

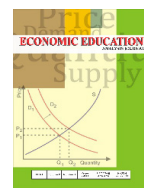


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Heyzine-Based Interactive E-Module to Improve Students' Understanding in Vocational High Schools

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Abstract

This study aims to provide an overview of the use of Heyzine-based interactive e-modules to enhance students' understanding in Vocational High Schools (SMKs). A quantitative descriptive approach employing a case study method was applied in this research. The participants consisted of 20 VHS students selected through a purposive sampling technique. Data were collected using multiple-choice tests, interviews, and observations. The findings revealed that the use of interactive e-modules in learning activities significantly improved students' average learning outcomes from 55 to 89.5. This improvement reflects the students' enhanced ability to solve problems related to service company materials. Moreover, the integration of interactive e-modules fostered more engaging and active learning experiences, aligning with the principles of the Kurikulum Merdeka, which emphasizes student-centered and enjoyable learning. Overall, the results indicate that interactive e-modules are effective in improving students' understanding and learning outcomes. These findings offer valuable insights for the development and implementation of innovative, technology-enhanced learning media designed to enhance instructional quality and learning effectiveness in SMKs.

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INTRODUCTION

Education is a crucial foundation for developing human resources who can adapt to rapid technological change. Along with the digital transformation in education, teachers are required to integrate technology to create interactive and engaging learning experiences (Saputri et al., 2023). Teachers are required to be able to study the sophistication of information and communication technology that has developed dynamically in the present day (W. Pratiwi et al., 2023). For that, teachers are required to be sensitive and responsive to the development of the times and the needs of society for the transition and renewal of science and technology, which is increasingly rapid (Sulastri et al., 2020).

In addition, the learning process is closely related to media, methods, and learning outcomes. Learning media is a tool used by teachers in the learning process and functions to support the delivery of messages to students so that educational goals can be achieved and student learning outcomes can achieve better results (Nurrita, 2018). However, in practice, there are a large number of students who have not been able to obtain optimal learning outcomes. In the academic field, various factors can have an impact on the failure of student learning outcomes, these can come from factors within the student or factors outside the student, such as being unable to adapt well, having low learning motivation, less than optimal learning habits, little study time, having a low discipline attitude and limited teaching media or teaching materials available (Mariatti, 2016).

Empirical findings at SMK Sunan Giri Menganti indicate that the accounting learning process faces obstacles due to limited technology-based learning media. Learning still depends heavily on printed textbooks and web summaries, resulting in passive participation and low understanding. Therefore, the learning process was less effective and the learning atmosphere seemed monotonous and less interesting. This is supported by the results of an interview with the head of the account-

ing expertise concentration at SMK Sunan Giri Menganti that learning was limited to the type of printed learning media and students were given support for understanding by exploring the material available on the internet independently.

Based on the interviews with teachers revealed that only a few subjects utilize available facilities such as computers, projectors, and Wi-Fi. This happens because of the limited readiness of teachers in preparing or developing technology-based learning media. This causes the creation of a learning atmosphere that tends to be less interesting and has an impact on student understanding during the learning process. Whereas, the curriculum implemented at SMK Sunan Giri Menganti is the Kurikulum Merdeka. This curriculum gives teachers, schools and students the freedom to innovate the learning process (Rahmadayanti & Hartoyo, 2022).

As a result, 45% of students scored below the Learning Objective Achievement Criteria (LOAC) of 78 in the Basic Accounting and Institutional Finance subject, especially in the topic of service companies. This shows the urgent need for digital learning media that can stimulate active and enjoyable learning to help students overcome difficulties in understanding accounting concepts (Khamidah & Susanti, 2014). For this reason, teachers or schools can utilize several types of learning media, but choosing the right learning media can affect the process of creating an active and efficient learning atmosphere (Istiqlal, 2017).

Previous studies have proven that e-module can make students easier to understand the material and interactive during learning (Susanti et al., 2023). Students can easily move pages, watch, pause, and replay available videos or animations (Sa'diah et al., 2022). The use of interactive e-modules in active and innovative learning positions teachers as no longer the sole source of information in the learning process, allowing them to be used as alternative sources of information and learning support (Basori, 2016). One of them can be used interactive e-module based on Heyzine Flipbook.

Heyzine Flipbook is an online website that offers a sophisticated free PDF-to-flipbook converter, providing an e-book effect similar to a typical printed book, allowing for free page opening and sharing with students via HTML links (Manzil et al., 2022). Heyzine offers several advantages, including the ability to add videos, images, graphics, audio, and links, enabling the e-modules to be presented as engaging and engaging learning media (Anggreni & Sari, 2022). The use of interactive e-modules based on the Heyzine Flipbook can help students understand the material presented in a more systematic, engaging, and interactive manner, and can encourage student engagement in learning (Ula et al., 2023). However, most existing studies focus on science or elementary education contexts, while research on accounting subjects at SMK remains limited. Furthermore, no prior study has examined the use of Heyzine-based interactive e-modules in accounting learning at SMK. Thus, this study fills that gap by exploring the use and effectiveness of Heyzine-based e-modules in improving students' understanding.

Therefore, this study aims to provide an overview of how Heyzine-based interactive e-modules can improve students' understanding in accounting learning at SMK. The findings are expected to strengthen empirical evidence on the use of interactive digital media as an innovative solution for technology-integrated learning in vocational education. On the other hand, the implementation of this media can support the achievement of the Kurikulum Merdeka learning process because it can support teachers and students to freely innovate and create a joyful learning. Thus, interactive e-modules are worthy of being used and disseminated on a wider scale.

METHODS

This study employed a quantitative approach with a case study method. The research was conducted at SMK Sunan Giri Menganti, a private vocational high school in Gresik ac-

credited "A" and currently implementing the Kurikulum Merdeka. The institution is equipped with adequate facilities and infrastructure that support technology-based learning. The learning material focused on service company topics.

The research subjects were tenth-grade Accounting students who had previously studied service company materials. A sample of 20 out of 30 students was selected using a purposive sampling technique. The selection was based on specific criteria, namely students enrolled in the accounting subject and possessing electronic devices to access digital learning media. The selected participants were given a pre-test before using the interactive e-module, followed by learning activities using the e-module, and finally, a post-test to measure their level of understanding.

The types of data obtained are quantitative and qualitative data. Observations and interviews with students and teachers were also conducted in this study to validate the test results. Observations and interviews were conducted at the beginning before the implementation of interactive e-modules to determine the initial conditions of learning and then carried out again at the end after the implementation of interactive e-modules to determine the final conditions of learning so that information related to the benefits of using interactive e-modules can be compared and obtained. Therefore, this study uses a qualitative approach in analyzing the data obtained because it wants to obtain in-depth and comprehensive results regarding the benefits of interactive e-modules through direct observation.

This study used data collection instruments in the form of multiple-choice tests that were analyzed quantitatively, observation sheets and interview sheets that were analyzed descriptively. Multiple-choice questions are a form of question that provides several alternative answers that require students to choose the most appropriate answer. The use of multiple-choice questions in this study aims to determine the level of students' understanding of the service company material. Scoring

guidelines are made to provide scores for each question indicator to analyze the results obtained from the test. Furthermore, the score is calculated using the percentages correction formula. Then the value is interpreted based on the interpretation criteria for student understanding in Table 1.

Table 1. Criteria for Interpretation of Student Understanding

No	Score	Interpretation
1	80-100	Very Good Understanding
2	66-79	Good Understanding
3	56-65	Sufficient Understanding
4	31-35	Poor Understanding
5	0-30	Very Poor Understanding

Source: Processed Data, 2025

RESULTS AND DISCUSSION

Based on the research results, the use of interactive e-modules based on Heyzine can support improving students' understanding. The results of student exams after using interactive e-modules experienced an increase in value which proves that there was an increase in student understanding. After using interactive e-modules, 85% of students scored above the Learning Objective Achievement Criteria (LOAC), which is greater than 80. Before using interactive e-modules, many students had not been able to achieve LOAC. The test used in this study was multiple choice consisting of 10 questions with the provision that each correct answer gets a value of 10 and the wrong answer does not get a value. The question items created were based on the learning objectives contained in the service company material, namely 1) definition and characteristics of service companies, 2) examples of service companies, 3) definition and examples of financial transactions of service companies.

Based on the results of the analysis of student learning outcomes, after the use of interactive e-modules, the average learning outcomes increased to 89.5 while before the use

of interactive e-modules the average learning outcomes were 55. This shows that interactive e-modules can support improving student understanding of service company material. A detailed explanation related to student understanding of each learning objective is as follows:

Material on Definition and Characteristics of Service Companies

Multiple choice questions related to the definition and characteristics of service companies. Students are asked to determine the definition of a service company and the characteristics of a service company. In this learning objective, there are 3 questions related to the material on the definition and characteristics of service companies. The level of students' understanding of the questions related to this learning objective can be seen in Figure 1.

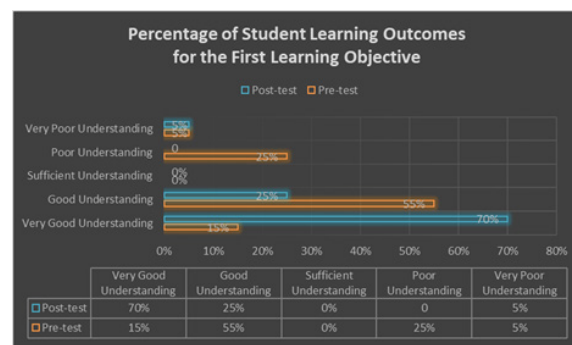


Figure 1. Percentage of Student Learning Outcomes for the First Learning Objective

Based on Figure 1. there is an increase in students' understanding of the material on the definition and characteristics of service companies before and after using the interactive e-module. Before using the interactive e-module, only 20% of students were included in the very good understanding group, 60% in the good understanding group, and 20% in the poor understanding group. This happens because students are less interested in learning the material on the definition and characteristics of service companies. The learning process that still refers to textbooks causes some students to feel bored so that they do

not understand the material. However, some students have a fairly good understanding of the definition and characteristics of service companies. In addition, learning activities that only refer to textbooks cause students to feel bored easily and because the appearance of the book is not equipped with illustrations, students have difficulty remembering the material on the definition and characteristics of service companies.

After the use of learning media in the form of interactive e-modules, the percentage of student understanding increased. Where students have a very good understanding group of 75% and students have a good understanding of 25%. This shows that interactive e-modules can support an increase in student understanding related to the definition and characteristics of service companies significantly. This condition is because the appearance of the interactive e-module is attractive and equipped with illustrations that can make it easier for students to understand the definition and characteristics of service companies. In addition, the appearance of interactive e-modules that are not only in the form of text but also images, animations, and videos provide assistance for students to understand the learning material well.

Example Material for Service Companies

The next material presented is an example of a service company. This question requires students to be asked to determine an example of a service company. In addition, in this learning objective, students are asked to describe what are the examples of service companies. This learning objective consists of 3 questions related to examples of service companies. The level of student understanding of the questions related to this learning objective can be seen in Figure 2.

Based on Figure 2. There is an increase in students' understanding related to the material on examples of service companies before and after using the interactive e-module. Before using the interactive e-module, only 15% of students were included in the very good

understanding group, 55% in the good understanding group, 25% in the poor understanding group, and 5% in the very poor understanding group. This condition occurs because the learning process carried out only refers to textbooks that contain very few illustrations that describe real examples of service companies. In addition, the learning process which is limited to book media causes students to only be able to carry out learning activities in places that allow students to bring learning media in the form of books.

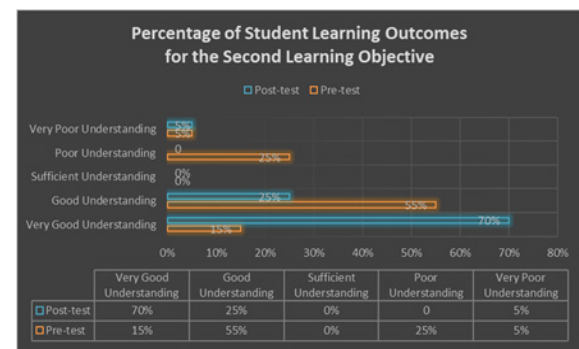


Figure 2. Percentage of Student Learning Outcomes for the Second Learning Objective

After using the interactive e-module, the percentage of students' understanding of the material on examples of service companies increased significantly. Where it is known that students who are included in the very good understanding group are 70%, students who are included in good understanding are 25%, and students who are included in very poor understanding are 5%. This proves that interactive e-modules can support increasing students' understanding significantly. In addition, it is known that interactive e-modules are equipped with image illustrations so that they support increasing students' understanding of the material on examples of service companies.

Material on Definition and Examples of Financial Transactions of Service Companies

The third material in the multiple-choice questions given to students is related to the characteristics of the definition and examples of financial transactions of service

companies. Students are asked to describe the definition of financial transactions of service companies and describe in detail what are the examples of financial transactions of service companies. This learning objective consists of 4 questions related to the material of the definition and examples of financial transactions of service companies. The level of students' understanding of the questions related to this learning objective can be seen in Figure 3.

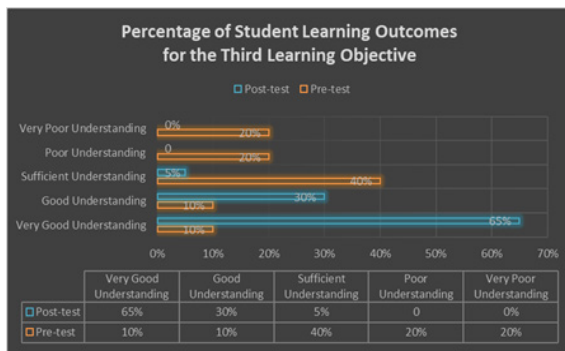


Figure 3. Average Percentage of Student Learning Outcomes for the Third Learning Objective

Based on Figure 3. It is known that the level of student understanding has increased after using interactive e-modules. This is evidenced by the average percentage of student learning outcomes increasing from before and after using interactive e-modules. Before using interactive e-modules, students who were included in the very good understanding group were 10%, the good understanding group was 10%, the fairly good understanding group was 40%, the poor understanding group was 20%, and the very poor understanding group was 20%. This condition is because the learning process carried out is monotonous because it is only based on textbooks. so that most students cannot carry out the learning process optimally.

After using the interactive e-module, students' understanding of the definition and examples of financial transactions of service companies increased. Where it is known that students who are included in the very good understanding group are 65%, the good understanding group is 30%, and the fairly good

understanding group is 5%. This proves that interactive e-modules can be used as learning media and can support significant improvements in student learning outcomes. Complete material and illustration displays and interesting learning videos can support students in understanding learning materials. Thus, students can easily understand the material regarding the definition and characteristics of service companies, examples of service companies and the definition and examples of financial transactions of service companies.

Based on the result, it can be seen that the success of students in carrying out the learning process can be proven by one of them by increasing student understanding. If the learning material delivered by the teacher can be understood by students well, then there will be an increase in student competence. Increasing student competence is one proof that the learning process carried out by the teacher has gone well and is said to be successful. Therefore, one of the benchmarks for the success of this learning activity can be seen from the increase in student learning outcomes (Mahmudah & Pustikaningsih, 2019). Based on the results of observations conducted on students, before using the interactive e-module, the learning outcomes of students in the Accounting subject, especially in the service company material, were less than optimal. As many as 45% of students have not been able to obtain a score above the set LOAC score. This is reinforced by the results of student interviews that the learning process experiences obstacles in the form of limited learning media. The learning that is carried out mostly refers to textbooks distributed by the school and there is also learning that uses a student guidance system to create a resume of learning materials sourced from the web available on the internet. Therefore, the learning process that takes place is less effective and the learning atmosphere seems monotonous and less interesting. This is supported by the results of an interview with the head of the accounting expertise concentration at SMK Sunan Giri Menganti that learning is limited to the type

of printed learning media and students are given support for understanding by exploring the material available on the internet independently. In fact, understanding the concept is an important thing to master in order to increase students' interest in learning and problem-solving skills (V. Pratiwi et al., 2023).

On the other hand, interactive E-modules are the best alternative that can contribute to improving students' reading comprehension and reading interest. Interactive E-modules can trigger students' interest and involvement in learning because they are designed in an interesting and simple way (Pradnyana et al., 2021);(Ula et al., 2023). With interactive e-module learning, students can learn individually actively without maximum assistance from teachers, so that students can learn independently (Herawati & Muhtadi, 2020);(Manzil et al., 2022);(Winatha & Abubakar, 2018). Other research states that the use of interactive e-modules assisted by Heyzine Flipbook encourages students to take a more active role in learning and provides students with the freedom to learn at their own pace and learning style by utilizing technology (Eriyanti et al., 2023);(Sa'diah et al., 2022). This is supported by statements from teachers who feel that the existence of this learning media is one of the solutions to the use of technology in learning that makes it easier and more enjoyable for both teachers and students. Thus, the existence of interactive e-modules can support the realization of the desired learning process in the 2013 Revised curriculum, namely the integration of technology in learning activities and is relevant to the Merdeka Curriculum which is currently developing.

The use of interactive e-modules in accounting learning activities greatly supports the improvement of students' understanding. This is in accordance with the results of interviews with students who stated that they felt happier and more interested in the service company material so that it was easier to understand the material. Learning media using Heyzine Flipbook has been integrated with technology and can make students more

interested in undergoing learning (Widya & Anggoro, 2023);(Sari et al., 2022). In addition, interactive e-modules equipped with various features help create a more interesting and non-monotonous learning process. The existence of interesting learning media and also providing convenience for students in learning, improves the quality of learning in the classroom and students do not get bored easily (Qouri & Zulherman, 2023);(Anggreni & Sari, 2022);(Linda et al., 2018).

The delivery of material in interactive e-modules does not only rely on text aspects, but is also supported by multimedia components such as images, graphics, videos and animations (Pradnyana et al., 2021);(Suwatra et al., 2018);(Rahmatsyah & Dwiningsih, 2021) so that the use of this media can realize the learning process according to the demands of the curriculum that is centered on students and the only source of learning is not only from the teacher. The existence of interactive e-modules is in accordance with the explanation that the integration of digital technology in the creation of learning media is one of the revolutions that presents opportunities for better understanding and learning outcomes (Thana et al., 2023);(Putra et al., 2021).

The various advantages of this interactive e-module will support the improvement of students' understanding. Learning using interactive e-module media is very helpful for students to learn independently, can improve learning outcomes and increase student activity (AN Rohmah, 2017);(DE Pratiwi et al., 2021);(Winatha & Abubakar, 2018). Learning media in the form of interactive e-modules can make it easier for teachers to deliver learning so that the objectives of the material delivered can be achieved by students (F. Rohmah et al., 2022);(Pradnyana et al., 2021). In addition, the use of Heyzine Flipbook-based learning media can attract students' attention and prevent students from getting bored quickly in the learning process (Khairunnisa et al., 2023);(Basori, 2016). With the use of this interactive e-module, it becomes one of the choices of technology-based learning media that

can be used by teachers in learning, especially in Vocational High Schools (SMK) in the Accounting Department.

In summary, the significant improvement in students' understanding after using the Heyzine-based e-module indicates that integrating multimedia elements can facilitate deeper cognitive processing, enhance engagement, and promote independent learning. The results affirm the theoretical assumptions of multimedia learning and extend the application of interactive e-modules within vocational education, particularly in accounting subjects. These findings suggest that technology-based learning media like Heyzine can serve as effective tools to improve conceptual understanding, motivation, and learning outcomes among vocational students, and thus hold substantial potential for broader implementation across similar educational contexts. Meanwhile, this learning media is still limited to service company material so that it is expected that in subsequent research it can be developed in subsequent materials in the Accounting subject. The interactive e-module display is presented in Figure 4.

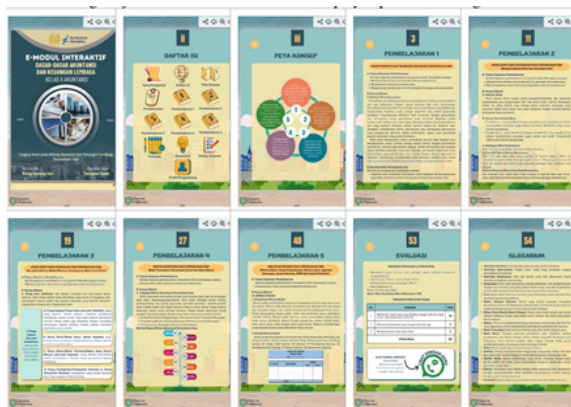


Figure 4. Interactive E-Module Display

CONCLUSION

Based on the results of the research and discussion above, it can be concluded that the use of Heyzine-based interactive e-modules in the Accounting learning process has been proven to support improving students' understanding. This is evidenced by the increasing abi-

lity of students to answer practice questions contained in the interactive e-module for service company material. Interactive e-modules are equipped with various interesting features that support students in understanding service company material. The use of interactive e-modules in the learning process can support increasing student involvement in the learning process and can support creating fun learning activities. Thus, interactive e-modules with attractive displays can help students' understanding increase. The use of interactive e-modules in active and innovative learning that positions teachers as no longer the sole source of information in the learning process requires learning media that can be used and utilized by teachers as alternative sources of information and learning support. Teachers and schools are expected to support maximizing the use of technology in the learning process through the development of innovative and creative technology-based learning. This can be started by using interactive e-modules as learning media for accounting subjects, especially in service company material. Furthermore, subsequent research is expected to be able to test the effectiveness of using this media on learning outcomes.

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