



Analysis of Needs for the Development of Local Wisdom-Based Junior High School Science E-Modules Related to Ethnoscience in South Sumatera

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Abstract: This article aims to present the results of an analysis of the needs of local wisdom-based e-module teaching materials related to ethnoscience in South Sumatera. The data in this article were collected by distributing a questionnaire with the help of a Google form which was filled in by 35 science teachers and 69 students in grades VIII and IX at SMPN 1 Madang Suku I, even semester of the 2022/2023 school year, and then analyzed using descriptive analysis. The objects of study in this article include the suitability of KI and KD, the teaching materials used by teachers, and the needs of teachers and students for local wisdom-based e-modules related to ethnoscience in South Sumatera. The results of the study show that 100% of teachers use other handbooks and other teaching materials that are in accordance with KI and KD; 56.3% of teachers use special teaching materials other than books from schools to assist in understanding a material; 100% of teachers need e-module teaching materials based on local wisdom related to ethnoscience in South Sumatera which can be used to study material on liquid pressure; 23.2% of students have handbooks other than science books that are borrowed from the school; 92.8 Students look for other materials to help understand the science material; and 95.7% of students need e-module teaching materials based on local wisdom related to ethnoscience so that the subject matter is more interesting and easier to understand. Thus, it can be understood that e-module teaching materials based on local wisdom related to ethnoscience in South Sumatera are needed to make it easier for students to understand the material.

Keywords: Analysis of needs; E-modules; Ethnoscience-related local wisdom

Introduction

Technology and information have progressed and have broad impacts on various aspects of life and livelihood, including the field of education. Ease of access to information through networks and technology is an advantage in the field of education. Education is part of self-capability improvement activities and can improve the level of welfare of human life. Education is expected to produce qualified and skilled human resources. Learning in the 21st century demands change. The expected change is a shift from simple behavior to

more complex behavior and learning activities from traditional to skills and technology based (Primadianningsih et al., 2023). In fact, even though people are currently good at using gadgets or technology, on the other hand, reading literacy skills are still low (Atmaja et al., 2022). Development of electronic modules as a solution to increase human capacity and capability at the school level (Charlina et al., 2022). Students' digital abilities relate to skills in using information and communication technology based on pedagogical principles. Of course, in the 21st century, skills that need to be mastered include critical thinking

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skills (Sari et al., 2023), problem solving, communication (Marhaeni & Wulanningtyas, 2021), literacy, innovation and creation as well as character. So that by preparing 21st century skills, students are expected to become successful individuals in their lives.

The problems that are often encountered in the learning process are limited supporting facilities, including limited teaching materials, media and others that can assist in realizing effective and interesting learning for students (Fathurohman & Kusuma, 2023). During the learning process, learning problems are often related to learning materials and learning resources. Teaching materials in the context of learning should be one of the components that must exist, because teaching materials are a component that must be studied, scrutinized, studied and made into material that students will master and at the same time can provide guidelines for learning it. This is in accordance with what was expressed by Mahendrani (2015), Nurbani et al. (2022), and Noviaty et al. (2022) that the creative use of teaching materials can increase students' abilities to learn more and understand what is being learned.

E-module is a form of presenting self-learning material that is arranged systematically into a particular learning unit, which is presented in an electronic format, where each learning activity in it is linked with a link as navigation which makes students more interactive with the program equipped with the presentation of tutorial videos, animations and audio to enrich the learning experience (Pratama et al., 2021; Dani et al., 2022; Sari et al., 2021; Supriyadi & Sari, 2022; Zulkhi et al., 2022). E-module as a learning medium using a computer or mobile phone that displays text, images, graphics, audio, animation and video in learning. E-module is a set of non-printed learning media that is systematically arranged for students to study independently which can be used anywhere and anytime, one of the benefits of the module is to train students to learn independently.

Making electronic modules or e-modules is an alternative that can be used by both educators and students in learning (Fathurohman et al., 2021). With the e-module it can reach distance learning. Based on research by Saraswati et al. (2019), Febrian et al. (2021), Johan et al. (2022), and Dewi et al. (2023) that students need more digital materials in the form of e-modules in independent learning activities compared to printed modules. Learning using e-modules makes students more enthusiastic and less bored (Megavitry et al., 2023).

The e-module developed by researchers is an e-module based on local wisdom related to ethnoscience in South Sumatra. The material chosen in the research and development of this learning e-module is material pressure on liquids where researchers take the example of the Perjaya Dam. The choice of material is due to

several reasons. The first reason for choosing this material is because it is appropriate if it is integrated with local wisdom related to ethnoscience in East Oku Regency, which is one of the regencies in South Sumatra. This material is in accordance with the scope of local wisdom which includes culture, regional potential and positive attitudes that exist in local wisdom (Sofyan et al., 2019; Harjanto et al., 2021; Saripudin et al., 2022; Dewi & Kuswanto, 2023). The second reason is by integrating local wisdom related to the ethnoscience of East Oku Regency in the material on liquid pressure, it is hoped that it will increase students' knowledge that the potential of the area if used and preserved properly will be very beneficial for the community to improve welfare (Pingsan & Saputri, 2021).

Based on the results of an interview at a junior high school (SMP), the use of teaching materials at that school is still limited. Where students only use the revised 2013 Curriculum 2013 Class VIII package and some material made by students' worksheets when learning in class. Supported by the statements of students who were interviewed said that the textbooks that had been used so far were difficult to understand, because the material was monotonous so that students were less interested in reading and looking for learning information with the textbook. This certainly has an impact on students in understanding the material being taught. In general, students also have difficulty understanding science material during the learning process, one of which is liquid pressure material, based on the results of an interview with one of the educators at the school. This can happen because students do not understand the concepts they are learning and tend to only memorize theoretically. Based on the explanation that has been stated, this study aims to analyze student needs for the development of e-modules on liquid pressure material for class VIII students of SMPN 1 Madang Suku I, OKU Timur district, which is expected to be able to add resources or teaching materials to students that have the potential to increase participant understanding about this material.

Method

The method used in this research is descriptive qualitative research method. The research was conducted on both teachers and students. The steps of the research process were carried out through three steps, namely in the first stage the researcher read previous research sources in the form of articles in scientific magazines, in the second stage an inventory of questions was carried out, then made 6 questions for teachers and 9 questions for students, and in the third

step prepared questionnaire for each question answered with "yes" or "no".

The subjects in this article are students of SMPN 1 Madang Suku I, East Oku Regency, South Sumatra and several junior high school science teachers in several districts in South Sumatra. This research was conducted on May 22 2023 from 35 science teachers in South Sumatra and 69 students in grades VIII and IX at SMPN 1 Madang Suku I. The objects of study in this article include: compatibility of KI and KD, teaching materials used by the teacher, the needs of teachers and students related to e-module teaching materials based on local wisdom of ethnosience, and students' difficulties in learning the material of liquid pressure. Data collection was carried out using a questionnaire with the help of Google form which data was analyzed and interpreted by looking at the percentage of respondents' needs for e-module teaching materials based on local wisdom related to ethnosience.

Result and Discussion

Utilization of local wisdom-based e-modules related to ethnosience in South Sumatra which is presented in electronic format, where each learning activity in it is connected with a link as navigation which makes students more interactive with the program, complemented by presentation of video tutorials, animations and audio to enrich the student learning experience itself is one of the benefits of using technology which is considered important to keep up with the times and meet the demands of the 21st century, namely student literacy in ICT (Indahsari et al., 2023). Researchers conducted research on analyzing the needs of teachers and students for local wisdom-based e-modules related to ethnosience in South Sumatra.

In the teacher needs questionnaire there were 35 teacher respondents who came from various districts in South Sumatra, of the 35 teacher respondents 100% of the teachers had other handbooks that were in accordance with KI and KD curriculum K 13 on liquid pressure material and also they were looking for other materials originating from the internet to be delivered as additional material to students, there are 58.3% of teachers who are looking for special teaching materials for liquid pressure material, 95.8% of teachers need teaching materials in the form of e-modules based on local wisdom related to ethnosience to carry out the process learning natural sciences with material on Liquid Pressure to make it easier and more interesting and 100% of teachers agree that local wisdom-based science e-modules related to ethnosience in South Sumatra are developed so that the material is easier to understand.

In the analysis of the problem in the teacher's questionnaire submitted to the questionnaire via Google form, it can be concluded that the teaching materials owned by the teacher are ineffective in conveying a subject matter of science to students, the teacher only provides subject matter in class, without any further material which students can learn independently by using a computer or cellphone.

In the student needs questionnaire, there were 69 student respondents from SMPN 1 Madang Suku I, of the 69 students consisting of 24 students and 45 female students, for science textbooks all students had been loaned textbooks from the government and only 2.89% of students and 20.2% of female students have other books as textbooks while 76.8% of female students do not have other books besides the books shared by the school, as many as 27.5% of students and 62.3% of female students looking for other sources such as from the internet to understand science subjects on Liquid Pressure material. 56.5% of students experience difficulties in learning Science material Liquid Pressure from textbooks and as many as 72.5% of students will understand the material better if given other teaching materials by the teacher, because 79.4% of students do not understand the material Science, especially the material on liquid pressure and the delivery of this material, is considered by students to be less attractive, 89.9% of students will be more enthusiastic in taking science lessons if they use e-module teaching materials, and 92.8% consisting of 27.5% students and 65.2% of female students need e-module teaching materials based on local wisdom related to ethnosience to better understand material on liquid pressure and 95.7% consisting of 30.4% of students and 65.2 female students agree if the e-module is based on local wisdom related to ethnosience in South Sumatra is developed.

Analysis of the problem in the student needs questionnaire shows that only a few students have textbooks other than the books lent by the school, because most students use the internet more to learn and understand a subject matter if the material is considered difficult by students, especially in the material of Liquid Pressure. In science textbooks on the subject of Liquid Pressure the discussion is few and less interesting and students need e-modules based on local wisdom related to ethnosience to better understand the material on Liquid Pressure (Hikmawati et al., 2022).

Based on the results of the summary of the distribution of questionnaires for teachers and students, students and teachers agreed to use local wisdom-based e-modules related to ethnosience in South Sumatra where the e-module teaching materials can be used individually and in groups by involving students and teachers as facilitators. This is because in the e-module

teaching materials the learning concept emphasizes the independence of all students in understanding the content of the material provided by the teacher so that students can easily understand the content of the material provided by the teacher, then various kinds of thoughts and various understandings will be realized for students. Therefore, the existence of teaching materials in the science learning process is very important. Students still said that the teaching materials used gave difficulties to students in learning liquid pressure material. This proves that the existing teaching materials have not been able to display the components of each material with implications for everyday life. Thus, it is still necessary to develop science e-module teaching materials based on local wisdom related to ethnosience in South Sumatera.

In line with the research objective, namely to analyze the need for local wisdom-based e-module teaching materials related to ethnosience in South Sumatera. The results of the questionnaire analysis of the needs analysis of students at SMPN 1 Madang Suku I, East Oku Regency, can be identified that teachers and students strongly agree and support the creation and development of e-module teaching materials based on local wisdom related to ethnosience in South Sumatera in science subjects. Based on the findings obtained from the results of the analysis, the authors found it necessary to improve and improve the quality of science learning, especially at SMPN 1 Madang Suku I generally in East Oku District. One of the things that needs to be done is to improve the quality of teachers' abilities in designing and implementing science learning activities as well as procuring and adding teaching materials that can increase student interest and motivation. This can be done by providing teachers with knowledge and skills in designing and implementing activities in science learning, as well as developing teaching materials such as local wisdom-based e-modules related to ethnosience.

Based on the problems at the analysis stage that have been explained in the research results it is known that in the science learning process teachers and students have not been supported by teaching materials that can help students in studying the material that has been received according to the learning characteristics of each individual, so the authors develop a product in the form of e -modules based on local wisdom related to ethnosience, determination of titles and indicators adapted to the competencies concerned based on the syllabus. The presentation of the needs analysis carried out by the researcher is in accordance with the steps of the needs analysis, namely: determining the competencies that have been formulated in the syllabus; identify and determine the scope of the competency unit

or part of the main competency; identify and determine the required knowledge, skills and attitudes; and determine the title of the module to be compiled.

The selection of IT-based teaching materials in the form of e-modules as a support in the learning process needs to be developed due to the times and technology, so that the most appropriate use of teaching materials is IT-based teaching materials, namely e-modules. This is also because teaching materials in the form of e-modules are able to explain material in a more interesting and detailed manner and attract more students' attention to independent learning. In addition, the use of e-module teaching materials is easier, and does not drain energy and their use is no longer limited by space and time. As we know, e-modules are more effectively used in implementing learning, because: they can expand and facilitate access to information in learning quickly; can help visualize abstract materials; can display learning material to be more interesting; and allows interaction with the material being studied. Using IT in the form of an e-module has four advantages, namely: Training students to explore concepts, Improving reasoning abilities, Encouraging students to think systematically, logically and analytically, and Increasing students' interest in learning. The findings in this article can practically be followed up by the authors and the school in improving the teaching materials used by science teachers. Teachers must also continue to explore local potentials and needs that deserve to be integrated into learning mathematics, so that learning becomes meaningful, enjoyable and sustainable. Without a change in attitude among teachers, the implementation of IT-based teaching materials at the classroom level will fail.

According to research conducted by Cynthia et al. (2023), it was found that the product developed had a practitioner assessment percentage of < 80%, so the e-module was included in the practical category and also met the eligibility criteria (valid) so that e-module teaching materials are important. The learning process used e-module also can make student has the critical thinking ability (Azmi et al., 2021; Azmi et al., 2022).

The selection of e-module teaching materials based on local wisdom related to ethnosience as a support in making media on teaching materials developed (Astalini et al., 2022). This is because the e-module teaching materials based on local wisdom related to ethnosience are able to explain material in a more interesting and more detailed manner. It is hoped that the presence of this technology and information based learning material can help in conveying material in more detail and attract more students' attention to learning.

Conclusion

Analysis of the needs of local wisdom-based e-modules related to ethnosience in South Sumatera consists of an analysis of teacher needs and an analysis of student needs. Based on the research results, it was found that there is a need for local wisdom-based e-modules related to ethnosience in South Sumatera for teachers and students. Thus, the step that will be taken after this is to develop learning tools to meet these needs.

Author Contributions

Yuliana conceptualized the research idea, designed of methodology, management and coordination responsibility; Sardianto Markos Siahaan analyzed data, conducted a research and investigation process; Apit Fathurohman conducted literature review and provided critical feedback on the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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