

DEVELOPMENT OF INQUIRY SCIENCE ISSUES-BASED STUDENT WORKSHEET TO ADVANCE PRACTICAL SKILL AND ENVIRONMENTAL ATTITUDE IN A SEVENTH GRADE HIGH SCHOOL STUDENTS

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Abstract. *The aims of this research were to (1) develop inquiry science issues-based student worksheet based which is feasible to advance students' practical skills and environmental attitude, (2) know the students' responses towards inquiry science issues-based student worksheet, (3) know the advancement of students' practical skills after using the developed inquiry science issues-based student worksheet and (4) know the advancement of students' environmental attitude after using the developed inquiry science issues-based student worksheet. Research of the model that is being conducted is 4 d model (define, design, develop, and disseminate). Data were collected using validation form, student response student worksheet, towards a questionnaire inquiry science issues observation form, practical skill observation form, pretest-posttest of practical skill, and environmental attitude questionnaire. The data were analyzed four scale analysis, percentage for practical skill and science issues inquiry learning, N-gain score, and paired sample t-test. According to results, (1) the color worksheet was feasible to advance students' practical skills and environmental attitude; (2) Students' responses to the worksheets developed were found very good (A); (3) The average score of practical skills after using the color worksheet was 77.87%. Gains were found between practical skill pre and post test scores. The value of the gains were 0.65, categorized as medium gains. Paired sample t-test indicated that there was significant advancement of students' practical skills after using the developed student worksheet with the Sig. value was reported to be 0.000; (4) The average score of environmental attitude after using the color worksheet was 87.58%. The value of the gains were 0.65, categorized as medium gains. Paired sample t-test indicated that there was significant advancement of students' environmental attitude after using the developed student worksheet with the Sig. value was reported to be 0.000.*

Keywords: *student worksheets, Inquiry Science Issues, practical skills, environmental attitude.*

INTRODUCTION

The fact of the IPA and IPA 2013 Curriculum emphasizes that woke up on products, processes, attitudes, and scientific applications. Thus learning IPA was entrusted to implemented a way that can hone aspects in fact of the IPA, which of them is the knowledge, attitudes, skills, and applications.

Based on the results of observation on SMP N 1 Paliyan, note that the implementation of the IPA still learning-centered teachers and cognitive achievement. In addition, the subject of learning the IPA has not been associated with the related issues of science that developed in the community, so that learning becomes less meaningful.

Observations show that the practical skill learners lack honed. In addition the results of observation and debriefing with the learners indicated that environmental attitude positive learners is still lacking.

Based on the above description then needed a way to membelajarkan the concept of IPA that can

facilitate the growth of practical skill and environmental attitude. Approach to inquiry science issues capable confronts learners on science issues and facilitate learners to solve it through the investigation. The activities of the investigation requires the presence of LKPD. Therefore need to be developed the learning device LKPD based inquiry science issues.

RESEARCH METHODS

This is the kind of research the research development or Research and Development (R&D).

Time and place of Research

Research conducted at the JUNIOR HIGH SCHOOL N 1 Paliyan and done in April 2017.

The subject and Object of research

The subject of this research is 30 learners classes VII B SMP N 1 Paliyan. The object of the research was LKPD based inquiry science issues the results of development.

Procedure

This research and development using the model 4 d that consists of 4 stages define include initial analysis, analysis of the characteristics of the learners, analysis tasks, concepts, analysis and formulation of learning objectives. Stage design includes preparation of test benchmark reference, the selection of media and format, as well as the creation of the initial draft. The stage of the assessment stage include experts develop and test development. Disseminate stage limited to teachers and learners in the IPA Class VII B Junior 1 Paliyan.

Data Analysis Techniques

Question form validation and analysis of data was done by calculating the response average score is then converted into four categories by the following rules.

Table 1. Conversion of the actual Scale value Score four.

Score	value	Category
$X \geq \bar{X}_i + 1.Sbi$	A	Very Good
$\bar{X}_i + 1.Sbi > X \geq \bar{X}_i$	B	Good
$\bar{X}_i > X \geq \bar{X}_i - 1.Sbi$	C	Good Enough
$X < \bar{X}_i - 1.Sbi$	D	Less Good

(Djemari Mardapi 2008: 123).

An analysis of the percentage of agreement (PA) to know the consistency of assessment validator. The results of the validation of the reliability that has IPA LKPD $\geq 75\%$ reliability.

The percentage of keterlaksanaan learning inquiry science issues changed to qualitative data by using the guidelines as in table 2.

Table 2. The Percentage Of Keterlaksanaan Learning.

Percentage (%)	Category
$80 \leq X \leq 100$	Very good
$80 \leq X \leq 100$	Good
$80 \leq X \leq 100$	Enough
$20 \leq X \leq 40$	Less
$0 \leq X \leq 20$	Very less

(Eko Putro Widoyoko, 2009: 242).

An average score of practical observation skill convert data in the form of percentage of mastery of practical skill then analyzed its category with table 3.

Table 3. The Conversion Percentage Of The Mastery of Practical Skills Into The Qualitative Data.

Percentage	Category
86 – 100%	Very Good
76 – 85%	Good
60 – 75%	Enough
55 – 59%	Less
$\leq 54\%$	Less All

(Anthony 2009: 103).

Pretest-posttest data practical skill is analyzed with gain score ternormalisasi then the value is converted.

Table 4. The conversion of standard value of the gain into the qualitative data.

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

(1991: Hake 1).

The analysis of the questionnaire environmental attitude is done in the form of a percentage is then converted in the form of categories through rules in table 3. Next do the analysis gain score ternormalisasi with conversion value gains as presented in table 4.

Testing the significance of the growth of practical skill and environmental attitude is calculated using the t-test correlated or paired sample t-test on the application of SPSS 16.0.

RESULTS AND DISCUSSION

Eligibility Inquiry-Based Science LKPD Issues

Based on data validation results against development results obtained LKPD an A on the four components of the assessment by category. The results of the analysis of the percentage of agreement (PA), the assessment shows that validator against LKPD are reliability. After the declared valid by experts, conducted empirical test. Based on t-test correlated against a score of practical skill before and after using LKPD show that there were significant practical skill growth after using the significance value LKPD (Sig) of 0.000. Based on t-test correlated against a score of practical skill before and after using LKPD show that there were significant practical skill growth after using the significance value LKPD (Sig) of 0.000. It

indicated that LKPD developed deserves to cultivate practical skills and environmental attitude learners Class VII junior high school.

Learner response against LKPD developed is also very good, with all components acquire a. Learning inquiry science issues to be implemented 100%. This means that the whole activity of teacher and learners occurs in every activity.

The Growth Of Practical Skill

Analysis of gain ternormalisasi gain score results of 0.64, with categories being. Practical skill of data from three activities gained through observation sheet is analyzed and obtain results average mastery of practical skills to learners after using LKPD is 77.87% with categories either.

While t-test correlated against the results of a pretest-posttest pointed out that practical skill experience significant growth after using the significance value LKPD (Sigs.) 0.000.

Research results aligned with the stated theory Harlen (2010: 13) that the learning of inquiry is able to help learners in fostering skill to ask yourself, to predict, plan and conduct investigations, observing, analyzing and interpreting data, as well as communicating results. Edelson et al (1999: 4) also stated that the inquiry could provide an opportunity for students to grow and train the skills of inquiring into, carry out investigations, analyze data, and communicating the results of the inquiry means that can facilitate learners to cultivate and train practical skill. Prasajo (2016: 137) also confirmed that the activities of the inquiry can be menumbuhkembangkan the skills included in the practical skill learners.

The Growth Of Environmental Attitude

Analysis of the gain score ternormalisasi against data environmental attitude shows the value of the gain of 0.67 with requirements are. The t-test correlated test shows that the environmental attitude learners experiencing significant growth after using the significance value LKPD (Sig) of 0.000.

Research results in accordance with stated theory that Kaiser, et al (2014: 275) and Cohen (in White 2004: 4) that the interaction of the learner with nature through learning activities can engender a sense of caring learners on the environment. In addition the learners who was introduced to environmental issues according to Gifford and Nilsson (2014: 2) also contribute to the growing environmental positive attitude will. Corraliza and Berenguer (2000: 833) menyatakab that a positive attitude is the environmental concern and attention of someone on the environment. This means that learning using inquiry-based science LKPD issues are able to foster a positive attitude or environmental concern for the environment of the learners.

SUMMARY AND ADVICE

Summary

Based on the results of research and discussion has been done then it can be concluded that (1) the inquiry based science LKPD issues worthy of use for menumbukan practical skills as well as environmental attitude learners Class VII JUNIOR HIGH SCHOOL; (2) the inquiry based science LKPD issues gained excellent response from learners with an A on the feasibility component content, linguistic, presentation, and kegrafikan; (3) on the basis of trial results on the field and test result of t-test correlates well known that LKPD based inquiry science issues can cultivate practical skills learners JUNIOR Class VII significantly, with the percentage of mastery of practical skills of 77.87% categories both in terms of the observation sheet and gain score ternormalisasi of 0.64 by category are reviewed from a pretest-posttest problem; (4) on the basis of trial results on the field and test result of t-test correlates well known that LKPD based inquiry science issues can grow the environmental attitude of JUNIOR HIGH SCHOOL students of Class VII significantly, with the percentage of achievement of environmental attitude after using

LKPD was 87.58% of the reviewed questionnaire and gain score ternormalisasi amounting to 0.67 by category.

Advice

(1) Further research to better emphasize the reporting category and interpretative skill practical skill and domain conservation motivated by environmental concern anthropocentric attitude at LKPD developed;
(2) Further research in order to use larger samples so that the feasibility of LKPD to cultivate practical skills and environmental attitude looks more significant;(3)
further Research needs to be wider dissemination, so that the results of product development can be more meaningful.

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