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ORIGINAL

E-Module Based on Local Wisdom to Strength Cultural Literacy and Critical Thinking

Módulo electrónico basado en la sabiduría local para fortalecer la alfabetización cultural y el pensamiento crítico

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ABSTRACT

Introduction: the rapid development of science and technology has a major impact on various aspects of human life. The limited availability of electronic teaching materials shows the lack of use of technology in the learning process, and teachers express that learning resources for science subjects are still limited. The study developed an E-Module for the independent learning curriculum based on local wisdom to improve cultural literacy and critical thinking skills.
Method: the research used a descriptive qualitative method with questionnaire, interview, and observation instruments.
Results: the methods and teaching materials used by teachers are dominated by methods and sources that are less relevant to the needs of the times. Low student attention, interest, and competence reinforce that there are deficiencies in the learning process. Teachers need e-modules based on local wisdom to help improve cultural literacy and critical thinking skills.
Conclusions: the conclusion of this study is that there is a need to develop teaching materials in the form of e-modules developed based on local wisdom that can improve cultural literacy and critical thinking skills for elementary school students.

Keywords: E-Module; Teaching Materials; Cultural Literacy; Critical Thinking.

RESUMEN

Introducción: el rápido desarrollo de la ciencia y la tecnología tiene un gran impacto en varios aspectos de la vida humana. La disponibilidad limitada de materiales didácticos electrónicos muestra la falta de uso de la tecnología en el proceso de aprendizaje, y los profesores expresan que los recursos de aprendizaje para las asignaturas científicas aún son limitados. El estudio desarrolló un módulo electrónico para el plan de estudios de aprendizaje independiente basado en la sabiduría local para mejorar la alfabetización cultural y las habilidades de pensamiento crítico.
Método: la investigación utilizó un método cualitativo descriptivo con instrumentos de cuestionario, entrevista y observación.
Resultados: los métodos y materiales didácticos que utilizan los docentes están dominados por métodos y fuentes que son menos pertinentes a las necesidades de la época. La escasa atención, interés y competencia

de los estudiantes refuerzan la idea de que existen deficiencias en el proceso de aprendizaje. Los docentes necesitan módulos electrónicos basados en la sabiduría local para ayudar a mejorar la alfabetización cultural y las habilidades de pensamiento crítico.
Conclusiones: la conclusión de este estudio es que existe la necesidad de desarrollar materiales de enseñanza en forma de módulos electrónicos desarrollados con base en la sabiduría local que puedan mejorar la alfabetización cultural y las habilidades de pensamiento crítico de los estudiantes de la escuela primaria.

Palabras clave: Módulo Electrónico; Materiales Didácticos; Alfabetización Cultural; Pensamiento Crítico.

INTRODUCTION

The rapid development of science and technology has a major impact on various aspects of human life.[1] Currently, the industrial revolution 4.0 encourages the use and utilization of science and technology in all activities, including in the field of education.[2] Along with the development of the industrial revolution 4.0, the term 21st century education has emerged, where the world of education utilizes digital technology and teachers are encouraged to be technology literate.[3] Teachers who are able to utilize technology optimally are expected to be able to improve the quality of the learning process.[4]

The ability to understand cultural and civic literacy is one of the important things that needs to be mastered in the 21st century.[5] This is because the diversity of nations, languages and customs is starting to be disturbed by people or groups who do not want differences and want to open up the nation's cultural wealth.[6] Cultural literacy means the ability to gain understanding so as to have an attitude that the identity of the nation is Indonesian culture.[6] Cultural literacy is important because Indonesia has a very diverse diversity of tribes, nations, languages, habits, customs, beliefs and social strata.[7] Therefore, the ability to accept and adapt and be wise about diversity is something that can build a culture of literacy in all areas of education.

The low ability of students to think critically is a serious problem that must be solved immediately because it will be very detrimental to many parties if it is allowed to continue,[8,9] considering that Indonesia is a country with quite complex diversity.[10] There is concern that students will not be able to analyze and solve real problems that they experience in everyday life and that they will have difficulty in making decisions quickly and accurately.[11] Students with low critical thinking skills tend to have a lower interest in reading.[12,13,14] Interest in reading and critical thinking skills are an inseparable combination because reading can stimulate critical thinking skills.[15,16,17] Teaching materials are guidelines for teachers in the learning process in the classroom, both written and unwritten, which can facilitate the teaching process. E-module teaching materials contain material concepts that can be displayed using electronic devices such as computers or smartphones. By developing learning modules based on local wisdom, it helps students in the learning process to be more independent, think critically, creatively, develop aspects of attitude, knowledge, skills, and help preserve local wisdom that is the identity of a particular region.[18,19,20] Local wisdom is one of the potentials owned by a region, which is utilized and processed well. Through local wisdom in the surrounding environment, it will make it easier for students to understand learning materials contextually.[21] In compiling teaching materials, it should be in accordance with the characteristics of the students and local cultural wisdom so that learning is more contextual.[22] With learning that emphasizes local wisdom, it can encourage students to love their homeland, admire the natural wealth and diversity that exists in the country through small units, namely the residential area.

In reality, teachers in the field have not yet utilized technology optimally in implementing classroom learning.[23,25] The purpose of optimal use of technology is that teachers should utilize the facilities that have been provided such as LCD projector screens and laptops or computers and tablets to facilitate students in the learning process. Another example is that teachers make learning videos, or teaching materials that can be studied independently by students and contain practice questions. In addition, there is no electronic-based teaching material available to support the independent learning curriculum which is currently being implemented as the national curriculum. The learning process that has been taking place tends to make students feel bored, because it is only based on printed textbooks whose availability is still limited.

Teachers and education practitioners develop digital or electronic teaching materials based on local wisdom to improve critical thinking skills and cultural literacy, because in the implementation of the learning process there are no digital teaching modules based on local wisdom to improve critical thinking skills and cultural literacy. The teaching materials used only focus on textbooks which are limited in availability. This causes students to learn monotonously and creates a boring learning atmosphere and is not yet based on local wisdom to improve critical thinking skills and cultural literacy, thus E-teaching modules are developed. Learning accompanied by the use of e-modules is considered more relevant and effective for learning in modern times. Its use of collaborating technology and visuals that are more dynamic than conventional printed modules makes

e-modules an alternative choice to accompany learning activities. Therefore, this study wants to find out the need for e-modules that have elements of local cultural wisdom for elementary school students. This is an initial study in order to obtain accurate information and a detailed picture of the need for e-teaching modules based on local wisdom which are also able to improve cultural literacy and critical thinking skills of elementary school students.

METHOD

This research is descriptive research with a qualitative method. The stages of this research include the pre-field stage, the field activity stage, and the data analysis stage. The pre-field stage is carried out by examining the research location that is considered to be the most representative of an area. The field activity stage is carried out by collecting data from 25 schools in Purworejo Regency, Central Java, Indonesia. This research was conducted from June to August 2024 and the report preparation process was from July to October 2024. The research subjects consisted of 50 education practitioners, namely 25 class teachers and 25 principals. Data collection techniques were carried out using semi-structured interviews, questionnaires, and field observations. The instrument was used to determine the need for e-module teaching materials based on local wisdom and cultural literacy skills as well as critical thinking skills of elementary school students. The following is a grid of research instruments.

Table 1. Questionnaire Grid

Aspect	Indicator	Number of question
Availability of media	Methods used	1
	Methods used	2
Learning activities	Students' difficulties in the material	2
	Students' activeness and collaboration	2
	Students' critical thinking skills	2
	Cultural literacy skills	2
	Facilities containing local wisdom	1
Need for innovation	E-module utility value	2
	E-module supporting facilities	1
	Willingness to use	1

Table 2. Semi-Structured Interview Grid

Aspect indicator	Number of question
Implementation of the learning process	3
Use of media and teaching materials	2
Mastery of local wisdom-based IPAS concepts	2
Alternative solutions that have been implemented	2
Need for innovative learning e-modules	3

RESULTS

At the stage of collecting data with a questionnaire, data related to the availability of media, ongoing learning activities, and the need for innovation in teaching materials were known. The results of the questionnaire data are seen in figure 1.

Data from semi-structured interviews are presented in table 3.

In the learning process that has been going on so far, it is known that 16 % of practitioners use only one method, 70 % use 2 methods, and 14 % use 3 methods, and no practitioners use more than 3 methods for the learning process. From unstructured interviews it is known that the method that is definitely used is lectures. Then 2 methods use lectures and discussions, or lectures and questions and answers. While with the answer 3 methods usually use a mixture of lectures, discussions, role playing, demonstrations, and work visits.

As many as 20 % of practitioners mentioned rarely using teaching materials, 76 % mentioned often, and only 4 % answered always using teaching materials in the form of modules. From unstructured interviews and observations, it is known that the teaching materials used are limited to textbooks provided by the government which are made nationally without considering the differences in characteristics of each region.

As many as 18 % of practitioners said that students felt very difficult in the natural and social science subjects on the theme of residential areas, as many as 72 % of practitioners said that students had quite difficult, and 10

% said that students found the material easy. From unstructured interviews, it was found that the things that supported the students' difficulties were the breadth of social and natural science materials and the lack of supporting teaching materials related to local wisdom around the students.

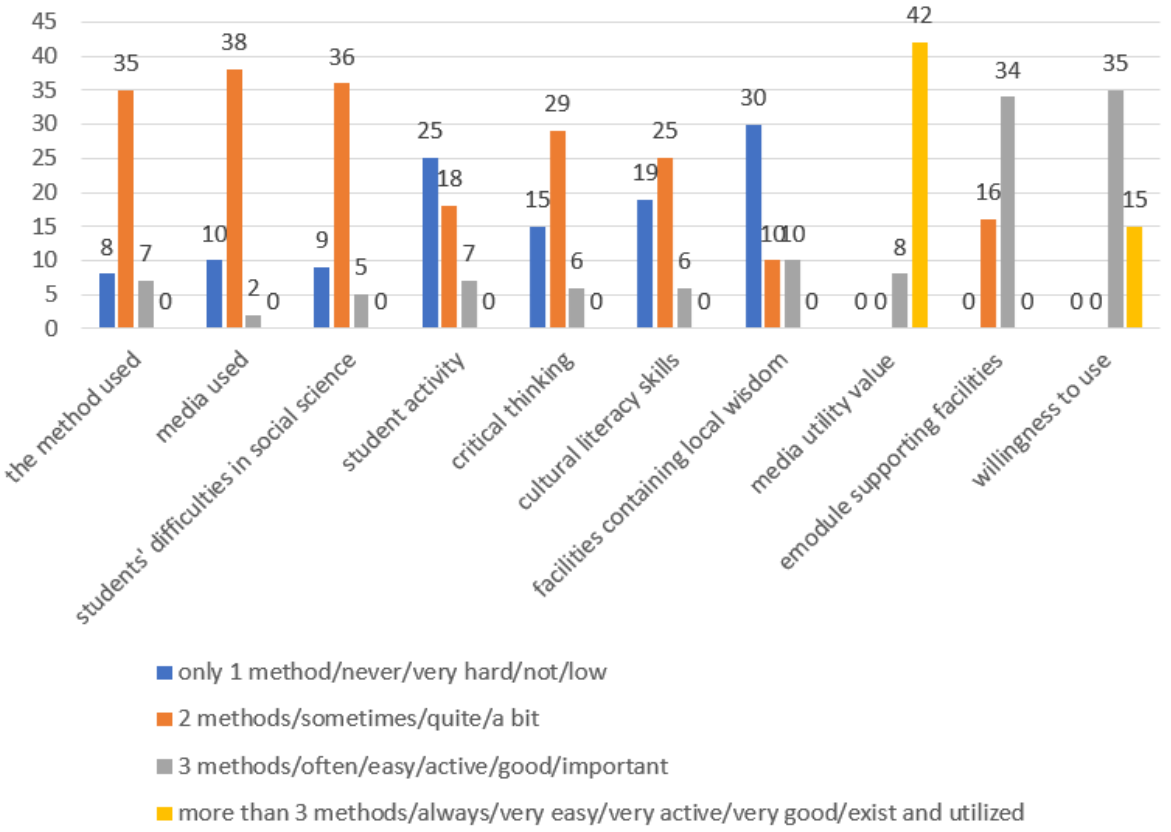

Figure 1. The results of the questionnaire

Table 3. Semi-structured interview results

Aspect	Answer
Implementation of the learning process	Learning refers to the Independent Curriculum which seeks to facilitate all needs and in accordance with the potential of students. The teaching method that teachers definitely use is lectures and occasionally a combination of discussions and questions and answers. The difference in learning that is quite noticeable in the current curriculum is the separation of subjects that used to be delivered thematically.
Use of media and teaching materials	The use of teaching materials that are certain are textbooks provided by the government and sometimes student worksheets made in groups by several teachers in one environment. Learning media is rarely used routinely in learning social and natural sciences, especially those containing local wisdom because they are not developed by teacher working groups. Media that is often used comes from YouTube videos or Google illustrations.
Mastery of local wisdom-based IPAS concepts	Students do not yet understand the concept of local wisdom integrated with social and natural subjects. The content of material in social and natural subjects is very broad and elements of local wisdom require thinking from teachers to integrate into learning so that it is easier for students to understand.
Alternative solutions that have been implemented	The solution that teachers often do is to have discussions with colleagues regarding difficult material and the need for local wisdom and surrounding culture. Sometimes they also do independent searches through Google and YouTube. In addition, some teachers also look for the most effective way to improve students' critical thinking skills because this competency is very much needed today.
Need for innovative learning e-modules	There needs to be e-module support that can support the limitations of teaching materials that are in accordance with the times. Students are also more enthusiastic if learning intersects with technology. The use of e-modules with the support of technological devices in general makes students more interested in learning. An e-module is also needed that contains local wisdom integrated into social and natural science subjects so that learning outcomes are higher, cultural literacy and critical thinking skills increase.

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In terms of student activity, 50 % of practitioners said that students were not active in learning, 36 % of practitioners said that students were quite active, and 14 % of practitioners said that students were active in learning. In terms of critical thinking, 30 % of teachers said that students' critical thinking skills were still low, 58 % said that they were sufficient, and 12 % said that they were good, and no practitioners said that students were very good at critical thinking. 38 % of teachers said that students' cultural literacy was low, 50 % of teachers said that students' cultural literacy was quite good, and 12 % of teachers said that students' cultural literacy skills were good. Regarding supporting facilities for learning containing local wisdom, 60 % of teachers said that there were none, 20 % of teachers said that the facilities were available but few, and the other 20 % of teachers said that there were learning facilities containing local wisdom.

In terms of the need for innovation in e-modules, 16 % of teachers stated that it was important and 84 % stated that it was very important to have e-modules containing local wisdom because of their usefulness for learning. 32 % of teachers stated that there were supporting facilities for e-modules in schools but only a few, and 68 % stated that schools had adequate facilities but had not been utilized in the learning process. From observations made, these facilities were in the form of tablets, laptops, and chrome books, facilities assisted by the government. From interviews, it was found that teachers had difficulty in the process of developing teaching modules, especially if they were made in the form of e-modules. This was explained due to a lack of competence and technological stuttering, as well as limited time to create a development work. Then from the results of the questionnaire it was also found that 100 % of teachers said they would use e-modules if they were available and made based on the needs of the material and the surrounding environment.

DISCUSSION

Referring to the research results, there are several things that indicate the need for teaching materials containing local wisdom for elementary school students. In the Merdeka curriculum implemented by Indonesia since the post-pandemic, there have been several changes, one of which is in the natural and social subjects which were initially separate but are now integrated. Adjustments and needs for media and teaching modules in the field are the focus of the research. In the process of learning natural and social sciences related to the surrounding environment, it was found that most teachers still apply the contamination method as the dominant method. The dominance of the lecture method tends to reduce the variety of approaches used in the learning process which has an impact on low student involvement to be active in class. Innovation and variation carried out by teachers in teaching and learning activities in the classroom have an impact on student development.[26] As a supporter of the limited use of methods and ways of teachers in teaching, aids or media are needed in the form of e-learning modules containing local wisdom.[27]

The minimal use of contextual teaching materials causes students to lack relevant understanding of natural and social science learning materials related to the surrounding environment.[28,29] Commonly used textbooks are also not able to cover relevant aspects of local wisdom, so that the material presented is less able to provide students with a comprehensive understanding of their living environment. A country with high diversity demands that its educational institutions are able to provide teaching that adapts to every existing diversity and uniqueness. Incorporating cultural elements into the development of teaching materials, especially e-modules, is important for comprehensively understanding phenomena, especially the culture that exists around students.[30]

Data shows that low involvement and critical thinking skills of students in learning indicate an urgent need for innovation in teaching materials that can optimize learning of natural and social sciences in elementary schools. The learning needs of today's students are not only limited to written materials that are rote, but must also be able to cover high-level thinking skills that use critical thinking skills. Teaching materials in the form of modules that are specially designed by paying attention to the characteristics of the student's living environment provide them with the opportunity to learn more playfully and contextually.[31] Something that students are already familiar with will be easier for them to understand and assimilate with the new knowledge they will gain from the learning process.[27] A study also showed that the use of e-modules can improve students' critical thinking skills and sensitivity to environmental changes.[32] Research also shows an increase in student interest in participating in learning that integrates the process with the use of e-modules.[33,34]

In terms of facilities, teachers and schools have been supported by various things from the government. However, in the process that occurs in the field, the minimal utilization of these facilities occurs because of the high workload for teachers and the lack of training or assistance in making teaching modules to support activities. Basically, teachers have the will to provide maximum service, but what happens in the field often makes it difficult for teachers to do so.[35] This is also an obstacle in learning natural and social sciences based on local wisdom. A teaching module that should be able to be developed by teachers according to the characteristics of the environment and surroundings but is not developed independently because of these things. The trend of using technology and developing innovative teaching materials is important for teachers and practitioners in the field.[36]

CONCLUSIONS

Thus, the need for e-modules for learning natural and social sciences based on local wisdom is important to be developed in order to improve students' cultural literacy and critical thinking skills. This is supported by the need for specific materials in e-modules related to local wisdom that vary greatly between regions. In addition, e-modules are also needed as learning companions that integrate technology.

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The authors declare that there is no conflict of interest.

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