Development of accounting learning module using scientific approach through interactive video

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Abstract. The results of previous studies conclude that some learning media have the potential to improve students' independence and competence in understanding accounting material. Through modules and interactive video media, the lecturers have the opportunity to improve student competency in learning introductory accounting. The purpose of this study is to produce an introductory learning module accounting with a scientific approach through interactive video. The learning module was developed by researchers and validated by experts. The results of the study show that the learning module with a scientific approach through interactive video can improve student competency in understanding the process of financial reporting. This research recommends that the learning module with a scientific approach through interactive video, student competence in understanding the process of financial reporting, especially adjusting journals, is more profound, meaningful, and student-centered. Future research is needed to analyze the contribution of the use of learning modules in economic subjects.

1. Introduction
Learning using the scientific approach does not only require students to learn actively but also students must be independent and improve higher-order thinking skills. To support students in independent learning, a learning module needs to be developed [1]. So that in this case, the lecturer has an important role in student learning activities. One of them is in the preparation of learning devices in the form of modules. Modules are one component that has an important role in the teaching and learning process. The availability of modules in learning can help students in obtaining information about the material being studied [2]. Module development needs to be adapted to the development of science and technology and the needs of students. Learning by using modules with a scientific approach is expected to increase student motivation and independence [3]. The results of discussions with fellow introductory lecturers in accounting, it was found that many students had difficulty in studying the material of the preparation of financial reports, especially in the material of the adjusting journal. The absence of modules causes students to be less active in the learning process because students listen more and record what the lecturers say. Based on the results of educational research both at school and the results of lecturer research contained in various journals, it can be seen how the role of the module in facilitating the learning process [2]. Based on the problems that have been found in the accounting background lecture and the results of the research can be used as the basis for developing teaching materials in the form of modules.
The accounting learning module in this study was developed with a scientific approach with interactive video media. Learning using interactive videos has the potential to create a high-quality learning environment that actively involves students, thus enabling deep learning [4,5]. Learning by using a scientific approach can improve student learning motivation, because students can be directly involved in the learning process [6]. The interactive concept in teaching is most closely related to computer-based media. Learning will also be easily understood by students by utilizing science and technology, therefore the design and development of learning must be in accordance with the development of science and technology [7].

The purpose of this study is to produce accounting modules that can be used to support the introductory accounting activities. In addition, this study also aims to determine the effectiveness of modules developed in introductory accounting courses. The expected benefits of the module with the scientific approach through interactive video include growing student motivation and learning activities, because by using modules students can find out the development of their own learning.

2. Method

The design of this study adapted and modified the research and development model initiated by Borg & Gall which was adjusted to the characteristics of students and the contents of the field of study [8]. The development procedure that is carried out is (1) potential and problems; (2) data collection; (3) product design; (4) design validation; (5) design revisions; (6) testing the use of learning modules, carried out through research experiments at the University of Kanjuruhan Malang management study program, measuring the effectiveness of the learning module to improve student competence in understanding the introductory accounting courses; (7) final product revision; and (8) final product.

3. Results and discussion

The accounting substitution course module developed in this study uses a scientific approach through interactive video. The resulting modules have been validated by a team of accounting learning experts using developed and modified assessment instruments [9]. Both teams of experts have assessed the module with a scientific approach with interactive media and provided various notes to improve the module before being used in lectures. The results of the expert team validation are presented in Table 1.

| Aspect                                           | Validation of the Expert Team |
|--------------------------------------------------|-------------------------------|
|                                                  | I    | II   |
| Relevance                                        | G    | VG   |
| Accuracy                                         | G    | G    |
| Completeness                                     | VG   | VG   |
| Sacred systematics                               | VG   | VG   |
| The suitability of the presentation with the demands of student-centered learning | G    | G    |
| Serving method                                   | VG   | G    |
| Language suitability with good and correct Indonesian language rules | G    | G    |
| Readability and communicativeness                | B    | G    |

Information: G: good; VG: very good

Based on Table 1 the results of module validation obtained data with very good and good categories for the eight aspects assessed. The note given by the expert states that "it needs to be added to the problem training, so that students practice doing more questions, by practicing a lot in working on the questions will further enhance students' understanding of the lecture material they are learning". Enter from the expert has been followed up by adding practice questions in the module.
According to the two expert teams, the preparation of modules with a scientific approach with interactive videos is very good in supporting the lecture process. With a scientific approach will help students in the problem solving process. Students will solve their problems through scientific steps. With the results of the validation, the module with a scientific approach accompanied by interactive media is feasible to use as teaching material in the introductory accounting course.

After the module is deemed feasible by experts, then the module is used in introductory accounting courses in the class. During the three meetings, all student activities were recorded and collected through observation sheets by observers and the research team. At the end of the lecture at the third meeting a competency test was conducted on the material presented. The results of student competency test before and after using the module in the introductory accounting course are presented in Figure 1.

![Figure 1. Student competency test results.](image)

Based on the results of the competency test presented in Figure 1, it can be seen that before using the module, there were no students who scored within the range 84 - 100 or the category was very good. The value achieved by students is more in the 71-83 range or good category and 56-70 range or sufficient, namely 25 students (71%) and there are still 10 students (29%) who get grades less than 56 or poor categories. After using the module with a scientific approach, accompanied by interactive videos, student grades can increase. It can be seen that there are 12 students (34%) who can get grades in a very good category, on average the student grades are in the good category as many as 17 students (49%), only 6 students (17%) in the sufficient category, and no student gets a bad grade.

The real impact that can be felt by lecturers when teaching using modules, lecturers are easier in class management because by using modules students are more active and independent in the lecture process. Lectures using modules with a scientific approach that is accompanied by interactive video can help students improve the understanding of material in the preparation of financial statements. From the results of this study, the learning module with a scientific approach can increase student grades when compared before using modules [1,7,10,11].

When using modules, lecturers can be more flexible in developing assessment. The assessment sheet contained in the module has been developed in accordance with the final competencies that are expected and can be monitored in the development of students during the lecture process [12]. Students can study the contents of the module in stages according to their respective abilities. The use of modules like this makes students feel depressed while studying accounting [13].

In addition to competency testing, students also provide responses to the modules used through the questionnaires that have been distributed which are presented in Table 2.
Table 2. Student response questionnaire.

| Score | f  | Information     |
|-------|----|-----------------|
| 0 - 20| 0  | Not agree       |
| 21 - 40| 0  | Less agree      |
| 41 - 60| 0  | Doubtful        |
| 61 - 80| 13 | Agree           |
| 81 - 100| 22 | Strongly agree  |

Of the 35 students who gave responses to 20 statements indicating the choice of answers strongly agreed and agreed to the use of modules with a scientific approach that was equipped with interactive videos. There were no students who responded hesitantly, lacking, and did not agree to the use of the module. Students provide positive responses to the use of modules with interactive videos and they state that modules are very effective in helping students understand the material of the financial report preparation process [14,15].

The questionnaire analysis of student responses to the use of modules with interactive videos showed a positive response. A total of 22 students (63%) stated that modules with interactive videos are very necessary and effective in the lecture process. Students feel helped when studying the process of preparing financial reports, especially in understanding the adjusting journal material. From these results it can also be said that the student response to the modules produced in this study is very good [16,17].

4. Conclusion
Based on the results of the development data analysis, the resulting product is concluded to be of quality and effective to be used as a learning product. Product quality was assessed by a team of experts learning and product testing carried out through experiments. The learning outcomes in the trial show that student competency has increased compared to before using the module. Based on observations during product trials and experimental research conducted, it appears that students are more motivated and independent in learning accounting. Students can measure their own abilities and lecturers more easily control the development of students through their worksheets. Although student competency has increased, to find out more about the improvement of student competency, statistical tests are needed.

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