

Student Responses to the Development of KITTOS Media Which Containing Ethno-STEM Content on Changes Energy Forms

Ro'i Khatul Jannah¹, Sudarmin², Sri Wardani³, Helmi Auliya⁴, Novitasari M⁵

¹Master Program, Student of Primary Education, ^{2,3}Master Program, of Science Education, ⁴State Junior High School 1 Nalumsari, ⁵Master Program, Student of Primary Education, Universitas Negeri Semarang, Semarang City, Indonesia

Corresponding Author: Ro'i Khatul Jannah

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ABSTRACT

This research aimed to determine students' responses to the use of KITTOS media containing Ethno-STEM. This research describes various student responses to KIT media, including levels of interest, understanding of concepts, and active involvement in the learning process. The research method used is a descriptive method, namely research that seeks to observe students' responses accurately. The research was carried out in 2 meetings with different experimental activities. The research participants consisted of 23 grade IV students at MI Mazroatul Ulum, who were involved in a series of learning using KIT during two meetings. Qualitative data analysis was carried out by detailing the findings from students' interactions with KIT media, as well as identifying factors that influenced positive or negative responses. The data analysis technique uses Ghutman's theory, which only has two categories, those were Yes=1 and No=0. The results of the analysis of student responses gained an average score of 97% in the very appropriate category for the application of KITTOS media containing Ethno-STEM in learning.

Keywords: Student response, media, changes in energy forms

INTRODUCTION

In this era of globalization, the world of education is required to continue to innovate and adapt to technological developments so

that it can create media (Agustian & Salsabila, 2021). The main advantage of using media in learning is its ability to create a more interactive and interesting learning experience (Wardhani et al., 2018). This reveals that learning must be carried out more actively and involve students, so that they are able to visualize complex concepts, helping students understand the material in a more concrete and applicable way. Many learning models are currently being developed, such as using a STEM approach.

The *Science, Technology, Engineering and Mathematics* (STEM) learning approach is considered more effective in increasing understanding of science concepts (Yulaikah et al., 2022). STEM learning can encourage students to develop 21st century skills (Nuragnia et al., 2021). Innovative learning can provide an interesting and enjoyable learning experience for students, so that it can increase students' motivation and interest in learning. During learning, students can carry out preparation for practical activities, observe objects, analyze the data gained, prove and draw their own conclusions. regarding the experiments carried out (Wellyanti, 2020). To support the learning process, media is needed in the learning process.

Learning media is anything that can use to convey messages from the sender to the

recipient so that it can stimulate students' thoughts, feelings, attention and interest in the learning process (Sari, 2019). In general, learning media has three roles, there were the role of attracting attention (*intentional role*), the role of communication (*communication role*), and the role of memory/storage (*retentional role*). According to Nurrita, (2018) learning media has criteria that must be considered in selection, including objectives, effectiveness, teacher and student abilities, flexibility, media availability, benefits and quality. The learning media developed in this research is in the form of KIT (Integrated Instrument Box). KIT is equipment that is produced and packaged in the form of a teaching unit box, which resembles a series of process skills trials in natural science (science), equipped with instructions for use (Nursari & Okimustava, 2019).

Science KIT is a set of teaching aids to prove science theories that are connected to the natural environment and aim to develop its potential (Widayanti et al., 2019). The Science KIT has a practical shape, not too big or small, so it is easy to use during the science learning process (Handoko, 2016). One innovation that plays an important role is the use of learning media, especially KIT in delivering material on changes in forms of energy. Changing forms of energy is a topic that is not only important in forming students' knowledge, but also has a direct impact on their understanding of basic science concepts (Sudiar et al., 2023).

The importance of understanding the concept of changing forms of energy in science is the initial basis for this article. This material not only provides in-depth insight into the law of conservation of energy, but also teaches students about how energy can transform from one form to another. In this context, the application of KIT as a learning medium is expected to provide students with a more real and interactive experience in understanding the concept. Even though the material on changing forms of energy has its own

charm, less interactive teaching can make it difficult for students to be actively involved. Therefore, this article will discuss the extent to which KIT can be a solution to overcome these challenges, creating a more dynamic and inclusive learning environment.

It is important to understand how students respond to the use of KIT in learning changes in energy forms. Is this learning media successful in increasing students' understanding of concepts, interest and participation? Current data and research will be explored to provide a comprehensive picture of students' positive responses to the use of KIT. Through this article, we would explore various dimensions of student responses to learning media. To increase the effectiveness of the learning process, a deep understanding of how students interact with learning media will be an important foundation. Apart from that, we will also explore strategies and methods that can be applied to maximize students' positive responses to learning media to achieve better educational goals.

MATERIALS & METHODS

This research was qualitative research which aimed to determine students' responses to KITTOS learning media containing Ethno-STEM. The subjects of this research were 23 students as respondents. The research procedure involves conducting 2 learning meetings with different experiments. Then, at the end of the lesson, a questionnaire was given to gain student responses. Research data/student responses to the use of KIT products will be analyzed using averages. Then the average value categorized as an assessment of modification results (Fajriah & Asiskawati, 2015) is presented in Table 1.

Table 1 Assessment Categories

Percentage (%)	Validation Level
81 – 100	Very worthy
61 – 80	Worthy
41 – 60	Decent enough
21 – 40	Not worth it
1 – 20	Not feasible

RESULT

This trial involved 23 students, 10 men and 13 women. The use of KITTOS media in learning does not only involve students' senses. The sense of sight, the sense of hearing and other senses are involved in the learning process using KITTOS media

containing Ethno-STEM. At this stage, student response data is produced.

Student responses to KITTOS media containing Ethno-STEM. The results of 23 student responses answering 20 questions are presented in Table 2.

Table 2. 16 Large-Scale Test Student Response Results

No.	Statement	Percentage	Criteria
1	Able to give examples of activities that change forms of energy.	96%	Very worthy
2	Student interest	100%	Very worthy
3	Encourage students to discuss	96%	Very worthy
4	Can be used in groups or independently.	100%	Very worthy
5	Arouse curiosity	91%	Very worthy
6	Understand the material	100%	Very worthy
7	Every word/sentence can be understood	100%	Very worthy
8	Dare to express ideas.	96%	Very worthy
9	The language used is easy to understand	96%	Very worthy
10	The experimental steps are presented sequentially	96%	Very worthy
11	Easy to remember terms	96%	Very worthy
12	The size of this KITTOS media is just right	100%	Very worthy
13	Interested when seeing the appearance (shape and color)	91%	Very worthy
14	Media tools have a simple form	96%	Worthy
15	Interested in reading the guidebook	96%	Very worthy
16	Materials are easy to search and find	96%	Very worthy
17	KITTOS media uses safe materials	96%	Very worthy
18	Easy assembly of tools and materials	96%	Very worthy
19	The description of the instructions for each experiment is very clear	96%	Very worthy
20	Increase enthusiasm for learning	96%	Very worthy
Average		97%	Very worthy

The research results seen from three aspects gained satisfactory results. Student responses are classified into 3 aspects, there were media display, media use, and media benefits.

DISCUSSION

At the end of the lesson, student response questionnaires were distributed to determine the responses and practicality of using KITTOS media containing Ethno-STEM from the students' perspective. The average student response score is 97%, which is a very appropriate category for the application of KITTOS media containing Ethno-STEM in learning. Questionnaire responses were then categorized based on practicality categories in terms of ease of use of the benefits of KITTOS media and efficiency of use. Of the 23 respondents, 19 students responded very well and 4 students responded well. The average practicality questionnaire score is 19 and it can be concluded that KITTOS media containing

Ethno-STEM is very practical to use in learning.

KITTOS media containing Ethno-STEM has good practicality because KITTOS media containing Ethno-STEM is made by fulfilling aspects that support the practicality of KIT, namely ease of use of the media, the media also makes it easier to understand the material, apart from that the material presented in the manual is related to regional culture, those were baratan party and lomban party. It is also equipped with LKPD with STEM aspects to help explain changes in forms of energy and be able to improve students' science process skills. The analysis results show that all respondents responded very positively and concluded that the KITTOS media containing Ethno-STEM was very practical to use in the learning process.

Research from Sartika et al., (2022) showed that ethno-STEM based learning is successful in improving analytical thinking skills and students provide positive responses in learning. Teaching strategies

based on Ethno-STEM can help students develop the capacity for critical thinking (Karim et al., 2022). Continuous learning with Etno-STEM produces results that tend to be good and get positive responses from students.

These results are in line with research by Lestari et al., (2021) which in developing learning media received a student response of 96% with very feasible criteria. Good student responses were also gained in Prasetiyo & Yuliawati's (2021) research regarding the development of learning media with 97.9% of participants falling into the very good and positive category. Learning media has become an interesting thing for students, especially at the elementary school level. This is reinforced by research results from Maisurah, (2023) that students' responses when learning using media are more interesting and increase success.

With an experience-based learning approach, students can more easily relate abstract concepts to real natural phenomena around them. Through experimentation, observation, and interaction with KIT Science, students can develop critical thinking skills, creativity, and problem-solving abilities (Rahmah et al., 2019). The use of KIT Science has also been proven to increase students' active participation in the learning process (Khoirun Naimah, 2022). They become more active and enthusiastic in carrying out practical activities, which in turn can increase their retention and understanding of the lesson material.

Aligned with research by Ramadhani & Hambali, (2023) and Gumala et al., (2020), the use of KIT in science learning can attract students' interest, thereby showing increased learning outcomes. In contrast to the research of Fauziah et al. (2022) KIT Science media can influence students' scientific literacy and curiosity. The results of the analysis of several articles on the use of KIT media in science learning at elementary school level have had a positive impact.

CONCLUSION

The use of learning media was currently very needed by students. It was because students need a learning atmosphere that was not only monotonous from books. In this research, a learning process was carried out which involved many students carrying out experiments. The experiment was carried out twice. The results of the analysis of student responses regarding the use of KITTOS media with Ethno-STEM content showed that the average student response score was 97% in the very appropriate category for the application of KITTOS media with Ethno-STEM content in learning.

Declaration by Authors

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