INTERACTIVE MODULE FOR ECONOMIC LEARNING TO SUPPORT STUDENT CENTERED LEARNING

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Abstract: *This study aims to develop an interactive module that supports student-centered learning and test the feasibility and the response of students to the interactive module for economic learning. The product development stages use the Analyze, Design, Development, Implementation, and Evaluation procedure. The validation of the developed products was carried out by two material experts and two media experts. Products that have been revised and get a proper assessment are tested out in small groups consisting of 5 teachers and tested in large groups consisting of 30 students. The results show that the interactive module economy as a support for Student Centered Learning is very good and feasible to use. This is based on the results of the validation of material experts which show the percentage of the feasibility level of 95% and the results of the validation of the media experts show the percentage of the feasibility level of 80%, while the small group trials and large group trials show the percentage of the feasibility level of 87% and 86% respectively. Meaning that it is in the very feasible category.*

Keywords*: interactive module, student center learning, economy*

INTRODUCTION

In this decade, information and communication technology have developed rapidly and have been integrated with all aspects of life, including the learning process. This condition has implications for educational institutions in providing digital learning resources (Johnson et al., 2016). Computer technology is the most important part in designing educational technology performance, so that teachers are helped in making their own learning media by utilizing information and communication technology (Mantiri, 2014).

Responding to the development and advancement of ICT, teachers are required to master technology (ICT) in order to develop ICT-based learning materials and utilize ICT as a learning medium (Susilo, Efendy, 2018).

The condition of learning in schools today is more oriented to the use of traditional learning methods and media such as lectures and using textbooks. There are many theories listed in the book, but students have limitations in understanding, even students are not interested in reading, this

is because books only use one of the five senses in its use, namely the eyes. Images and text alone are not sufficient in delivering material (Purba, Liliana, & Kwarrie, 2017).

Referring to the above problems, interactive modules are one of the solutions to overcome them because technology-based interactive modules can provide the latest educational information to students, provide interesting instruction with electronic media, and promote their technological proficiency, all of which contribute to their professional development (Martin, Hoskins, Brooks, 2013). The use of technology can combine all media elements such as text, video, animation, images, graphics, and sound into one presentation, so that all these elements can be combined with student learning modalities. This combination can accommodate students' visual, auditory and kinesthetic learning styles (Risnawati, Amir, & Sari, 2018).

Based on the researcher's observations, it is found that problems include the limited digital learning resources in the form of interactive modules that are in accordance with the needs of learning economics in SMA, especially at SMA Negeri 1 Muara Jawa, Kutai Kartanegara Regency. The problems mentioned above can be solved by designing learning media that combines technological progress and pedagogical elements that are oriented towards improving the quality of learning (Sudarman, 2014).

Research on the use of interactive modules or the like learning has been carried out by many researchers, such as research on interactive mathematics modules (Prabowo, Anggoro, Astuti, 2017), biology e-book modules and their impact on learning outcomes (Morris & Lambe, 2017), hyper content print modules namely, modules that integrate hypertext, hypermedia, and hyperlinks (Jaya Putra, Situmorang, & Muslim, 2020) but research on the development of interactive modules on economic subjects is still lacking.

Based on the explanation above, schools need learning innovations that are needed in today's digital era. In addition, various types of learning using media have been widely used, but the use of interactive modules to support student-centered learning, especially in economic subjects, is still rare. Therefore, this study aims to develop a valid, effective, and reliable interactive module in high schools, to produce empirical findings for efforts to improve the quality of learning as well as to test the feasibility and the response of the media to the media.

METHOD

This type of research is research and development (R&D) with the development model used, namely the ADDIE (Analysis, design, development, implementation, and evaluation) model, a development model that is widely used in the development of instructional models and learning media (Muslimin, Nordin, & Mansor, 2017). The consideration of using the ADDIE model is because the results of the study show that development using the ADDIE model produces products and is useful in learning which is

proven to improve student learning outcomes (Martin, Hoskins, Brooks, 2013).

The stages of development with the ADDIE model are according to the following chart;
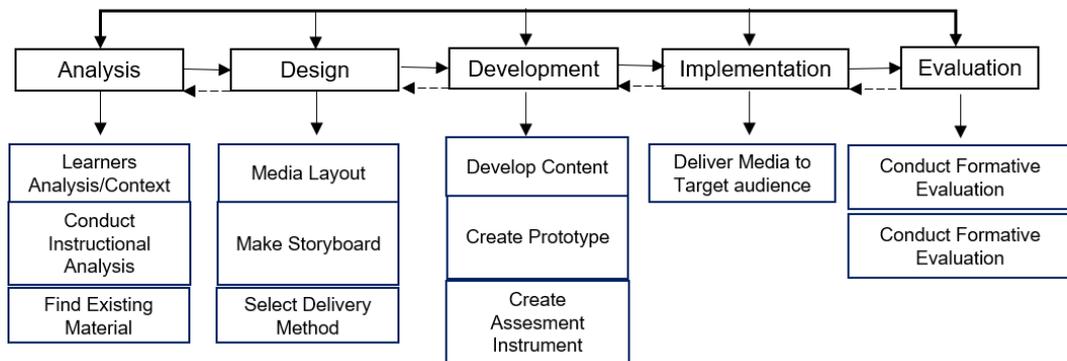
Figure 1. ADDIE model

The analysis stage includes a needs analysis by making direct observations at SMA Negeri 1 Muara Jawa. The results of the analysis are used as a reference for the development of interactive learning media. The purpose of the analysis is to obtain data that support media development. Material analysis determines the competencies to be achieved in class X KD 3.6 economy material: Central bank, payment systems, and payment instruments in the Indonesian economy.

Design Stage. In this design stage, an interactive learning module storyboard is made which contains an overview and description of the content of the material to be made in the learning media. The design of the media (storyboard) is used to facilitate the process of making interactive learning media. Storyboard design includes the layout, coloring, and size of the text. The layout is the most important thing to communicate what the intent and purpose are on each screen.

Development stage, at this stage, the researcher uses a program that is able to run a learning media product on a laptop or a computer with a small bytes capacity, namely Adobe Animate CC, a software capable of creating animation and interactive modules. Adobe Animate CC has interesting features and can be operated on every laptop and computer, the choice of Adobe Animate CC software is because every laptop and computer in Indonesia have Adobe Flash Player installed, so interactive modules created through Adobe Animate can be operated without having to have Adobe Animate CC. In addition, there is no disturbance in the operation of the interactive module due to its small capacity.

At this stage, a feasibility assessment was carried out, revision of the prototype I, limited trials (small group trials and large group trials). The feasibility assessment is carried out by an assessment of material, linguistic, presentation, and graphic experts who aim to know the feasibility of the digital teaching materials being developed. Small group and large group

trials aim to see the efficiency and effectiveness of the product. Meanwhile, the purpose of the development stage itself is to produce a final prototype.

The next stage is Implementation, in this stage, the product or interactive module that has been developed is then applied to class X students for product validation testing. Before being applied to students, the product or interactive module must pass the test stage, namely the media expert test and the subject matter expert test.

The next stage is evaluated. At this stage, it is carried out by evaluating each stage of the ADDIE model itself. After the evaluation is carried out, then it is revised before going to the next stage. If, at the development stage, revisions are carried out continuously, then the researcher will only carry out product revisions a maximum of 3 (three) times due to the limited time and money the researcher has.

The research subjects were students of grade 11 SMAN 1 Muara Jawa with 30 respondents, at the Small Group Trial stage 5 respondents, at the field trial stage 30 respondents, with 2 media experts and 2 material experts.

This developmental research used data collection techniques and data analysis in the form of interviews and questionnaires and carried out descriptive analysis. The data obtained through the assessment instrument were classified into two data, namely, qualitative data and quantitative data. Qualitative data contains criticisms and suggestions put forward by material experts, media experts and students who are gathered to improve interactive module-based learning media. Whereas for quantitative data obtained from a questionnaire that has been made using the Likert scale method to determine the quality and feasibility of the product, a statistical analysis is carried out through a percentage (Iasha, Sumantri, Sarkadi, & Rachmadtullah, 2018).

RESULTS

The main result of this research and development is an interactive media as a support for learning resources on Central Bank material and payment systems on economic subjects in the application of student-centered learning. The interactive media is used as a medium to teach banking concepts and payment systems. The detailed results of each stage of the development procedure are carried out as follows:

The result of development

1) Intro / Introduction view

Figure 2..Intro Display of Learning Media

This page is the intro page of the interactive module. On this page, there is an "enter" button which is used to start the interactive module. Navigation key "enter" will function when a media user clicks or presses the "enter" key on the keyboard. In addition, there is a back sound on the intro page.

2) Main Menu Display

After the user presses the "enter" button on the keyboard, on this page there are buttons like "power" and "volume" located in the lower left corner. In addition, on this page, there are buttons that can be selected by students, the buttons are Indicators, Material, Video, Questions, Bibliography, and a Developer. The menu display is as shown in Figure 3.

Figure 3. Main Menu Display

3) Material Indicator Display

Figure 4. Display of Material Indicators

On this page, there are material indicators in the interactive module. This indicator is in accordance with the syllabus and lesson plans for class X on

economic subjects. In addition, there is a "menu" button in the upper right corner and a "back" button in the lower left corner to return to the main page.

4) Material Selection Page Views

On this page, the module user, in this case students, can choose the material they want. The material in this interactive module consists of two main subjects in accordance with the Syllabus and RPP, namely about the central bank and payment systems. Students can immediately click on the material they want to study on the central bank button or payment system. In addition, there is still a "menu" button to return to the main page.

Figure 5. Display of Material Options

5) Sub-material page views

Figure 6. Views of Central Bank Sub-Material

On this page, there are central bank sub-materials that can be chosen by media users or students. When clicked on, the sub-materials contained the meaning and history of the central bank, the duties of the central bank in Indonesia, the authority of the Indonesian bank, and the role of the Indonesian bank. In addition to the central bank sub-material selection buttons that can be selected, there are also "menu" buttons and "payment

system" buttons which function to return to the main page and function to go to the sub-material page of the payment system. On the payment system sub-material page, there are material choices, namely, the definition of the payment system, the history of money, the functions and terms of money, payment instruments, and GNNT (National Non-Cash Movement).

6) Material Page Views

Figure 7. Views of Central Bank Material Page

This page is a material page about the central bank, which includes animations and pictures about the central bank. On this page, there is a "Scroll" panel that can be used by students to view the next text on the page. In addition, there are menu buttons, payment system, central bank, back, and next.

7) Video Page Views

On this page, students can choose videos related to central bank material and payment systems. The video on this page contains the history of Bank Indonesia, the history of money, let's use the rupiah, payment instruments, and GNNT (National Non-Cash Movement).

Figure 8. Video Page Views

8) Display Question Pages

Figure 9. Display Questions

On this page, students can practice mastery of the material that has been learned. Before students start working on the questions, students must fill in their names and attendance numbers so that the names and attendance numbers appear on the assessment page.

Basically, every page uses the same animation and buttons, but only the content is different for each page. Each page is button-customized so that media users can easily use it. The finished learning media are stored in .fla format to make it easier for researchers when there is a revision of the content of the material or media. After the interactive module is finished, the format of the module will be changed to .swf and .exe.

Validation results
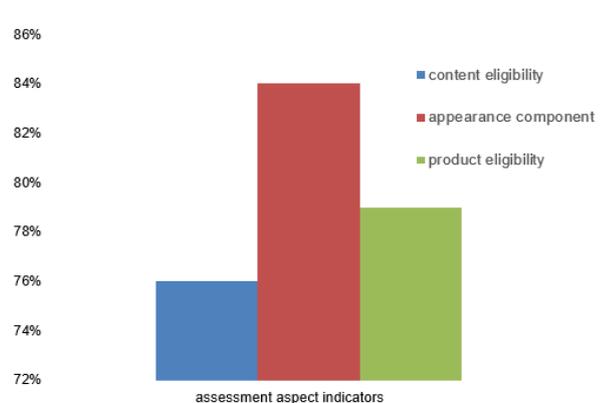
Figure 10. Stage 1 Material Expert Validation Graph

The results of the assessment of material experts showed the percentage of product feasibility in interactive learning media was 79%. In the feasibility component, the content in the interactive module shows a percentage of 76%, and the presentation component is 84%. The comments and suggestions from material experts are as follows:
1. Make a Bibliography and Author
2. Exit button is placed outside other items
3. The video source is written down, and the questions are added according to the indicators.

Based on comments and suggestions from material experts, revisions were made to the interactive module learning media. The revision made was to add 10 multiple choice questions to 20 questions. In addition to adding questions, here are some views that have been revised and corrected. On the main page, added bibliography and Author/developer to find out the source and interactive modules developed. Then the "Exit" button turned into an icon and was not integrated with the main button. In accordance with the revised results of the material expert, the researcher made improvements, namely increasing the button and the number of bibliography pages, authors/developers, and moving and replacing the "exit" button in the form of an icon.

Figure 11. Main Menu Display After revision

Furthermore, the researcher also made revisions to provide video sources so that media users could find out the source of the video. This revision was carried out in accordance with the advice of material experts. The revision of the interactive module learning media was carried out in accordance with the advice of the material expert and was made 1 revision. After that, re-validation was carried out by a stage 2 material expert. The results of the second stage material expert validation showed a percentage of product feasibility of 95%. The percentage of the content eligibility component was 93%, and the presentation component was 98%. This shows that the interactive module learning media falls into the very good category.

Figure 12. Video Page After Revision
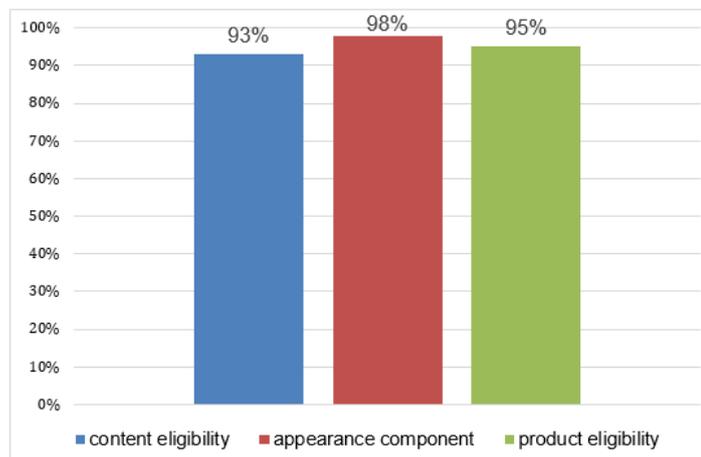
Figure 13. Stage 2 Material Expert Validation Graph

Media Expert Validation

Validation by media experts is used to see whether the media that the researcher has created is included in the interactive module category. At the stage of validation by media experts, there are many aspects that must be assessed differently from material experts. These aspects include aspects of image quality, aspects of content, aspects of information presentation, media integration, artistic and aesthetic aspects, and overall functions.

The results of the validation of the media expert, on average, get a score of 4 in the good category. Based on the results of validation by media experts, the average of various aspects of the assessment shows a percentage of 80% with product feasibility of 80%. As for the advice by media experts, there is not much, just a button on a video page so that it is easy to switch from one video to another without having to click the "back" button. In accordance with the advice of media experts, the researcher added navigation buttons to move from one video to another. Because the

suggestion only adds a button, the researcher only validates one time and does not re-validate it.

The validation results from media experts can be seen in table 1. as follows.

Table 1. Media Validation Test Results

Assessment aspect	Average Score	Percentage	Interpretation
Quality picture	4	80	decent
content	4	80	decent
presentation	4	80	decent
Media integration	4	80	decent
Artistic and aesthetic	4	80	decent
Overall function	4	80	decent
Produk feasibility	4	80	decent

The validator also provides suggestions and comments on the innovative module that have been made, namely to add sound effects to the video, and the interface is also provided with images and interaction buttons between pages so that it can be easier to use. Display of results after improvements and assessment areas listed in the table above can be seen in Figure 14.

Figure 14. Video Page Views After Revision

Evaluation Phase

The Small Group Trial Stage was carried out on students of SMA Negeri 1 Muara Jawa. In this stage, students are welcome to try interactive module learning media in order to stimulate student curiosity. After about 15-20 minutes of use, the researcher then explains how to fill in the assessment instrument to students. The small group trial was conducted by 5 students. The results of the small group test can be seen in table 2. From the results of the small group trial stage, it is known that the percentage in the small group

test is 87%. Referring to table 4.4, the interactive module learning media fall into the "Very Good" category.

Table 2. Results of the Small Group Trial Stage

| Respondent | assessment indicators | | | | Total |
	Image Appraisal	Presentation of Material	Appraisal Information Presentation	User Integration	
1	20	21	18	22	81
2	22	22	18	26	88
3	24	24	20	29	97
4	20	21	19	23	83
5	21	22	18	25	86
average	21.4	22	18,6	25	87
percentage	86%	88%	93%	83%	
Percentage Eligibility					87%

The next stage is a large group trial, which is carried out in the same class with the aim of seeing students' repeated responses to the interactive module learning media developed by the researcher. The same treatment was carried out in large groups, namely allowing them to try interactive module learning media in order to stimulate student curiosity. After a duration of 20 minutes of use, the next researcher explained how to fill in the assessment instrument to students. The results of large group trials were conducted on 30 students, the image assessment aspect obtained a total score of 642, with an average of 21.4 and a percentage of 86%, the aspect of presenting the material with a total score of 532 an average of 21.4 and a percentage of 86%. Percentage of assessment information, total score average 17.7 to a percentage of 88%, integration aspects of a user's total score, average 25.4, percentage 85%. From the results of the large group trial stage, it was found that the percentage of eligible product in the large group test was 86% in the sense that the category was very good or very suitable for use. A more detailed explanation can be seen in table 3.

Table 3. Results of the Large Group Trial Stage

| | Assessment Indicators | | | | |
	Image Appraisal	Presentation of Material	Appraisal Information Presentation	User Integration	Total
Skor Total 30 resp.	642	642	532	762	2578
Rata-rata	21,4	21,4	17,7	25,4	21.75
Persentase	86%	86%	88%	85%	
Percentage Eligibility					86%

DISCUSSION

`   The results of the feasibility of the interactive module in economic subjects by material experts show that the percentage of eligibility of the material is 95% in the very good category. The result of the percentage of media feasibility is an accumulation of the content feasibility component and the presentation component. In the aspect of the content feasibility component, there is material coverage, content, basic competency/curriculum linkages, and material accuracy (truth and accuracy). As a result of the content feasibility component aspect, the material coverage falls into the "Good" category. The content of the interactive module learning media fall into the "Very Good" category. Furthermore, the linkage between basic competencies/curriculum is included in the "Very good" category, and for material's accuracy (truth and accuracy), it is included in the "Very good" category. In the aspect of the presentation component, there are learning, communications and interactive presentations, as well as language aspects. The total of the three falls into the "Very Good" category.

        This condition is supported by the results of interactive modules developed based on Adobe Animate, which have several advantages compared to previous studies, namely in the aspect of the student centered learning approach in the learning process. In the context of this research, the material aspect as the focus is the principles of learning about the Central Bank and the payment system which characteristically require certain media to deliver the material. The learning has been designed in detail and systematically so that students who use it can follow the steps, and there are also videos that raise several phenomena in everyday life and in-depth explanations of the material accompanied by examples of concept applications and provision of scaffolding tests that provide lessons for students to keep trying and pay attention to avoid repeated mistakes (Diyana, Supriana, & Kusairi, 2020).

        The results of the media expert validation show that the percentage of eligibility of the material in the interactive module in class X economics subjects is 80% with the "Good" category. Media experts validate aspects of image quality, content, media integration, artistic and aesthetically, and wholeness function. The sum of all aspects that were validated by media experts showed a "Good" category.

        This assessment is supported by the result of an interactive module that has been developed and has features that have been tested for its feasibility. The use of technology in the learning process is an alternative to support the student-centered learning process. The use of interactive module elements in loading learning content makes the learning experience more meaningful. Supporting elements and content components are important in interactive modules as they give students more choices in student-centered learning environments (Leow & Neo, 2014).

The results of the first trial on a small group consisting of 5 students showed a percentage of 87%, and after that, the trial was carried out in a large group consisting of 30 students with a percentage of 86%. Seeing the percentage results that were tried out, the interactive module learning media on Economics class X was included in the "Very Good" category.

The results of the validation of the interactive module in Economics class X has advantages that make it easier for students both in group and independent study, making students excited in the learning process because of the attractive animation design, having educational and interactive videos so that students are interested in participating in the learning process and do not feel bored. The interactive module can be used to support the implementation of student centered learning because students can experience learning at their own because they are free to decide what to learn. This is in line with the findings that interactive modules can be used online and are not limited by time and place and can be collaborated with video content, images and quizzes as well as question and answer forums that make it easier for students to learn independently (Sirwan & Kamal, 2020).

CONCLUSION

Based on the results of the research and feasibility tests that have been carried out, it is concluded that the interactive module of economic subjects can be used as a support for student centered learning. The results of the research are in accordance with the formulation of the problem that in order to meet the needs in supporting active learning and providing flexibility to improve the quality of learning in student-based learning, interactive modules are needed. The results of the development of an interactive module containing valid teaching material and integrated with various media, including animation and video, can motivate students in the learning process. So that the interactive module developed can become student centered learning material that is able to improve desire and is able to provide facilities for students to carry out learning evaluations independently as well as get feedback. However, the effectiveness of the interactive module development that has been produced is not yet known. Therefore, you can use interactive module learning media that has been developed for further research which is carried out on its impact on student learning outcomes.

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