

The Development of Guidance and Integrated Science Practicum Kit Integrated Guided Inquiry Model bases Science Process Skills for Class VII Semester I

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Abstract- this study aims to obtain an integrated Science Practicum handbook integrated guided inquiry models based on students' science process skills by adjusting KIT to practicum activities in the development book. The sample in this research were 2 integrated science practicum guidebooks with different publishers for class VII SMP / MTS Semester I. The practicum guides that have been developed are validated by 2 expert lecturers of chemical and biology study programs in Postgraduate State University of Medan and 4 teachers in the field of Natural Sciences, and tested it to 2 classes. The sample selection uses a purposive sampling technique. The research data were then analyzed using SPSS 20 for window through tests of normality, homogeneity, and t test. The results of this study indicate (1) the results of the analysis of the feasibility level of integrated science practicum guides used in schools from two different publishers have an average value of 2.85 with a feasible category, but there are several components of the guide that need to be developed. (2) the results of the developed Ministry of Education and Culture KIT questionnaire have a very feasible category, so it is feasible to use in integrated science learning (3) the results of students' science process skills by getting a percentage of 82.1% with a good category. (4) Student cognitive learning outcomes show there are differences in student learning outcomes using the guide and KIT integrated science practicum integrated science model guided inquiry based on science process skills that is ($t_{count} > t_{table}$, $4.801 > 1.672$). (5) The students' responses to the guide and KIT practicum developed showed a positive response 96.77% with a very good category.

Kata Kunci- *Practical guide, practicum KIT, guided inquiry model, science process skills.*

I. INTRODUCTION

One of the efforts to improve the quality of education in Indonesia is through the teaching and learning process improvement efforts in all level of education. According to Trianto (2013), the nature of science is a collection of systematic theory, Implementation is generally limited to the symptoms, natural born and developed through scientific methods such as observation and experimentation as well as

demanding scientific attitude and curiosity, open, honest, and so on. In any event practical IPA required laboratories, the lab is a place where students perform experiments and the investigation in Finding a research. According to subannia, et al (2014) to support practicum activities in learning science, certainly we need a practicum set which contains practical instructions, tools and materials for practicum that help students to understand the concepts of science more meaningfully. KIT is one of the practicum media that can be used in class learning, so that practicum implementation becomes easier and simpler.

II. LITERATURE REVIEW

A. *Research and development*

Research and Development in education is often called research and development, the process used to develop, produce certain products and test the effectiveness of these products, Sugiyono (2012).

B. *Practicum Guide*

Textbooks are one of the supporting processes of teaching and learning activities. textbooks contain subject matter that will be given to students. A good textbook is one that meets the content standards and refers to the competencies that will be achieved by students. in addition to textbooks, students also need a practicum guide, so when doing practicum. As a book, the compilation of practicum guides must consider several things, namely: the contents of the book, the organization of the book, the clarity of sentences and the level of readability, as well as the physical appearance of the book Farikhayati (2009).

C. *KIT*

KIT stands for Integrated Instrument Box is one of the tools in the laboratory. KIT practicum contains a set of practicum tools which are packed in a box. KIT is one of

practicum media that can be used in class learning, so that practicum implementation becomes easier and simpler.

III. METHODOLOGY

This type of research is research and development using the ADDIE model. The study was conducted at junior high school 1 Kuala Simpang. This research was conducted in October 2018 to March 2019. The population in research on the development is an integrated science book that guides practical guides circulating in schools. The sample selection in this study used a purposive sampling technique. The sample of students selected 2 classes consisting of experimental class 1 and experiment class 2.

TABLE I. DESIGN STUDY

Group Sample	Pretest	Treatment	Posttest
Class Experiment-1	T ₁	X	T ₂
Class Experiment-2	T ₁	Y	T ₂

Description

T₁ = Initial test of experimental class-1 and experimental class-2 (pretest)

T₂ = final test of experimental class-1 and experimental class-2 (posttest)

X = learning with guide inquiry based practical guides

Y = Learning with practical guide book student worksheets that are in school

Procedure of the research used at the trial stage (1) Analysis Stage Learning Devices and Needs Analysis, (2) Planning (Design) Stage, (3) Development Stage (4) Implementation, (5) Evaluation Stage. The data in this study were obtained from: (1) Feasibility test sheet (2) Learning Outcomes Test Instrument and (3) Test of Questionnaire Response Instrument. The data in this study consisted of qualitative and quantitative data, so the data analysis was done by processing each data. The qualitative data were analyzed for descriptive percentage. Percentage description analysis is used to describe the percentage of each variable. This analysis is used to determine the percentage level of answer score of each sample.

IV. RESULTS AND DISCUSSION

V.

A. Validation Results of the Practical Guide and KIT Practical Guide

Based On the Results of validation of the feasibility study of practical guidance based on guided inquiry by expert validation and integrated science teacher, the result of the (1) aspects of the feasibility of the contents of 3.34 and 3.73, this shows that the integrated science practicum guide book is feasible to use. (2) aspects of language feasibility, namely 3.66 and 3.75, this shows that the science practical guide book is very feasible to use. (3) aspects of presentation 3.50 and 3.70, this shows that integrated science guides are very feasible to

use (4) aspect the feasibility aspect of the graphic 3.60 and 3.80 shows that the integrated science practical manual is very feasible to use.

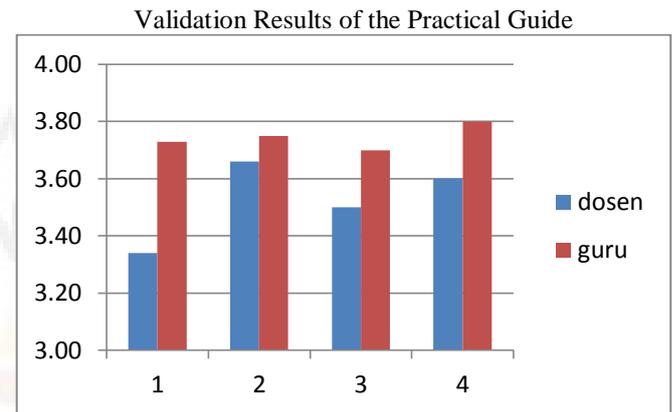


Fig.1 Chart Validation results

B. Developed KIT

The results of the validation of the material practicum kit and its changes for junior high school grade VII odd semester by expert lecturers and teachers of integrated science studies show an average value of 3.71 and 3.82, meaning that the practicum kits developed are very feasible to use. The results of the integrated science kit analysis developed on the KIT indicator practicum can help students understand the science learning materials by expert lecturers and science teachers obtained an average value of 4.00 and 3.75, meaning it is very feasible to use. The results of the practicum kit analysis needed in science learning by expert lecturers and science teachers obtained grades of 4.00 and 4.00, which means that they are very feasible to use. The results of the analysis of conformity with increased competence in students by expert lecturers and teachers in the field of science study were obtained an average of 3.50 and 3.75, which means it was very feasible to use.

The results of the analysis of indicators of Conformity with the intellectual development of students obtained an average value of 3.50 and 3.75, which means it is very feasible to use. The results of the analysis on the indicators of the materials that make up the resistant kit when used by expert lecturers and teachers in the field of natural sciences obtained an average of 3.50 and 4.00, which means it is very feasible to use. The results of the integrated science kit analysis developed on the indicators of easy maintenance by expert lecturers and science teachers obtained an average value of 4.00 and 3.75 which means it is very feasible to use. The results of the integrated science kit developed on the indicator of Endurance of equipment components are also used by expert lecturers and science teacher obtained an average value of 3.50 and 3.75 which means it is very feasible to use. The results of the integrated science kit developed on the indicator Can be used for testing by expert lecturers and science teacher obtained an average value of 4.00 and 4.00 means it is very feasible to use.

The results of the integrated science kit analysis developed on indicators are easy to be arranged by expert lecturers and science teachers obtained an average value of 4.00 and 4.00 which means it is very feasible to use. The results of the integrated science kit analysis developed on the indicators are easy to use by expert lecturers and science

teachers obtained an average value of 3.50 and 4.00 which means it is very feasible to use. The results of the integrated science kit analysis developed on the easy indicator of the construction of equipment for students by expert lecturers and science teachers obtained an average value of 4.00 and 3.50 which means it is very feasible to use. The results of the integrated science kit analysis developed on the interesting equipment kit indicator motivate students to learn by expert lecturers and science teachers obtained an average value of 4.00 and 3.75, meaning it is very feasible to use. The results of the integrated science kit analysis developed on the indicators of ease of storage and taking practical tools by expert lecturers and science teachers obtained an average value of 3.50 and 3.50, which means it is very feasible to use. The results of the integrated science kit analysis developed on the indicator of the safety of the storage box by expert lecturers and science teachers obtained an average value of 3.00 and 3.75 which means it is very feasible to use.

Validation Result of KIT

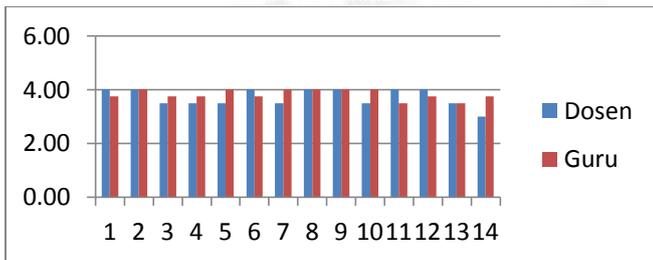


Fig 2. Chart Validation results

C. Students Response practical Guide And KIT

Based on the data of the students' responses to the guide and the developed Natural Sciences practicum KIT, it can be seen that the students' response to the first indicator, namely the guideline for the use of practical guides assisted by the Integrated Natural Sciences Practicum, is easily understood at 93.54% with a very good category. The second indicator The use of practical guides and practical KITs is easy to use 93.54% with very good categories. The third indicator The questions and sentences in the lab guide and the practicum KIT are easy to understand are 100% with a very good category. The fourth indicator Information given to the guide of science practicum makes practicum more active, creative, and fun is 95.96% with very good category. The fifth indicator, the use of time is more effective when practicum using guides and integrated science practicum KIT is 93.54% with a very good category. The sixth indicator, size and font model used in the lab guide clearly visible and easy to read is 95.96% with a very good category. Furthermore, the seventh indicator of the picture presented in the Integrated Science Practicum guide looks interesting and in accordance with the Integrated Science Practicum KIT is 92.74% with a very good category. The eighth indicator of the KIT Practicum form is simple and looks attractive is 100% with a very good category. Indicator nine, cover or packaging on the guide of science practicum looks attractive is 97.58% with very good category. Indicator ten, the material presented in the practical guide is easy to understand is 96.77% for SMPN1 schools with a very good category. Eleven indicators, procedures and work steps are presented clearly structured and easy to use. is 100% with a very good

category. Indicator twelve, KIT practicum is easy to use in the process of practicum implementation is 97.58% with very good category. Thirteen indicators, tools, materials and procedures for using KIT in accordance with the practicum guidelines are 98.38% with very good category. Indicators of fourteen, the guide and KIT of this practicum support to master the science lessons are 99.19% with a very good category. The average value of students' responses to the practical guide is 96.77%.

Validation Result of Respon

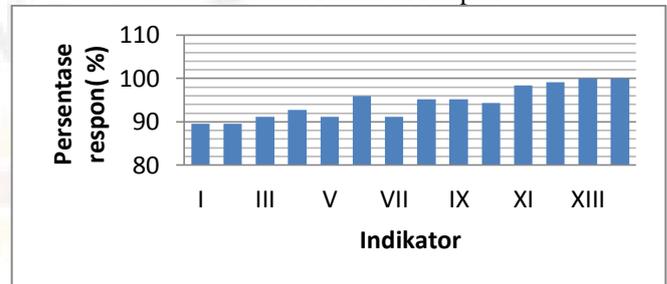


Fig 3. Chart Respon

Results Data Hypothesis

TABLE II. RESULT DATA HYPOTHESIS

Hipotesis	Data	Sig	α	t_{hitung}	t_{tabel}	Kesimpulan
There are differences in learning outcomes of students who are taught using the Integrated Science practicum guide which was developed with the practicum handbook available at school.	Gain	0,000	0,05	2,915	1,672	H_a diterima

Based on table 4.9, it can be seen that the significance value (sig) $<\alpha$ (0,000 <0.05) and $t_{count} > t_{table}$ (2.915 > 1.672) is obtained, which means that H_a is accepted. From the two hypotheses so that it can be concluded that there are differences in learning outcomes of students who are taught using the Integrated Science practicum guide which was developed with the Integrated Science practicum guidebook in schools.

VI. CONCLUSION

1. The guide to the integrated science practicum guided inquiry model for junior high school / MTS class VII semester I developed has a very feasible category, so it is appropriate to be used in integrated science learning.
2. Practical KIT developed for SMP / MTS VII class I semester has a very feasible category, so it is feasible to use in integrated science learning.

3. Student responses to the guides and practicum kits developed show positive responses in the excellent category.

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