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MULTI-REPRESENTATION-BASED E-MODULE ANALYSIS OF NEEDS IN THEME 3 SUBTEMA 1 IN 6TH GRADE ELEMENTARY SCHOOL

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Abstract

This research aims to analyze the needs of electronic modules (E-Modules) based on multi-representation using *Flipbook PDF Professional.* At this stage, researchers made observations and collected data on teaching materials at SDN 146 Palembang. This research uses a questionnaire with qualitative data types as the data collection. The data analysis technique used is descriptive analysis with data reduction, data presentation, conclusion, and verification. The data that needs to be analyzed by researchers are data regarding the use of the types of teaching materials used, the implementation of learning, the evaluation system, and the factors that support it. Based on the questionnaire data, 46.7% of students thought the learning material for theme 3, sub-theme 1, which discussed inventors who changed the world, could have been more interesting. Students stated this because 73.3% answered that no exciting teaching materials could make the material easily understood by students. Furthermore, based on the distribution of needs analysis questionnaires related to the e-module teaching materials to be developed, students with a percentage of 76.7% answered that they needed teaching materials that contained images, text, video, and audio or sound. E-Modules can be an alternative in developing teaching materials to support improving the quality of learning.

Keywords: Needs Analysis; E-Module; Multiple Representations.

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A. Introduction

The 21st century is closely related to the era of the Industrial Revolution 4.0, which requires people to have the ability to think more creatively and be able to accept technological developments that are running very rapidly. Therefore, education has a vital role in influencing a person's abilities. (Maskur et al., 2020).

Learning media is a physical means for conveying subject material to students that teachers can use for learning purposes. (Hendracipta & Syachruroji, 2023). Developing new teaching materials or teaching materials is part of an educator's task and competency development (Praspita & Rosy, 2021).

The primary purpose of developing teaching materials is to make teaching and learning more effective and efficient in achieving competency standards and increasing students' cognitive, affective, and psychomotor abilities (Maksum & Purwanto, 2021).

Likewise, Noviyanita (2019) argues that the development of teaching materials has a crucial role in the success of the teaching and learning process in educational units. However, many educators still use ready-made conventional teaching materials, and educators often rely on these without trying to design them themselves.

Choosing teaching materials that are not appropriate for certain conditions will result in learning that is not optimal, so the results may not be satisfactory (Lisa & Wedyawati, 2020). According to Ayu and Pahlevi's (2019) view, the quality of the teaching and learning process becomes inappropriate if an educator only uses conventional teaching materials.

Digital teaching materials are teaching materials that can be used in learning as well as one form of teaching material that combines text, audio, video, and image elements (Muhamad et al., 2022).

Digital teaching and learning materials result from educators' development to face 21st century learning and Industrial Revolution 4.0 (Warsita, 2018). Teaching materials are suitable for delivering the material to support growing students' interest in learning. The greater the student's interest in learning, the greater the possibility of the student achieving brilliant performance.

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The importance of the concept of function for learning and its application in everyday life, one of the goals of science is the development of good functional thinking in primary education (Doorman et al., 2012).

Today, innovations have appeared in the learning process, including teaching materials students want to present. It is the right step to encourage students' learning interests because students see more about what they will learn before exploring the material to be studied.

Innovations in teaching materials carried out by educators will change the paradigm of students in unattractive lessons. Teaching materials in the form of learning modules are effective for bridging gaps in learning independently because they are complementary, that is, complement the teacher's verbal explanation in creating learning experiences.

Many teaching materials can be used in the learning process to help make it easier for students to learn. It aligns with Castillo's opinion (2021) that developing good and varied teaching materials enriches student learning effectively.

According to Arsanti (2018), the types of teaching materials are divided into printed teaching materials in the form of books, modules, *handouts*, brochures, and worksheets. Audio teaching materials, radio and cassettes. Visual teaching materials, films, and videos. Interactive teaching materials such as interactive CDs. Learning should be done by combining various teaching materials, such as making electronic modules (e-modules) to attract students' interest in learning and make it easier for students to understand learning material.

Digital teaching materials are one of the most substantial solutions because they are digital and can be shared easily via social media such as Facebook, WhatsApp, Telegram, Web Links, and others, making them more time and cost-efficient (Nurhayati, 2021). Learning modules can also clarify, animate, emphasize instruction, and enhance learning by transmitting knowledge, ideas, skills, and attitudes (Oladejo et al., 2011). Modules also make it easier for

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students to access flexible learning resources anywhere and anytime. (Yuniar Fatmawati et al., 2020).

Another opinion states that learning modules offer new approaches and opportunities that enhance students' knowledge and skills and help them overcome deficiencies (Gordon & Nicholas, 2013). The development of increasingly sophisticated science and technology makes learning fun, exciting, and not complicated. Many free supporting applications and software can be used to make attractive teaching materials, including the *Flipbook PDF Professional* application.

Application *Flipbook PDF Professional* is an application that can be used as a learning medium in online learning settings. *Flipbook PDF professional* digital is not only limited to text but can also include images, animation, video, and audio, making it more fun and interactive (Candra & Susilowibowo, 2021).

Flip PDF Professional is different from other PDFs. This application can combine material in the form of PDF files with pictures, animations, and learning videos. It can be an alternative for use in learning physics or material related to Science (Serevina et al., 2018). The use of multiple representations in learning is an effort to improve students' cognitive abilities because it can help build students' understanding of the information they receive (Rolfes et al., 2021).

Multi-representation-based teaching modules are learning media for delivering material. In addition to making learning media, educators never make learning media they want to convey to students; they prefer to use books the government has provided. The solution for increasing multi-representational abilities is with multi-representation-based teaching modules, which contain complete, systematic material and are also supported by visual explanations for abstract material simply according to students' level of thinking.

Teaching modules are presented through multiple representations, including verbal representations, videos, images, and graphics. Learning with a multi-representational approach is claimed to be able to increase student learning

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interest because there is an understanding process when knowledge is received by students with various forms of representation (Widyaningtyas, 2015).

Multiple representation means representing the same concept in different formats, including verbal, pictorial, graphic, and mathematical (Wilkie, 2020). Learning in elementary school uses thematic learning, where each material is listed in the themes contained in each subject and related to one another.

According to (Wahyuni et al., 2016), thematic learning is structured learning through a network of themes in which each subject concept is interrelated, so it can make it easier for students to understand a concept from one theme for several lessons to be taught. Furthermore, another opinion states that thematic learning is a combination and combination of several subjects arranged into one integrated subject matter (Lubis, 2020).

This research emphasizes the material or content, discussing theme 3 and sub-theme 1 on Inventors Changing the World. In lessons 1 to 6, the subject matter of science, Indonesian, social studies, civics, and cultural arts and crafts is presented. As for the Mathematics and PE contained in the basic competency mapping, each is carried out as a separate subject and uses a separate book. So, all Mathematics and PE materials in thematic books are no longer used in learning.

Research on the use of multi-representation-based E-modules *using Flipbooks PDF Professional* has been carried out by Andini & Fitriana (2018), developing teaching materials in the form of e-modules based F*lipbook PDF Professional* on the material of simple geometric nets (cubes and blocks) in 5th-grade Elementary School, the results of validity by material experts were obtained in very valid categories, the validation results of linguists were obtained in very valid categories, and the results of media validity were obtained in very valid categories.

Furthermore, research related to multi-representation teaching modules has been conducted by Saraswati et al. (2019) titled *"Development of Interactive E-Module Chemistry Magazine Based on Kvisoft Flipbook Maker for Thermochemistry Materials at Second Grade Senior High School."* The results

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showed that the interactive chemistry magazine e-module developed based on Kvisoft Flipbook Maker met the valid criteria by the material validator based on the content substance assessment aspect of learning design with a percentage of 88.89% and 97.22% by the media validator based on appearance.

Further research that has relevance to this research has also been carried out by Rasmawan (2020) titled *"Development of Multi-representation Based Electronic Book on Inter Molecular Forces (IMFs) Concept for Prospective Chemistry Teachers."* The initial validation results showed that the correspondents agreed that the module had an easy-to-read writing style and font, easy-to-understand material, and video explanations and pictures that matched the material's content. This research aims to analyze the needs of the multi-representation-based E-module using F*lipbook PDF Professional* on theme 3 sub-theme 1 in 6th-grade elementary school.

B. Research Methodology

This research was conducted using a descriptive qualitative research approach. This research will be carried out in the 6th grade of SDN 146 Palembang. The population in this research was all 6th-grade students, totaling 30 students. Data collection techniques in this research were through observation, interviews, and questionnaires distributed using *Google Forms* so respondents could complete the questionnaire online.

Observations in this research were conducted to see the implementation of teachers' learning, media, and teaching materials in the 6th grade of SD Negeri 146 Palembang. Interviews were conducted with 6th grade teachers to determine the types of teaching materials used, teaching methods, media, and the difficulties experienced by teachers during the learning processes in class. The questionnaire contains questions to measure students' interest in the material, difficulties, and teaching materials students need.

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Table 1

The Educator Needs Analysis Questionnaires Grid

No	Aspect	Indicator	Number Question
1.	**Teaching Material Needs**	Types of teaching materials often used by educators.	1
		Educator knowledge about e-module.	2
2.	**Learning**	The often-used learning method.	3
		The difficult-to-understand material for students.	4

The data analysis techniques used are descriptive analysis with data reduction, data presentation, conclusion, and verification to know students' needs in the learning process, their conditions, and problems in learning.

C. Result and Discussion

Based on the results of interviews conducted by researchers with 6th grade educators at SDN 146 Palembang, it shows that teachers at this school still often use conventional learning media and methods such as lectures in their learning processes and have used modules of sheets of paper in learning activities but have never made and used modules-based electronically (E-Module) so learning activities so far are monotonous, less attractive and not innovative.

Another problem is that students need help understanding the learning and quickly feel bored in participating in learning, as evidenced by the list of semester exam scores. There are still many students who still need to fulfill the minimum mastery criteria. The following is a list of semester exam scores for 6th grade students at SDN 146 Palembang.

Table 2
List of Semester Examination Scores

Class	The number of students	Mark			
		<75	≥75	Lowest	Highest
We	30	18 Students (60%)	12 Students (40%)	55	85

Source: List of Semester Exam Score for 6th grade Students of SDN 146 Palebang

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Based on the table above, the learning outcomes of 30 students of 6th grade at SDN 146 Palembang, 18 (60%) students still needed to fulfill the minimum mastery criteria. In contrast, 12 (40%) students have fulfilled the minimum mastery criteria. While the highest score of students is 85 and the lowest is 55. Therefore, it is necessary to evaluate and innovate by presenting the latest and most effective teaching materials modules to minimize the deficiencies of inventors who change the world in 6th grade, which results in low student learning outcomes.

Learning using E-Modules is a solution and is much needed in improving the learning outcomes of science content in 6th grade elementary school students. Based on their explanation above, this research aims to analyze the needs of their use of the E-Module *Flipbook PDF Professional*. The following are the results of their needs analysis obtained by filling out their questionnaire via *Google form* with a total number of respondents of 30 students. Indicators of respondent identity are asked at the beginning of the needs analysis to know the respondent's identity briefly. In addition to conducting interviews with educators, researchers also distributed questionnaires in the form of questions related to the needs of students to improve learning outcomes on inventors who changed the world in 6th grade at SDN 146 Palembang. The following are the needs analysis results for multi-representation-based E-Modules using *Flipbooks PDF Professional*.

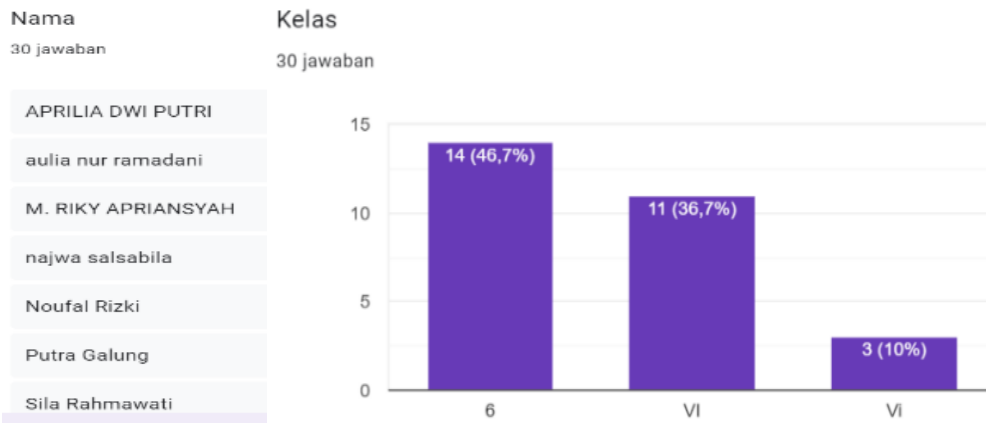

Figure 1. Student Identity

Kurniasari, Dita[1]
Susanti, Rahmi[2]
Siahaan, Sardianto Markos[3]

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Figure 2. Students' Interest in the Topic of Inventors Who Changed the World

Based on the data in Figure 2, students' opinions related to their interest in the material for theme 3, sub-theme 1, which discusses inventors who change the world, get answers with a percentage of 46.7% stating they are not interested, and 23.3% states very interested.

Figure 3. Causes of Lack of Interest in Learning

In diagram 3, which is a question about the cause of the inventor's material that changed the world (theme 3 sub-theme 1), 73.3% of students answered that the reason was that there were no teaching materials that engaged them in learning their material. In contrast, 26.7% answered a lot of memorization and words, which is hard to understand.

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Figure 4. Attractive Teaching Materials According to Students

Based on the questionnaire results, Figure 4 above refers to students' opinions regarding the types of teaching materials preferred by students. 76.7% of students said they needed teaching materials containing images, text, video, and audio or sound. In contrast, 20% answered that they needed teaching materials in the form of pictures only. The results of these students' answers are one of the reasons why researchers need to develop digital teaching material that can accommodate the needs of students, such as combining images and text, video, and audio features.

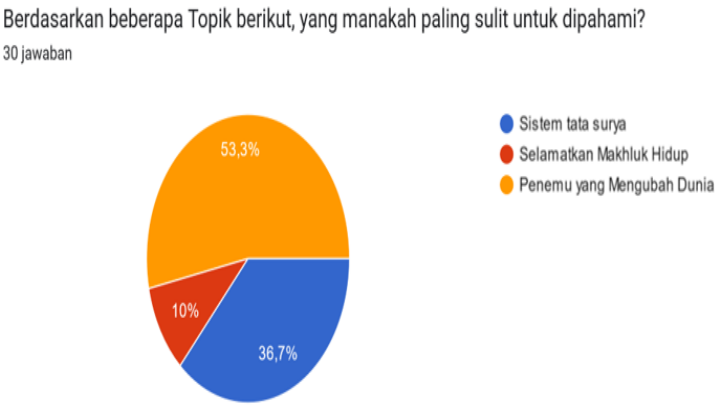

Figure 5. Difficult Topics for Students to Understand

Based on the questionnaire diagram above, it is known that 53.3% of students answered that they needed help understanding the topic of inventors who changed the world because the teacher had not used innovative learning media, so learning became unattractive and difficult for students to understand.

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D. Conclusion

Based on the research results above, 46.7% of students think the learning material for theme 3 sub-theme 1, which discusses inventors who change the world, could be more attractive. Students stated this because 73.3% answered that no attractive teaching materials could make the material easily understood by students. Furthermore, based on the distribution of needs analysis questionnaires related to the teaching materials, 76.7% of students answered that the materials needed should contain images, text, video, and audio.

Multi-representation-based e-modules that follow this needs analysis can be alternative media that can be used by teachers in carrying out existing and interactive learning activities. Hence, they have an impact on improving student learning outcomes.

Based on their conclusions above, the authors' suggestions are the results of the need analysis for multi-representation-based E-module books using *Flipbooks PDF Professional*, which are a variety of teaching materials or learning media that can be used in class.

However, adjustments need to be made to the conditions and characteristics of each class. Multi-representation-based e-modules using flipbooks PDF professional can also be developed in other subjects so students are more active and motivated in learning. It is also related to supporting applications in making digital books because there are many other supporting applications teachers can use to make them.

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