Developing Problem-Based Learning (PBL) Worksheets for the Eight Grade Students at Junior High School

Isrokijah
State Junior High School 3 Tulungagung
isrokijah@yahoo.com

Abstract

This study aims at developing problem-based learning (PBL) worksheets for the eighth grade students at junior high school. It belongs to Borg & Gall's research and development R & D, involving 35 students from one class as the subjects. Interview guide for the teachers and questionnaire for the students were employed to collect data in needs analysis, and checklist in validation and try-out stages. The qualitative data collected through interview was analyzed descriptively, while, the quantitative data collected through questionnaire and checklist was analyzed using statistic descriptive by counting the frequency of appearance of the response. Finally the result of the data analysis was synthesized to get the real picture about the teachers' and students' response towards the use of PBL worksheets in learning English.

Keywords: *problem-based learning, worksheets, junior high school students*

A. INTRODUCTION

Indonesian government has released Curriculum 2013 or it is usually called K-13. As stated in *Permendikbud* Number 68/2013 the mastery of English is crucial requirement in responding to the challenge of the era. In other words, the teaching of English plays an important role in preparing the students to get access to international communication in the globalization era, especially the coming era of free trade market. As other previous curriculums, the curriculum of English also emphasizes the four English skills: listening, speaking, reading, and writing, but the four skills are presented integrated.

In Curriculum 2013 Problem-Based Learning (PBL) is a teaching model required to be implemented in the teaching and learning process. As stated by the Ministry of Education and Culture of Indonesia in the material of teacher training in Curriculum 2013, Problem-

Based Learning presented contextual problem which stimulated the students to learn. In PBL situation, the students integrated knowledge and skills simultaneously and applied them in relevant context. With the PBL worksheets the students conducted meaningful learning. They learned to solve the problem by implementing their knowledge or trying to explore their knowledge they needed.

Problem-Based Learning (PBL) is the learning that results from the process of working towards the understanding and resolution of a problem in a real context (Barrows & Tamblyn, 1980). PBL purposefully combines cognitive and metacognitive teaching and learning (Mattews-Aydinli, 2007).

Furthermore, Schmidt (1983) states that Problem-Based Learning (PBL) is an instructional method that is said to provide students with knowledge suitable for problem solving. As Duch, Groh and

Allen (2001) declare, Problem-Based Learning is one educational strategy that helps build the reasoning and communication skills necessary for success today. In addition, Gijselaers (1996) adds that PBL is based on the theory that views learning as a process in which the learner actively constructs knowledge. For effective acquisition of knowledge, learners need to be stimulated to restructure information they have already known within realistic context, to gain new knowledge, and then elaborate new information they have learned. Therefore, Problem-Based Learning can be implemented to assist the students to increase their understanding or cognitive competence toward content subjects written in English. By understanding this strategy, both students' understanding and communication skills can be constructed

PBL is considered a student-centered instruction approach which inspires students to apply critical thinking through simulated problems in order to study complicated and practical problems that may have or not have a single correct answer. Savery & Duffy (1995) explain problem-based learning as a curriculum design that identified students not as passive recipients of knowledge but as problem solvers who could develop disciplinary knowledge and problem solving strategies to confront ill-structured problems that occur in the real world. Furthermore, Hmelo-Silver (2004) adds that students work in collaborative groups to identify what they need to learn in order to solve a problem. They engage in self-directed learning (SDL) apply their new knowledge to solve the problem and reflect what they have learned as well as the effectiveness of the strategies employed.

Schmidt (1983) also suggests that in a PBL environment, the activation of prior-learning can help problem solving. Group members may activate their prior knowledge and accumulate new knowledge to identify and solve the problems. Norman & Schmidt (1992) add in group discussion, members' contributions of elaborated knowledge are valuable for they formulate creative ideas and they facilitate the discovery of possible solutions.

Furthermore, Huang & Wang (2012) state that the ultimate goals of PBL are to help learners elevate intrinsic motivation, build up thinking skills, develop higher level knowledge, and become self-guided learners who could cooperate and collaborate in groups. Therefore, through PBL model students would be accustomed to work in group and solve their problem together.

Based on the results of the needs analysis it could be concluded that the students' textbook did not provide the exercises which were suitable with the students' need and the demand of the curriculum. The available exercises were not helpful to increase the students' English ability. In addition, PBL had not been clearly applied in the teaching process because of the teachers' lack of knowledge in PBL. Therefore, it could be known that worksheets which were relevant to the curriculum were really needed by the teachers and the students. The target group in this study was the eighth grade students of junior high school. The study was conducted at SMP Negeri 3 Tulungagung since it is one of the model schools in implementing Curriculum 2013.

B. RESEARCH METHOD
In developing worksheets, the study adopted Borg and Gall (2003) R & D model. Due to the limited time and fund, the original design of the development had been modified into three main stages.

They were needs analysis, expert validation, and try out. Needs analysis was conducted as information to collect in preliminary study to get the general picture of the teachers' and students' needs related to the availability of worksheets for the eighth grade students of junior high school. Then, based on the needs analysis the product development was done by mapping the worksheets development. Then, it was followed by developing the worksheets. The validation comprised expert validation and first revision. At last, having been revised, the development worksheets were tried-out in the field and revised. The adaptation of the original development model was carried out in order to meet the real condition in the field of research. The model of the product development can be seen in Figure 1.
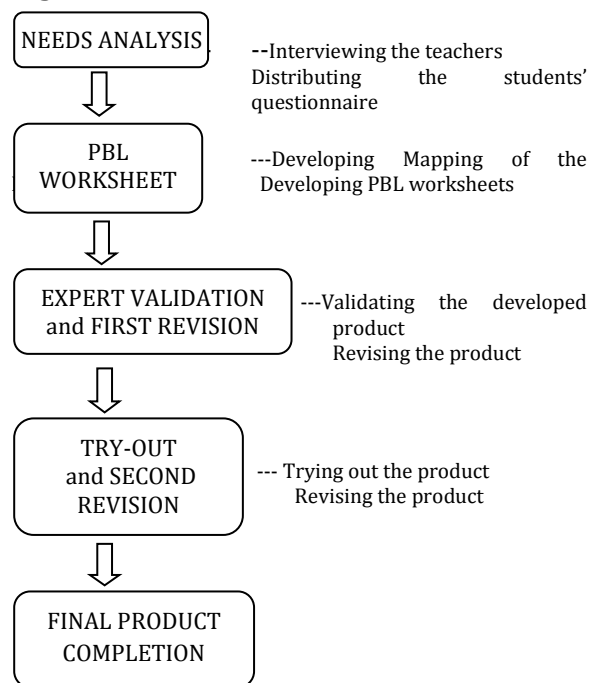

Figure 1 Model of the Product Development (Adapted from Borg and Gall, 2003)

Needs Analysis

The subjects in the needs analysis were two English teachers and students of SMP Negeri 3 Tulungagung. The teachers were teaching the eighth grade students in the academic year 2014/2015. The students of class 8.1, consisting of 35 students, were selected as the representative of all classes for doing needs analysis. They were chosen to obtain information about the problems and the needs in the teaching and learning process.

In collecting data, this study employed interview guide and questionnaire.

The interview guide was used for collecting the information about the teachers' opinion on the available textbook used in the English class, difficulty in applying the textbook and the application of PBL in the teaching of English.

Questionnaire was given to the students to collect information about the students' attitude toward English and English learning, opinion about the materials and exercises in the textbook, and activities in learning English. The use of this questionnaire was intended to see the students' need of worksheets in needs analysis. The result of the questionnaire could be used as consideration in developing PBL worksheets.

The data collected from the interview were presented in the form of qualitative. After having been gathered, it was analyzed descriptively. It means that the data analysis was presented through explanation. While the data collected from the questionnaire were in the form of quantitative. In this case, statistic descriptive was used to analyze the data by counting the frequency of appearance of the response.

The results of the data analysis qualitatively and quantitatively were synthesized to get the real picture about the teachers' and students' needs of PBL worksheets in learning English.

Development of Worksheets

Before developing the product of PBL worksheets, it was necessary to construct the mapping of the product development which consisted of selecting the basic competence, designing the indicators, developing the theme, designing learning experience and developing the learning objective. The basic competence was taken from syllabus of Curriculum 2013, the indicators, the themes, and the learning objectives were designed based on the basic competence, while the learning experience was decided based on the selected theme.

After the set of the development mapping had been established, the step for designing the initial draft of the PBL worksheet was begun. The purpose of this step was to design the prototype of the PBL worksheets developed.

Expert Validation and First Revision

Expert validation was done by an experienced English lecturer in English language teaching, specialized in the implementation of Curriculum 2013, and students' textbook writing who has written many books regarding this area of expertise. Besides, validation was also conducted by practitioners. They were English teachers as the prospective users of the product. The teachers who were responsible for the validation were the teachers who have more than ten year experience in English teaching and had joined teacher training in the implementation of Curriculum 2013.

The validation aspects cover the cover design and layout, picture, letter, theme, language, direction, organization, task, approach, and appropriateness with syllabus. The data from the expert which were collected by using checklist were in the form of quantitative. The data were used to validate whether the PBL worksheets have been developed appropriately or not. The evaluation, comments and suggestions obtained from the expert on the developed worksheets were used as the guidance for the revision.

After the validation and revision, the developed product was ready for the try-out.

Try-out

The try-out was conducted to determine whether or not the product met the practicality and acceptability. The subjects of try-out were the English teachers and the eighth grade students of SMP Negeri 3 Tulungagung in which the needs analysis was also carried out.

The data from the try-out were analyzed to see the practicality and acceptability in terms of clarity, difficulty, usefulness, and attractiveness of the developed worksheets. Most relevant evaluation, comments, and suggestions from the teachers and students were used to improve the quality of the product.

C. RESULTS

Based on the result of the first checklist in expert validation, it was found that some themes, pictures, and the organization of the worksheets were not suitable with PBL and should be changed. The second checklist showed that the PBL approach was clearly and systematically stated in the worksheets. Besides, in chapter 1 the proposed problems were not related to real world. From the third checklist, it was found that the learning objectives were too general and did not clearly describe the outcomes to reach.

The last checklist showed that the consistency in writing the verbs (v + e/es) in scoring rubric provided in the teacher's guide book.

Since each chapter of the worksheets has similar style, and due to the limited time, three chapters were tried-out. The try-out was conducted on 20, 25, and 27 May 2015. The result of the try-out showed that eight students (23%) strongly agreed and twenty seven students (77%) agreed that the display and layout are interesting. Twenty three students (66%) strongly agreed and twelve students (34%) agree that the materials are understandable because they related to real world. In term of learning step, sixteen students (46%) strongly agreed and nineteen students (54%) agreed that the learning steps are good and easy to follow and the learning activities are advantageous to improve their English ability. Next, fifteen students (43%) strongly agreed and sixteen students (46%) agreed that the themes are understandable. However, only four students (11%) stated neutral. Then, twenty two students (63%) strongly agreed and twelve students (34%) agreed that the themes are interesting, while, only one student (3%) stated neutral. Related to the availability of vocabulary exercise, twenty two students (63%) strongly agreed and eleven students (31%) agreed with the availability of vocabulary exercise. However, only two students (6%) stated neutral. In addition, sixteen students (46%) strongly agreed and seventeen students (48%) agreed with the availability of structure exercises. Only two students (6%) stated neutral. Based on the data gathered from the checklist after try-out, it could be concluded that the developed worksheets were practical, acceptable and interesting.

D. DISCUSSION

This study produced developed learning material in the form of students' worksheets and a teacher guide book. The worksheets were developed based on Problem-Based Learning (PBL) approach and designed for the eighth grade students of junior high school for the second semester. The developed worksheets are expected to solve the problems faced by teacher. The problems are the lack of exercises appropriate with Curriculum 2013 and also teachers' lack of knowledge on PBL as one of the teaching approach required in Curriculum 2013. So the development of PBL worksheets is on the right time.

Based on the try-out, the worksheets can be accepted by the teachers and students. The teacher felt that the worksheets are very helpful in teaching and learning process since they are already matched with the curriculum and also with the students' level. The students thought that the worksheets are interesting because the themes varied and were related to the real world problem. Besides, they could improve their English ability and knowledge of science, both natural and social sciences. The worksheets are easy to use because they were provided with language support which consists of vocabulary and grammar exercises. Those exercises were designed based on the basic competence in the syllabus.

The worksheets have 39 pages. They consist of 5 chapters with 5 themes. Each chapter contains objectives, language support, PBL activities, procedure to solve the problem, and worksheet to complete the task. The objectives contain the learning objectives which are developed based on the basic competence in the syllabus. In language support, there were two kinds of

exercises, vocabulary and grammar exercises. The exercises are intended to provide the students with content knowledge before they come to PBL activities which must be done through cross curriculum. The next part is PBL activities which are begun with warm-up activity to arouse the students' background knowledge. This activity is followed by problem-posing activity which contains problems or questions related to real world. The procedure to solve the problem and worksheet to do the task are provided. They are intended to facilitate the students in solving the proposed problems.

The teacher guide book has a similar cover. However, this book is thinner. It contains the manual how to use the worksheets in general, the manual for each task and the answer key for the exercises on the language support. Meanwhile, the answers for the problems given in the PBL activities are not provided because the students have their autonomy in answering the problems.

The developed product had also been tried-out in the class. During the try-out, it could be seen that the students were actively and enthusiastically involved the each activity. Collaborative work and students-centered learning as the characteristic of PBL were really found. It seemed that the students felt convenient in using the Internet to search information needed. In short, the PBL activities could be done by the students.

E. CONCLUSION AND RECOMMENDATIONS

The worksheets are considered as good materials and can support the teaching and learning process. This statement is based on the result of expert validation and the try out to the students which show that the worksheets are appropriate with the teachers and students' needs.

According to the expert, the authentic and varied materials become the strength of the worksheets. Further, expert mentioned that the themes are appropriate with the students of junior high school. The worksheets are interesting and challenging since the themes are related to science, natural and social sciences. Furthermore, the worksheets are printed in color and the pictures are familiar with them. At last, these kinds of worksheets still could not be found yet in market.

However, the study is far from perfect. It must be realized that it still has weaknesses. First of all, this study was conducted only in a small coverage and used small sample that generalization may have different result. Secondly, the development of the product was done mainly by adapting the materials due to the limited time and fund. Therefore, the developed worksheets only accommodate the students' and teacher's need in second semester. Next, since the worksheets apply mostly IT-based activities, it might be difficult to implement in the schools which are not equipped with IT facilities. Therefore, they may make it not perfect.

Based on those considerations, recommendations are presented. First recommendation is for teachers as the prospective users. Before using the product of this study, the teachers had better make sure that they had read the manual of each task in the chapter which are provided in teacher guide book, and the students are ready with their smart phones, notebooks, tablets, or laptops. Without the equipment the students will have difficulty in searching other sources. After everything is ready, the teachers must understand their role in PBL that is as the facilitators. They have to lead the students in doing their PBL activity. The learning process is really students-centered learning.

Next recommendation, future researchers can conduct R & D study using a greater sample or a wider coverage of materials. It is also possible to develop similar worksheets which are based on other teaching models; discovery learning and project-based learning, required in Curriculum 2013. In addition, similar worksheets for other students' levels may also be developed.

The last recommendation is for publishers or printing company. The product of this study has been tried out and was proven applicable to provide the students with suitable exercises. Therefore, it is suggested to be applied in other institutions with similar curriculum. In Tulungagung, there are six junior high schools applying Curriculum 2013. It is for sure that this product will be very helpful for them. Therefore, the product should be reproduced in order to be used by other schools. It will be much cheaper and save times when it is sent to the publishers or printing company. This will be advantageous for them.

REFERENCES

Barrows, H. S & Tamblyn, R. H. (1980). *Problem-based learning: An Approach to medical education.* New York. NY: Springer Publishing.

Borg, W. R, Gall, J. P and Gall, M. D. (2003). *Educational research: An Introduction.* 7th Ed. New York: Longman, Inc.

Duch, B. J., Groh, S. E., and Allen,D. E. (2001). *The Power of Problem-Based Learning*. Steerling, VA: Stylus.

Gijselaers, W. H. (1996). Connecting problem-based practices with educational theory. In L. Wilkerson & W. H. Gijselaers (Eds.), *Bringing problem-based learning to higher education: Theory and practice*. San Fransisco: Josey-Bass Publishers.

Hmelo-Silver, C. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16(3), 235-266.

Huang, K. & Wang, T. (2012). Applying Problem-based Learning (PBL) in University English Translation Classes. *The Journal of International Management Studies*. 7(1), 121-127.

Kemendikbud. (2013). *Kompetensi Dasar Sekolah Menengah Pertama (SMP)/Madrasah Tsanawiyah (MTs).* (http://pubilkasipendidikan.blogspot.com/2013/02/kompetensi-inti-dan-kompetensi-dasar.html, retrieved on 3 March 2015).

Mattews-Aydinli, J. (2007). Problem based learning and adult English language learners, Center for Adult English language acquisition, Center for Applied Linguistics. (http://www.cal.org/caela/esl_resources/briefs/Problem-based.pdf, retrieved on 5 April 2015)

Norman, G. R. & Schmidt, H. G. (1992). The Psychological Basis of Problem-Based Learning: A review of the evidence. *Academic Medicine*, 67 (9), 557-565.

Savery, J. R & Duffy, T. M. (1995). Problem-based learning: An instructional model and its constructivist framework. *Educational Technology*, 35(5),31-37.

Schmidt, H. G. (1983). Problem-based learning: rationale and description. *Medical Education l.* Vol. 17: 11-16.