

# DEVELOPMENT OF STUDENT WORKSHEET BASED ON PROBLEM BASED LEARNING APPROACH TO INCREASE 7<sup>TH</sup> GRADE student's CREATIVE THINKING SKILLS

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**Abstract.** *The research aims to (1) produce a student worksheet based on problem based learning that has the potency to improve the 7th grade student's creative thinking skill based on assessment of expert lecturers and science teachers on the content business feasibility component, language and image component, component, and presentation graphics component, (2) know the student response toward the student worksheet based on problem based learning to improve the 7th grade student's creative thinking skills, (3) know the improvement the 7th grade student's creative thinking skills after using the student worksheet based on problem based learning. The design of this research was Research and Development model with 4 d development model which includes define, design, develop, and disseminate. The data analysis technique of appropriateness of the student worksheet and students responses to the student worksheet is quantitative score conversion to qualitative value with five categories, the data analysis technique of the implementation of the problem based learning model and student's creative thinking skill based on observation is a percentage calculation, while the data analysis technique of creative thinking skills pre test and post test is normalized gain score (N-gain score). Based on the results of the research, it can be concluded that (1) a student worksheet based on Problem Based Learning has the potency to improve the 7th grade student's creative thinking skill based on assessment of expert lecturers and science teachers on the content business feasibility component, language and image component, component, and presentation graphics component get score 105.75 of a maximum score of 120 with a value of "A" is categorized as "Very Good", (2) a student worksheet categorized as "Good" with a value of ' B "based on student response with score 66.09 of maximum score of 88, (3) the student's creative thinking skill improves after using a student worksheet based on Problem Based Learning with N-gain score 0.72 categorized as "High".*

*Keywords: student worksheet, Problem Based Learning, creative thinking skills*

## INTRODUCTION

Based on the regulation of the Minister of education and culture No. 22-year 2016, the learning process in educational units organized in interactive, inspiring, fun, challenging, motivating learners to participate actively, as well as provide enough room for initiative, creativity, and independence in accordance with their talents, interests, and physical and psychological development of learners. (Kemendikbud, 2016: 1)

In Permendikbud No. 22-year 2016, skills of creative thinking is a very important part in the learning process. Important creativity is fostered and developed in the learners because of creativity as the ability to see the assortment of the possibility of a settlement of a problem. (Munandar, 1985: 45)

Based on documentation, observation, and interviews in the JUNIOR HIGH SCHOOL N 2 Limestone obtained information that creative thinking skills learners Class VII F is still lacking.

Efforts to improve the skills of creative thinking can be done using appropriate learning model, one Problem Based Learning (PBL). Problem Based Learning (PBL) felt right used to enhance creative thinking skills in creative thinking skills because there is a process of creative thinking. Basadur (2000: 78) posited in the process of creative thinking activity

there is found a problem (a problem finding activity), the activity of solving problems (problem solving activity) and the activities of the implementation of the solution (solution implementation activity). the third activity can be facilitated by using a model of learning Problem Based Learning (PBL). In learning to use the models of Problem Based Learning (PBL) required materials one LKPD.

Based on explanation above, need to be developed a learning materials that can enhance creative thinking skills learners through "Development-based IPA LKPD Problem Based Learning to Creative thinking skills Enhance Participants The students of Class VII JUNIOR HIGH SCHOOL N 2 Limestone. "

## RESEARCH METHODS

This research is a research and development (Research and Development) by using the floating research model 4-D (four-D models) expressed by Thiagarajan (1974: 5).

### Time and place of Research

This research was carried out in junior high N 2 Limestone, Sleman, Yogyakarta on 12 April 2017 – 29 April 2017.

## Subject of Research

The subject of this research is the learners Class VII F SMP N 2 Limestone.

## Procedure

This research consists of 4 stages namely define, design, develop, and disseminate. The stage of the initial analysis, covering define the analysis of learners, analysis tasks, an analysis of the concept and formulation of learning objectives. Stage design consists of 4 steps, among others, drafting instruments, selection of media, formats, and the draft pemelihan LKPD. Stages of develop is done with the steps in the following review, validation supervisor LKPD lecturer by Professor expert and teacher of IPA, a test development. The stage is only done to disseminate the learners Class VII F SMP N 2 Limestone and teacher IPA SMP N 2 Limestone.

## Data, instruments, and Data collection Techniques

The instruments used in the study include the eligibility validation LKPD sheet, sheet keteralaksanaan pembelejaran observation Problem Based Learnin, learner response against the now LKPD, creative thinking skills of observation sheets, reserved pre test and post test.

## Data Analysis Techniques

Analytical techniques used in this research are as follows:

### 1. Feasibility analysis of Validation by experts and Professors LKPD Teacher IPA

The first step is to calculate the average score of each component by using the following formula:

$$X = \frac{\sum X}{n}$$

Description:

X = average score  
 $\sum X$  = the number of overall score  
n = number of individuals score

Then the data beginning in the form of quantitative data is converted into the qualitative data (data intervals) on a scale of five. According to Widoyoko (2009: 238) reference conversion score into five scale as follows:

Feasibility research of the minimum value is B with category either. If the validator provides the value of the "B" then LKPD IPA developed decent used to enhance creative thinking skills.

Eligibility for validation by experts and Professors LKPD Teacher IPA analysis next is calculating the reliability. A learning materials have good feasibility when has a value of

reliability (R) greater than or equal to 75%. Reliability analysis of validation against the eligibility formula can use IPA LKPD Borich (2003: 285).

### 2. Analysis of Learner Response against LKPD IPA

The first step is to calculate the average score of each component by using the following formula:

$$X = \frac{\sum X}{n}$$

Description:

X = average score  
 $\sum X$  = the number of overall score  
n = number of individuals score

Then the data beginning in the form of quantitative data is converted into the qualitative data (data intervals) on a scale of five. According to Widoyoko (2009: 238) reference conversion score into five scales can be seen in table 1.

Feasibility research of the minimum value is B with category either. In response learners provide value "B" then LKPD IPA developed decent used to enhance creative thinking skills.

### 3. Analysis Of Creative Thinking Skills

The first step is to calculate the average score of each component by using the following formula:

$$X = \frac{\sum X}{n}$$

Description:

X = average score  
 $\sum X$  = the number of overall score  
n = number of individuals score

Then analyze the results of the study (a matter of pre-test and post test) using the formula that has been developed by Hake (1998: 65) analyzing data results of pretest and post test sought to use N-gain score. N-gain score can be calculated using the following formula

$$(g) = \frac{posttest - pretest}{skor\ maksimal - pretest}$$

(Hake, 1998: 65)

Table 2. Assessment of N-Kriterion gain score

The value of the $g$	Category
$(g) \geq 0.7$	High
$0.7 > (g) \geq 0.3$	Is being
$(g) < 0.3 < 0,3 >$	Low

(Source: Hake, 1998: 65)

## THE RESULTS OF THE RESEARCH AND THE DISCUSSION

## 1. Feasibility of LKPD IPA

IPA-based LKPD feasibility Problem Based Learning (PBL) being developed by the assessment results of Expert Lecturers and teachers of the IPA. IPA-based LKPD assessment of Problem Based Learning (PBL) encompasses the feasibility component contents, language and image components, component rendering, and kegrafisan components.

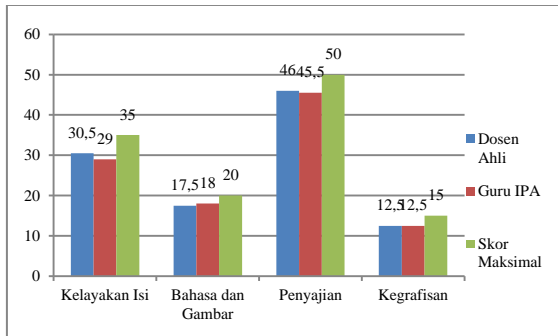


Figure 1. Eligibility Chart LKPD IPA

Based on Figure 1, looks at the components of the feasibility of obtaining content score of expert lecturers while 30.5 of the IPA teacher earns a score of 29 out of 35 with maximal reliability score of 97.48%. Based on Figure 1, looks at the components of the feasibility of obtaining content score of expert lecturers while 30.5 of the IPA teacher earns a score of 29 out of 35 with maximal reliability score of 97.48%. Based on Figure 1, looks at the components of the feasibility of obtaining content score of expert lecturers while 30.5 of the IPA teacher earns a score of 29 out of 35 with maximal reliability score of 97.48%. Based on Figure 1, looks at the components of the feasibility of obtaining content score of expert lecturers while 30.5 of the IPA teacher earns a score of 29 out of 35 with maximal reliability score of 97.48%. Of the components of each score can be calculated an average score of IPA based LKPD assessment of Problem Based Learning (PBL) all components of the maximum score from 105.75 120 with A grade includes the category "very good".

## 2. Learner Response Against LKPD IPA

Learner response against LKPD IPA-based Problem Based Learning (PBL) is obtained by using question form response. Now in response learners against LKPD IPA-based Problem Based Learning (PBL) there are three aspects namely learning Problem Based Learning (PBL) creative thinking skills, and language.

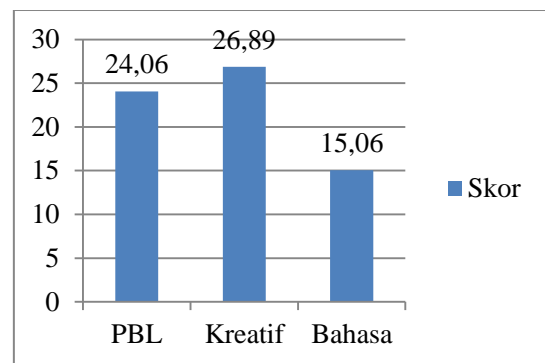


Figure 2. Analysis of Learner Response against LKPD IPA

It can be seen from Figure 2 score results response learners against LKPD IPA-based Problem Based Learning (PBL) is obtained on the learning model of Problem Based Learning (PBL) for a maximum score of 24.06 32 with a value of "B" includes the category " good ". It can be seen from Figure 2 score results response learners against LKPD IPA-based Problem Based Learning (PBL) is obtained on the learning model of Problem Based Learning (PBL) for a maximum score of 24.06 32 with a value of "B" includes the category " good ". It can be seen from Figure 2 score results response learners against LKPD IPA-based Problem Based Learning (PBL) is obtained on the learning model of Problem Based Learning (PBL) for a maximum score of 24.06 32 with a value of "B" includes the category " good ". Based on these three aspects namely learning Problem Based Learning (PBL) creative thinking skills, and language, then it can be calculated the average amount of the overall results of learner response against LKPD IPA-based Problem Based Learning

(PBL) of the maximum score of 66.09 88 with a value of "B" categories include "good".

### 3. Pre-and Post test-test your creative thinking skills

To find out your creative thinking skills enhancement learner use reserved pre-and post test-test. The question of pre-and post test-test consists of 5 reserved descriptions. Each problem has a different score i.e. aspect suggested ideas (C3) has a maximum score of 3, predict (C3) has a maximum score of 2, synthesize (C1 and C2) have a maximum of 3 score and making conclusions (C4) has a maximum score of 1. On pre-and post test-test there are two reserved related aspects of creative synthesis of thinking skills. Based on the results of pre-and post test-test your creative thinking skills in mind that learners increased. Creative thinking skills enhancement learner based on matter of pre-and post test-test can be seen in Figure 7. The results of the pre-test showed that 32 learners no a pass based on the KKM. While at the post-test 28 students graduated on the basis of KKM. Increased skills of creative thinking based on the calculation of N-gain score on the results of pre-and post test-test of 0.72 including categories higher because of greater than 7.

## SUMMARY AND ADVICE

### Summary

1. Generated LKPD IPA-based Problem Based Learning (PBL) that has the potential to enhance creative thinking skills of learners based on the assessment of Expert Lecturers and teachers IPA with a score of 105.75 score a maximum of 120 with a grade A include the category of "very good".
2. LKPD IPA-based Problem Based Learning (PBL) belongs to the category of "good" with a value of B based on learners' responses against LKPD IPA Problem Based Learning (PBL) with a score of 66.09 score a maximum of 88.

3. Creative thinking skills learners increased after learning using LKPD IPA-based Problem Based Learning (PBL) with N-gain score of 0.72 categories include "high".

### Advice

1. Further research needs to be done to improve the skills of creative thinking by adding another aspect, namely merelasi and make generalizations.
2. LKPD IPA developed recommended to be disseminated is not just limited to teachers IPA SMP N 2 Limestone like on JUNIOR MGMP IPA Sleman.

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