DEVELOPMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) BASED LEARNING MODULES USING HEYZINE FLIPBOOKS ON THE HISTORY OF INFORMATION TECHNOLOGY MATERIAL

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ABSTRACT

Information Technology History material in the Introduction to Information Technology course, using a monotonous learning system and not utilizing technology makes students less interested in the learning process. Producing ICT-based learning modules on Information Technology History material to determine validity and practicality is the aim of this study. The research methodology is research and development (R&D) using the ADDIE development model, which consists of five stages: analysis, design, development, implementation and evaluation. The subjects of this study were 3-5 semester students at Muhammadiyah University Jakarta who had studied information technology history material. The research results obtained for the validity of the media are 82% and the validity of the material is 84% with a very valid category. While the practicality results obtained for the lecturer response questionnaire in small classes were 86% in the very practical category, for the small class test student response questionnaire 91.6%, the large class test was 92.67% in the very practical category. Based on these data it can be concluded that the ICT-based learning module on the History of Information Technology material is stated to be valid and very practical.
Keywords*: *Module, ICT, History of Information Technology

INTRODUCTION

Today's education that follows the development of technology must implement the integration of Information and Communication Technology (ICT) into all lessons. ICT acts as a tool or means in overcoming the challenges of the development of the digital era, especially in education. The use of ICT in education will help students to have knowledge and apply it in learning. Through information and communication technology, the pattern of education in Indonesia can develop following technological advances. The pattern of education used has changed to a modern pattern, namely the application of technology in learning.

Therefore, it is important to information and communication to students, so that they have sufficient understanding and experience to apply it in learning activities, work, and aspects of daily life. One way to achieve this is by using electronic learning media as a learning resource. Sa'diyah in Chairunisa (2022:86) argues that due to the COVID-19 pandemic that has been going on for the past three years, education must be done remotely, so digital-based learning resources are very important. Books or modules can be developed in electronic format, e-book or alternatives to conventional books without reducing their role as a source of information and can be utilized as media in learning.

Initial observations carried out by researchers by directly observing the learning process found that the media and teaching materials used were in the form of powerpoint slides. In reviewing the material at each meeting, students are very dependent on the lecturer and cannot

learn independently because the initial knowledge of the material is obtained by students when the learning is carried out.

Another thing encountered in the field is that the learning methods applied at the University of Muhammadiyah Jakarta Faculty of Education Information Technology Education Study Program remain lecturer-centered, in learning, the lecture method is dominantly used, with students only acting as listeners and sometimes recording material. Opportunities to pursue deeper material outside of learning hours are very limited for students. And based on the findings in the field, the teaching materials and learning media used are still the same as in the past 3 - 4 years, a longtime span causes the teaching materials and media used to be out of line with student needs.

Based on the explanation above and the problems that have been experienced by previous researchers, hereby researchers will carry out a study with the title "Development of Information and Communication Technology (ICT)-based Learning Modules Assisted by Heyzine Flipbooks on Historical Information Technology Material" which is expected to be a solution. In learning Introduction to Information Technology, especially the History of Information Technology material.

RESEARCH METHODS

This research to develop an ICT-based module uses the R&D (Research and Development) methodology. The subjects in this study were students of Universitas Muhammadiyah Jakarta Information Technology Education Study Program Semester 3 and 5 totaling 25 students who had studied the history of information technology material. This research was designed using the ADDIE (Analysis Design Development Implementation Evaluation) development stages. The followingis stage research:

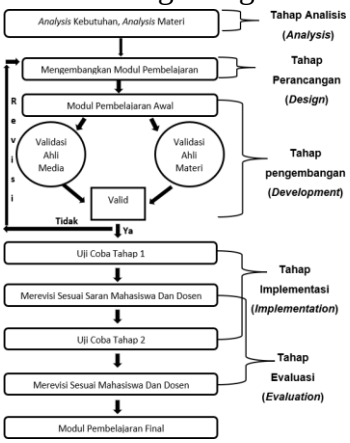

Figure 1. Research stages

The instrument used in this research is a questionnaire instrument used for validation of media, material and student and lecturer responses. The following is an instrument assessment table:

Table 1. Lattice of Media Expert Questionnaire Instrument

Criteria	Indicator	Question
Media Feasibility Aspects	Media Size	1
	Media Cover Design	2,3
	Media Content Design	4,5
Aspects of Language Appropriateness	Suitability with Student Development	6
	Readability	7

	Motivating Ability	8
	Agility	9
	Conformity with Indonesian Language Rules	10

Table 2. Lattice of Expert Questionnaire Instrument

Criteria	**Indicator**	**Question Number**
Content Appropriateness Aspect	Material Coverage	1
	Accuracy of Material	2,3
	Skill Scope	4
Presentation Component Aspects	Presentation of Learning	5
Aspects of Language Appropriateness	Suitability with Student Development	6
	Readability	7
	Ability Motivating Students	8
	Agility	9
	Conformity with Indonesian Language Rules	10

Table 3. Lattice of Lecturer Response Questionnaire Instrument

Indicator	**Question Number**
Material	1,2
Language	3,4
Interest	5,6,7,8,9
Media Quality	10

Table 4. Lattice of Student Response Questionnaire Instrument

Indicator	**Question Number**
Material	1,2,3,4
Language	5,6
Interest	7,8,9,10

The questionnaire instrument data analysis technique used in this study is as follows. Rohman & Muthmainah (2015):

$$P = \frac{Total\ score\ of\ questionnaire}{Ideal\ questionnaire\ total\ score}\ x\ 100\%$$

Table 5. Validity Category

No.	Score Interval (%)	Final Results
1.	80% < p ≤ 100%	Very Valid
2.	60% < p ≤ 80%	Valid
3.	40% < p ≤ 60%	Fairly Valid
4.	20% < p ≤ 40%	Invalid
5.	0% < p ≤ 20%	Very Invalid

Tabel 6. Practicality Category

No.	Interval Skor (%)	Final Results
1.	80%<p≤100%	Very Practical
2.	60%<p≤80%	Practical
3.	40%<p≤60%	Practical enough
4.	20%<p≤40%	Not Practical
5.	0%<p≤20%	Not Very Practical

RESULTS AND DISCUSSION

Media Expert

At the media validation stage there were several suggestions from validators. Here are some views of the module before and after revision.

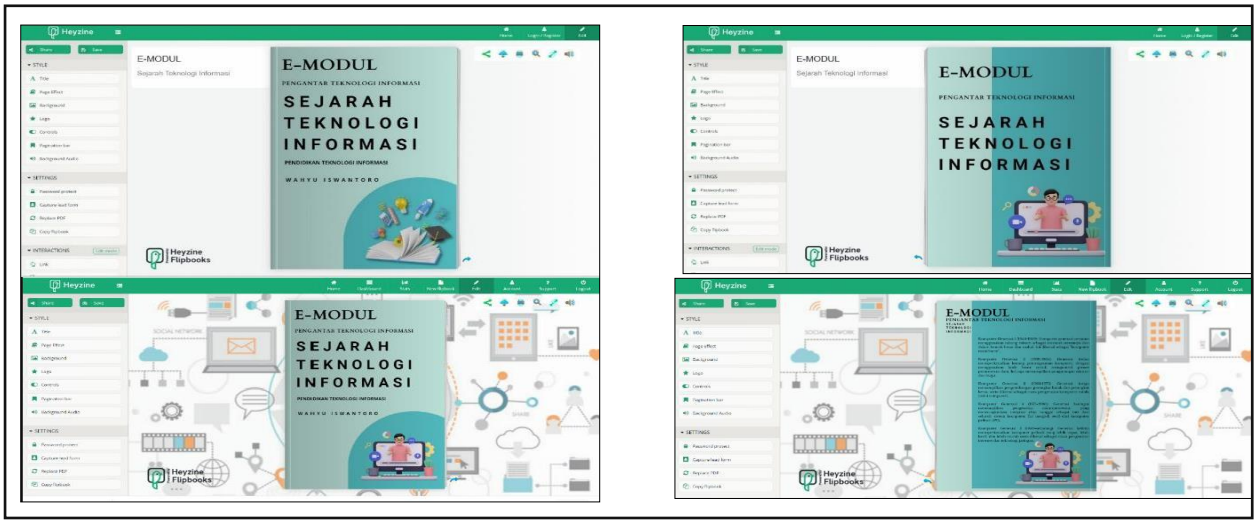

Figure 2. Cover Before and After revision

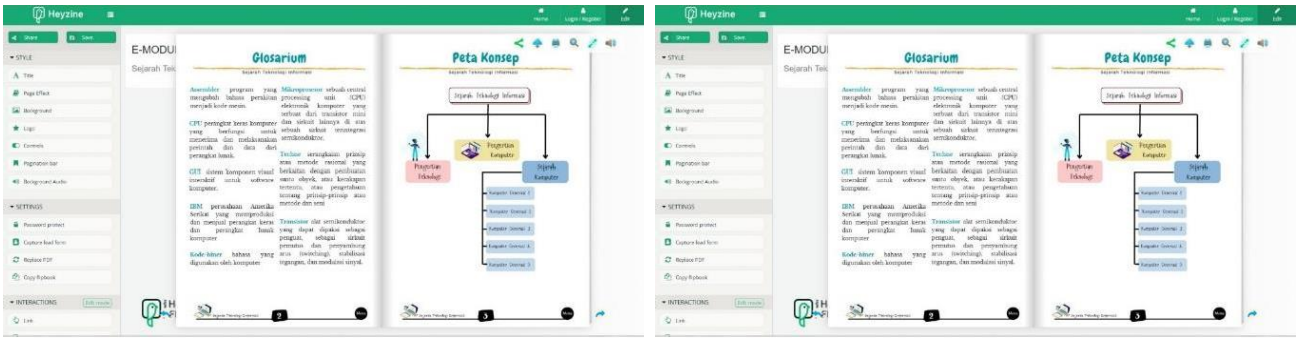

Figure 3. Font Size Before and After revision

Figure 4. Addition of Multiple Choice Problem Exercise

The results of the media expert assessment are as follows:

Criteria	Indicator	Question Number	Score
Aspects of Content Validity	Material Coverage	1	10
	Accuracy of Material	2,3	15
	Coverage of Skills	4	8
Presentation Component Aspect	Presentation of Learning	5	8
Appropriateness of Language	Suitability with student development	6	8
	Readability	7	7
	Ability to motivate students	8	10
	Agility	9	9
	Conformity with Indonesian Language Rules	10	7
Total			82

Based on the above calculations, it is obtained the result of media validity is 82% which categorized as very valid.

Material Expert

At the material expert validation stage there were several suggestions from validators. Here are some views of the module before and after revision.

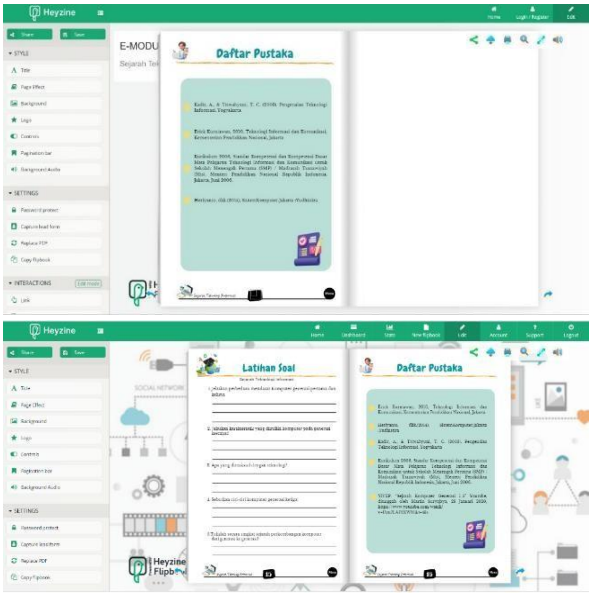

Figure 5. References Before and After Revision

The results of the materi expert assessment are as follows:

Criteria	Indicator	Question Number	Score
Aspects of Content Validity	Material Coverage	1	4
	Accuracy of Material	2,3	8
	Coverage of Skills	4	3
Presentation Component Aspect	Presentation of Learning	5	4
Appropriateness of Language	Suitability with student development	6	4
	Readability	7	5
	Ability to motivate students	8	5
	Agility	9	5
	Conformity with Indonesian Language Rules	10	4
Total			42

Based on the above calculations, it is obtainedthe result of the validity of the material is 82% which categorized as very valid.

Lecturer Response Questionnaire

The results of assessment respond lecturer as follows.

Indicator	Question Number	Small Class Score
Material	1,2,	9
Language	3,4	8
Interest	5,6,7,8,9	22
Media Quality	10	4
Total		43

Based on the above calculations, the result of the practicality data analysis is 86% which is categorized as very practical.

Student Response Questionnaire

The results of the student response assessment are as follows:

Indicator	Question Number	Small Class	Large Class
Material	1,2,3,4	92	328
Language	5,6	46	168
Interest	7,8,9,10	91	338
Total		229	834

Small Class

Based on the above calculations, the result of the practicality data analysis is 91.6% which is categorized as very practical.

Large Class

Based on the above calculations, the result of the practicality data analysis is 92.67% which is categorized as practical.

CONCLUSION AND CLOSING

a. Conclusion

The results obtained for the validity of the media are 82% and the validity of the material is 84% with a very valid category. While the practicality results obtained for the questionnaire response of lecturers in small classes are 86% with a very practical category, for the student response questionnaire small class test 91.6%, large class test 92.67% with a very practical category. Based on these data, it can be concluded that the ICT-based learning module on the History of Information Technology material is declared valid and very practical

b. Closing

The author would like to thank those who have supported this research so that it can run as it should, and the author would like to thank the Dean of the Faculty of Education and the Head of the Information Technology Education Study Program who have accepted the author to conduct research.

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