlarged on the contents, must not exist	Image content has been enlarged.
Map concept or framework needs to be re-examined in order to fill adequately	Map concept or framework has been re-examined adequately
Consider the big small letters, as well as the use of punctuation. There are some parts that still need to be revised.	punctuation has been revised.
Pay attention to the writing of words or terms, use the appropriate standard EYD, for example, "Ayo Berfikir Kritis' to be "Ayo Berpikir Kritis" 'Proyek' should be 'Projek'	The use of appropriate standard EYD
Note the consistency of the use of the word greeting either "kamu" or "kalian".	Consistency of the use of the word greeting has been revised.
Note the choice of appropriate words for junior high school children. The word 'priority' should be replaced with a more understandable word for the students.	The diction has been revised
Teacher's Guidance Book	
Assessment of attitudes conducted outside of school, not too clear	Assessment of attitudes conducted outside of school has been deleted
The format of self-assessment and assessment of attitudes needed to be enlarged	The format of self-assessment and assessment of attitudes have been enlarged
On page 11, isn't it better that the solving the problem to be project rubric.	project rubric has been directed to be problem solving
For the formulation of an integrated indicator should be made between economic activity and utilization of natural resources, the formulation of learning objectives with minimum number of indicators.	For the formulation of an integrated indicator is reviewed based on the expert's suggestion
Design the cover image needs to be enlarged, reduced module label and the title of the enlarged	Design the cover image has been enlarged, module label has been reduced and the title has been enlarged.
No need for the advisor's name	Advisor's name has been deleted
Adding the UM logo and Post Graduate Logo	UM logo and Post Graduate Logo have been added
It should be checked again for the inconsistent score table	Score table has been improved
Systematic of writing needs to be consistent	Systematic of writing has been revised
Notice the small or large letters, as well as the use of punctuation. There are some parts that still need to be revised.	Grammatical and punctuation have been revised.

Based on the Table 2., it can be known that appearing some suggestions given by the design expert for the developing module for the teacher. All suggestions have been taken into consideration to revise the product. The revised product has been used for the first Ty Out. Then, field Try Out has gained suggestions on the following Table 3.

Table 3. First Try Out Data on the Social Studies Module by Using *Scaffolding*

Recommendation	Revision
It is advisable to use more proper word	Material presentation has been revised.
Materials provided is too little, should be added more material.	Adding more material and make it more clearly
Reproduce more images.	Relevant images have been added
There are several misspelled	Writing revision

Suggestions and inputs that are used as a basis for improvement modules and teacher guide books. This stage is the second revision stage, where products have been used for the first primary field trial. At the moment, it obtained advice and input from students and Social Studies teachers from the seventh grade. The advice and input are presented in following Table 4.

Table 4. Main Field Trial Data on the Implementation of Social Sciences by Using Scaffolding

Recommendation	Revision
It is better that the part of 'Tahukah Kamu' (do you know) is presented in each learning activity.	All learning activity is equipped with 'Tahukah Kamu' (Do you know)

Suggestions and inputs are used as a basis for improvement modules and teacher guide books. This stage is the third stage of revision will produce the final product. Revisions were made through three stages to support the development to be better products which is expected to produce good quality of Social Studies learning modules.

Final Products

Based on the results of the test data analysis from the expert, first stage testing and field trials, test, and test the effectiveness can be concluded that the Social Studies module by using scaffolding for the seventh grade

students of junior high school students has been declared valid or feasible to be used as a learning material. However, to further improve the product can be tested more widely (dissemination). The final product is in the for of Social Studies Module by Using Scaffolding for the seventh grade students of SMP / MTs which is equipped with teachers' manuals that can be used in the Social Studies learning process.
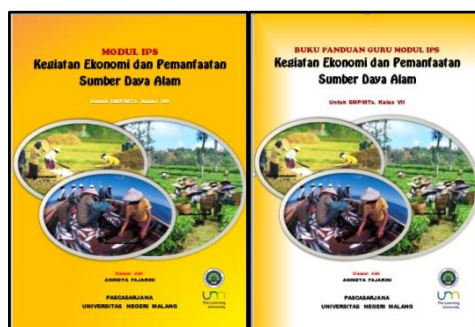

Figure 2. The Presentation of the Final Product

Study of Products that Have Been Revised Suitability Of The Module Materials With The Curriculum And The Content Of PBL Approach With Scaffolding In The Module

Based on data obtained from the results of material expert validation, it is known that the material in the module has been in accordance with the basic competencies in the Curriculum 2013 in which Social Studies learning is integrated and contextual focused in Basic Competency (KD) 3.1 understanding the spatial aspect and connectivity between space and time within the scope of regional as well as change and the sustainability of human life (economic, social, cultural, educational and political), KD 4.1 presents the results of the study of aspects of spatial and inter connectivity between space and time within the scope of regional as well as change and the sustainability of human life (economic, social, cultural, educational and political). Observing KD 3.1 and KD 4.1 on the Curriculum 2013, the material in the module should lead to scientific activities charged solving the problem of human life in day-to-day. Problem Based Learning (PBL) is a learning approach that can be used in the basic competence, where PBL is very close to solving the problem because it starts with a problem to be solved (Spirit, 2003). As steps for PBL learning are problem orientation, research organizations, and independent investigation group, the development and presentation of artefacts, analysis and evaluation (Arends, 2008).

As with previous exposure that weakness in the module using the PBL approach minimized by using four types of scaffolding that is, conceptual, procedural, strategic and metacognitive scaffolding that is interpreted through four cartoon characters. The use of scaffolding in teaching and in PBL-based module is relevant. It is supported by several previous research studies. Research that has been done by Noviyanti, et al (2014) entitled "Pengembangan Lembar Kegiatan Siswa *Berbasis Problem Based Learning* (PBL) pada Materi Sistem Pencernaan Manusia di SMA Kelas XI" (Development of Student Activity worksheet by Using Problem Based Learning (PBL) on the material of Digestive System of Man for the Eleventh Grade of High School' shows that, student worksheet can be used to train learners in determining the facts, data own, assess the problem, and generate alternative solutions. Another study by Tiantong and Teemungsai (2013) entitled 'The Four Scaffolding Modules for Collaborative Problem-Based Learning through the Computer Network on Moodle LMS for the Computer Programming Course' indicates the satisfaction of six experts on the use of scaffolding module is very high and the level of satisfaction of students to use scaffolding module is also very high, then 4 scaffolding module successfully completes PBL collaboratively.

It can be concluded that the learning that has been done by observing a problem first presented in the module by the character Dr. Edi and then look for things that are poorly understood. After that the students undertake independent and group activities, where the figure of Prof. Joko, Mr. Abdul and Mrs. Reni will help students in the module. Students investigate such problem solving, discussions and problem solving. This presented result indicates that the module is according to the learning points contained within the core competence and basic competence in the application of curriculum modules according to destination 2013. Hamdani (2011) stated that modules are structured as teaching materials in accordance with the demands of the curriculum taking into account the needs of students.

Conformity Assessment In The Basic Competence Module

Based on data obtained from the results of material expert validation, it is known that the exercises training and competency testing are in accordance with the basic competencies and indicators in Curriculum 2013. Curriculum Assessment conducted in this study is the evaluation process and results. Assessment is an assessment process that is carried out during the learning, covering aspects of attitudes and skills. Assessment

results of an assessment of the student's work in the form of exercises and competency test at the end of the assessment module. For attitude, attitude assessed is cooperation, curiosity, discipline and environmental care. The assessment is supported by the student attitudes by self-assessment results and by peer friend. For the skills assessment, assessed the skills of students in discussions, presentations and completion of project tasks in module. For the student learning outcomes assessment, performed exercise tests each end of the learning activities and competence test at the end of the study by using PBL module with scaffolding. From this description, it can be seen that assessment is in accordance with the module and the basic competency assessment guidelines in the curriculum.

The Attractiveness Of The Module Design And Ease For The Users

Based on the results of the validation module, it is already known that the design is attractive and easy to be used. In terms of design, ease of use module is also determined by the use of language in module. The validation result indicates that the language used is in accordance with the level of development that is structured systematically. Module fits with elements of the module according to Prastowo (2010) that is, title, preface, table of contents, the background, the standard of competence, a map concept, benefits, learning objectives, instructions for use of modules, basic competence, subject matter, description of materials, summaries, exercise / assignment , self-test, follow-up, hope, glossary, bibliography and an answer key.

The Analysis Results Of Validity Test, Implementation Test And Effectiveness Of The Module

The feasibility test, first trial stages and major field trials resulted in some improvements in the design of the product, so it needs to be done revise. Instrument used in product testing is divided into three aspects: the validity, implementation and effectiveness. The product validity is determined from the results of testing the validity of the material, design, and test the validity of the language by both teachers and students in the first stages of the Try Out.

Table 8. Summary of the Module Validity Results and Teachers' Handbook

No.	Valued Aspects	Percentage (%)		Description
		Module	Teacher's Handbook	
	Material Validity	95.71	96.67	Highly Valid
	Design Validity	77.89	84.29	Highly Valid
	Language Validity	83.16	82.35	Highly Valid
	Validity according to the Teacher	80.80	86.67	Highly Valid
	Validity according to the Students (First Try Out)	85.33	-	Highly Valid
Mean		84.58	87.50	Highly Valid

Based on the table above, it can be seen that this module fits for use, having high value of implementation and effectiveness based on criteria according to Akbar and Sriwiyana (2011).

V. Conclusions And Recommendation

Conclusion

This Social Studies Model based on PBL with scaffolding may provide an opportunity for students to learn and have the skills to observe and understand social problems in the surrounding area, especially with regard to economic activity and natural resource utilization. Students also practiced finding solutions to the relevant source solution either independently or groups write it in the form of a simple report and present their findings. Indirectly, it will grow curiosity, discipline, teamwork and caring environment when students know and trying to find solutions to social problems. This module also has both advantages and disadvantages in its use as a companion teaching materials that can help students in facilitating the learning process.

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