

Inquiry Training Based on Science Subjects E-Module Development to Improve Hots Literacy Ability

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ABSTRACT

The purpose of this study was to determine the feasibility and effectiveness of Inquiry Training-based E-Modules in science subjects to improve HOTS literacy skills for Class IV Elementary School students. This research is a type of research and development (Research and Development) using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The results showed that the E-Module based on Inquiry Training in science subjects to improve HOTS literacy skills was "Very Eligible" with details of the average score given by design experts 4, 4 in the "Very Good" category with a feasibility presentation of 88 % with "Very Eligible" category. The material expert validation results were 4.56 in the "Very Good" category and the feasibility presentation rate was 91% in the "Very Eligible" category. And based on the results of the pre test and post test there was an increase in presentation of 29.3 %. Initial pre-test results were 54.5 % and post-test results were 84 %. Therefore it can be concluded that Inquiry Training-based E-Modules in science subjects to improve HOTS literacy skills are appropriate and effective for use in the learning process.

KEYWORDS

Inquiry Training; E-Module; HOTS Literacy

INTRODUCTION

Process Study teach Teacher hold role important in world education and create intelligent generations in the next generation. Moment This Lots Teacher Which No innovate in world education and only teachwith conventional methods that make students not enjoy learning implemented (Darma et al., 2022). Implementation of learning so faronly often held in the class with system learning *teacher centered* with a variety of competencies that must be possessed by students withoutsee development and ability student in follow learning.

According to Permendikbud number 103 Year 2014, characteristics 21st century learning demands learner-centered learning. However in fact, process learning tend Still teacher centered whose activities are only reading and listen for a long time using the lecture method so that it has an impact on low student learning outcomes (Khalida, B. R., & Astawan, I. G., 2021). This cause the part of big participants educate become passive, lazystudying, feel bored moment learning going on, And not enough understand draft material which are given Teacher (Septiarini, 2020).

In line with research Usmaedi (2017) states that students only provide alternative answers to factual questions the answer is only one and usually the answer is something that can found immediately in a book or memorized.

Teacher Also Not yet know ability HOTS in a manner deep, so that material teach HOTS Not yet Lots developed. a number researcher previously revealed the development of very HOTS-based teaching materials effective for improving higher order thinking skills in

school studentsbase (Zahroh, D A., & Yuliani, 2021). Wrong One eye lesson Which capable develop critical thinking ability student i.e in natural science subject (Usmaedi, 2017).

Natural science subject doesn't only base emphasize in school to knowledge of the facts, concepts and meanings of science but rather also emphasizes the development of skills using the scientific method And behave scientific For solve problem in life daily(Yunus, Ayu, Muhammad Danial, 2022). In point, It is to develop the ability to think, work and act scientifically and communicate it as an aspect of life skills so that students are able to do and acquire deeper understanding of the natural environment. So, with that the needdevelopment material teach based literacy HOTS on learning natural science subject in school. So that, educator must innovate make something materialcreative teaching according to the material being taught to foster motivation and interest learner learning.

Based on the results of observations and interviews conducted at SDN 030317 Mountain Darling show that material teach Which used Still using lectures, discussions and assignment. In addition, the value of IPA students have not reached the Minimum Completeness Criteria standard (Hayati, Lu'luil, Inyoman Loka, 2019). This matter caused lack of interest student and constrained understand material IPA. so thatnecessity material teach Which increase results Study And ability thinkcritical student. (Arsal, Muhammad, Muhammad Danial, 2019) Responding problem on with implement model effective learning that can actively attract students' attention and pay attention to students' abilities.

Many effective models are used to process the learning process physics Which characteristic *teacher centered* become *student centered* Wrong only one modellearning inquiry training. Reason chooses inquiry training Because emphasizes the process of critical and analytical thinking to seek and find answers on their own of a problem in question. This learning also places studentsas a subject of study, all activities carried out by students are directed to look for and find answer Alone from something Which questioned, so that it is expected to generate self-confidence. Besides, election model This based on consideration And corner participant educate or student (Sari, A. T. I., & Hakim, 2018).

Effort enhancement quality education done government with change curriculum Which apply with adapt condition moment This.In line with Curriculum 2013, soenhancement system learning based HOTS become very important. Application learning think level tall must notice stages taxonomy Bloom, that is start from remember, understand, apply, analyze, evaluate and create. The bottom line is not only students just know And memorize material learning, However they Also can solve a problem Which There is in the neighborhood surrounding(Nursamsu, 2020).

Electronic use of submerged, floating, and hovering material modules so that more interesting so need combined with multimedia with add application audio, video, animation or websites with Meaning increase students' enthusiasm for learning(Budiono et al., 2021). Software Which used for drafting module electronic based inquiry trainingwith *Flip PDFs professional*, so that material teach become more interesting like a book and can load multimedia according to needs users (Seruni et al., 2019). Based on background behind, so researcher do study Which entitled "Development of E-Module Based on Inquiry Training on Eyes Lesson IPA for Increase Ability Literacy HOTS Student Class IV Elementary School".

RESEARCH METHODS

Draft ADDIE Which applied build "student-centered", authentic, and performance-based learninginspirational. This research focuses on developing e-module based inquiry training Which implemented with step study modelADDIE. The research will be conducted at SDN 030317 Gunung Sayang in March 2023. This time includes analyzing, designing, developing,

product implementation and evaluate (John W Creswell, 2012). Population in study This that is whole participant educate class IV Which currently follow Lesson IPA in SD Country 030317 Gunung Sayang. Sample in study that is participant educate class IV Which currently follow Lesson IPA on semester Even a number 31 participant educate, in SD Country 030317 Mountain Darling For learned with E-Module based inquiry training on material style. (Primayana, 2019). Variable Which done namely:

1. Variable free that is e-module based inquiry training Which taught on lesson IPA.
2. Variable bound i.e. results Study And literacy HOTS participant educate on material lesson IPA style material.
3. Variable Control i.e. Teacher, material teach, And material learning (J. W Creswell, 2014).

The data collection instrument is the method used by the reviewer for the activity collection of facts in a structured manner (Arikunto Suharsimi, 2013). The reviewer uses Multiple Choice in collect data that aims to measure results Study student. The instruments used are test and non-test instruments. (John W Creswell, 2012).

RESEARCH RESULT

The research results obtained in each stage of development are described as follows: at this validation stage it was carried out by three validators who are experts in their respective fields, namely e-module design experts , material experts, and teacher assessment (Rayanto, 2020).

Design Expert Validation

Design expert validation on Inquiry Training-based E-Module displays in natural science subjects will be held on 12 February 2023 conducted by material experts from lecturers at Universitas Negeri Medan. Assessment is carried out to obtain information that will be used to improve the quality of Inquiry Training-based E-Modules in science subjects, especially in the design and appearance of E-Modules , the assessment results of the validation of design experts can be seen in the following table:

Table 1 . Design expert validation results

No	Assessment Aspects	Average value	Presentation	Criteria
1	Appearance	4, 8	9 6 %	Very Worth it
2	Consistency	4, 4	88 %	Very Worth it
3	Use of Letters	4.0 _	8 0 %	Very Worth it
4	Technology Utilization	4, 3	86 %	Very Worth it
Average Number		4, 4	88 %	Very Worth it

The results of the presentation of the E-Module design expert are also presented in the form of diagrams, so the results can be seen in the following figure:

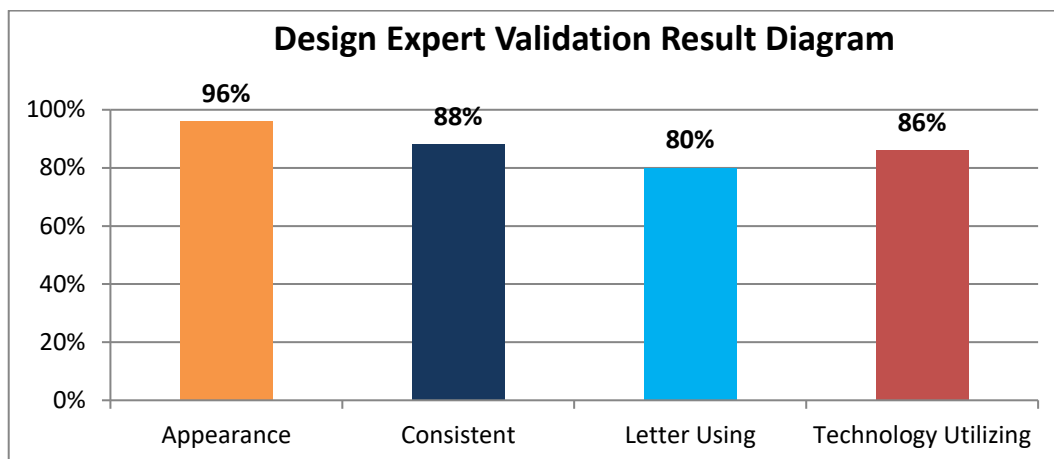


Figure 1. Diagram of Design Expert Validation Results

Material Expert Validation

Material expert validation on Inquiry Training-based E-Modules in Science subjects was held on February 14, 2023. Conducted by material experts lecturer in Science Education , Faculty of Mathematics and Natural Sciences, Universitas Negeri Medan. the assessment is carried out to obtain information that will be used to improve the quality of Inquiry Training-based E-Modules in science subjects, the assessment results of material expert validation can be seen in the following table:

Table 2. Material expert validation results

No	Assessment Aspects	Average value	Presentation	Criteria
1	Content or material	4, 6	9 2 %	Very worth it
2	Serving component	4, 7	9 4 %	Very worth it
3	Language	4, 4	88 %	Very worth it
Average Number		4.56	91%	Very Worth it

The results of the presentation of material experts are also presented in the form of diagrams, so the results can be seen in the following figure:

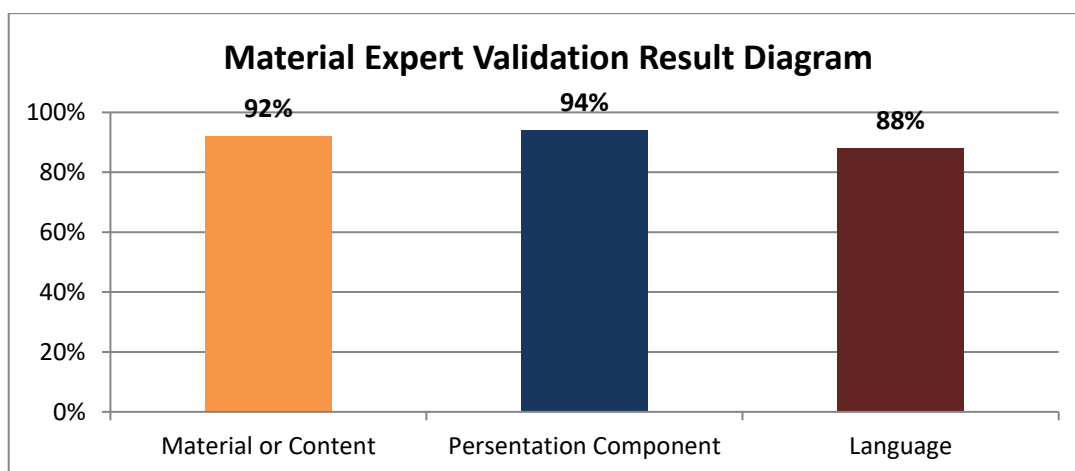


Figure 2. Material Expert Validation Results Diagram

The results of the evaluation at the evaluation stage can be seen in the following table:

Table 3. Comparison of *pre-test* and *post-test* values

No. Student Absence	Pre-Test Value	Post Test Value
1	55	100
2	70	85
3	30	95
4	65	70
5	45	90
6	65	85
7	45	90
8	60	90
9	60	80
10	65	89
11	45	91
12	60	78
13	55	74
14	60	85
15	30	83
16	65	91
17	45	77
18	65	86
19	45	80
20	60	88
21	47	76
22	58	81
23	62	70
24	49	77
25	55	91
26	60	80
27	63	87
28	70	79
29	55	90
30	39	84
31	48	82
Average	54,7	84

Table 3 shows that the average *pre-test* value is 54,7 and the average *post-test* value is 84. From this average, it can be seen that the difference in learning outcomes is that the *post-test* results have better scores than the *pre-test*. So that through this you can see the difference in the results of the pre-test and post-test, before and after using the developed e-module.

In the analysis phase, a needs analysis and an analysis of the characteristics of the students are carried out. The results of the needs analysis were obtained based on the results of observations and interviews with teachers. The second stage is *Design*, at this stage the researcher carries out the design of the E-Module, as for the results of the design that has been made, namely the initial appearance, drawings and scripts as well as drafts of the E-Module from the cover to the bibliography.

The third stage is *Development*, at this stage the researcher develops the product according to the validator's input and criticism. E-Modules based on Inquiry Training on natural science subjects, Basic Competency (KD), Learning Indicators, Learning Objectives, HOTS-Based Learning Activities, Bibliography, and E-Module design displays. The next stage is *the Implementation stage*. This stage is carried out after the E-Module based on Inquiry Training on science subjects has been developed and validated. The implementation was carried out in 4 meetings at SD Country 030317 Mt Dear class IV. The fifth stage is *the Evaluation stage*. This stage was carried out on Saturday, 20 February 2023, the researchers carried out a *post test* by filling out *the Google form*. Based on the evaluation carried out, the results of *the post test* were higher than the results of *the pre test*. The average *pre test score* is 54.7 and the average *post test score* is 84.

The analysis of the effectiveness of the Inquiry Training-based E-Module in the science subjects developed can be seen from the level of completeness of student learning outcomes, through *pre-test* and *post-test scores*. Based on table 3 above, the percentage of students' learning completeness was obtained at 87%, there was an increase in learning outcomes of 31.5%. Thus, this shows that learning with Inquiry Training-based E-Modules in science subjects has been able to improve student learning outcomes. So that the E-Module based on Inquiry Training on science subjects has been effective and feasible.

CONCLUSION

Development of E-Modules based on Inquiry Training on natural science subjects implemented in SDN. 030317 Gunung Sayang in class IV with 31 students. The results obtained through the development of this E-Module can be summarized as follows:

1. E-Module based on Inquiry Training on science subjects has been validated by a material expert validator with Very Eligible criteria. This is shown from the acquisition of a feasibility presentation of 91%. Validation results by design experts with Very Eligible criteria. This is shown from the acquisition of feasibility presentation of 88%.
2. Through the results of the pre test and post test there is an increase in learning outcomes, namely 29.3%. The *pre-test average percentage* is 54.7% and the *post-test average percentage* is 84%. So that the E-Module based on Inquiry Training in science subjects can be said to be effective and suitable for use in learning.

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