Developing E-Modules for Correspondence Subject based on Project-Based Learning

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Abstract:

This study aims to develop E-Module teaching materials for Correspondence subjects based on Project Based Learning and analyze the feasibility of E-Modules for Correspondence subjects based on Project Based Learning. This type of research is R&D which uses an adaptation of the 4D development model consisting of the defining stage (define), planning stage (design), and development stage (develop), but does not reach the dissemination stage. The results showed the acquisition of material expert validation scores of 86.81% classified as "Very Strong", language experts 90.55% classified as "Very Strong", and 81.11% of graphics experts classified as "Very Strong". The results of the students' response of 90.66% were classified as "Very Strong" and the teacher's response of 89.33% was classified as "Very Strong". Thus, this research, namely E-Modules for Correspondence subjects based on Project Based Learning, is suitable for use in learning and is expected to achieve the learning objectives that have been set.

Keywords: E-Modules, Correspondence Subject, *Project-Based Learning*

INTRODUCTION

The quality of human resources can be measured by looking at the quality of education in the country, therefore the government continues to strive to improve the quality of education in Indonesia in preparation for future changes. Teachers include human resources that are very important to support educational efforts in meeting the needs of the industrial world (Wulandari et al., 2020). Teachers as educators have an active role in improving the quality of education, one of the efforts that can be made by teachers is by guiding and facilitating the needs of students in the learning process. In line with current technological developments, teachers are required to adapt to technology to develop knowledge, because the sophistication of current technology makes it possible to support the creation of interesting, active, and flexible learning (Oksa & Soenarto, 2020).

One of the uses of technology in education is the presentation of teaching materials such as E-Modules for student learning resources. E-Module is one of the electronic or non-print teaching materials that is useful as a supporting tool for learning activities which contains material, methods, and evaluations that are systematically arranged to achieve the expected competencies (Iklina & Fadilah, 2022). The use of E-Modul Flip PDF Corporate Edition is one application that can be utilized to create digital teaching materials such as E-Modules (Khoiriyah et al., 2022). The way this application works is by converting PDF documents into flipbooks in HTML form or it can also be in the form of Android applications that can be accessed online or offline. The advantage of developing E-Modules using this application is that it has features such as adding text, images, audio, video, animation, and hypertext (Zinnurain, 2021). With Flip PDF Corporate Edition, teachers can insert material for a complete learning resource for students so that students do not need to look for material from outside the E-Module.

Based on an interview with the Correspondence subject teacher of ten-grade Automation Office Management Program (AOMP) 1 on Vocational High School 1 Jombang, information was obtained that in the learning process in class, the teacher used printed teaching materials from the school library and diktat made by the teacher himself. During this time, learning activities take place using the lecture method which occurs in one direction only so that students tend to be passive in class. Based on the results of interviews with students in ten-grade AOMP 1, some information was obtained, namely that students are only allowed to borrow textbooks from the school library, one book each for one table, while the distance between students' homes and their classmates is relatively far away. according to students, the material presented

in the textbook is still incomplete, such as in the Correspondence subject in the "Commercial Letters" chapter containing the types of commercial letters that are still few. Therefore, innovation is needed to develop interactive teaching materials that are favored by students by paying attention to the ease of students in obtaining teaching materials, and complete materials, and can hone students' abilities in mastering learning materials. The E-Module developed has been adapted to the project-based Based Learning-based learning model. The six-syntax contained in the Project Based Learning learning model uses several learning methods such as lectures, discussions, questions and answers, and demonstrations that involve communication between students and teachers to be more interactive, so it is expected to be a solution to the problem of passive students in the classroom.

Referring to the results of research conducted by (Oksa & Soenarto,C 2020) show the results that the project-based E-Module assisted by the Flip PDF Professional application in Basic Graphic Design subjects is very feasible and effective to use to increase the motivation of vocational students. Another study conducted by (Oksa & Soenarto, 2020) showed the results that the Project Based Learning-based E-Module based on FLIPHTML_5 was able to improve student learning outcomes. Based on the results of the above research, the use of E-Module teaching materials based on Project Based Learning is declared feasible and effective for use in the learning process.

The development of teaching materials in the form of E-Modules is expected to be an interesting learning resource for students by paying attention to the ease of students in obtaining teaching materials, and complete materials, and can hone students' abilities in mastering learning materials. This study aims to describe the process of developing E-Modules of Correspondence subjects based on Project Learning and determine the feasibility of E-Modules of Correspondence subjects based on Project-Based Learning.

METHODS

This research is a type of development research with the R&D (Research and Development) method. The R&D method is a research method used to produce a new product or improve existing products and test the effectiveness of these products (Sugiyono, 2015). The development process uses the 4-D development model developed by Thiagarajan in 1974 which consists of 4 stages, namely defining, designing, developing, and disseminating (Widodo, 2021).

Data collection instruments were obtained from validation questionnaires by material

expert validators, linguists, and graphic experts. This study also presents the results of interviews addressed to students and teachers majoring in AOMP. The product validity assessment is prepared based on an assessment instrument guided by BSNP (2014) as follows:

Table 1. Indicators

No	Indicators
Material Expert	
1	Content eligibility
2	Presentation feasibility
3	Contextual assessment
Language Expert	
1	Suitability to learners
2	Communicative
3	Dialogical and interactive
4	Straightforwardness
5	Conformity with language rules
6	Use of terms/symbols/icons
Graphics Expert	
1	E-Module size
2	E-Module cover design
3	E-Module content design

The validation questionnaire for the assessment of material experts, linguists, and graphic experts uses a Likert scale adapted from (Riduwan, 2015), based on the assessment criteria very suitable: 5, appropriate: 4, sufficient: 3, less: 2, very less: The data analysis technique in this study uses qualitative analysis techniques and quantitative analysis, then the data is described in descriptive form using descriptive analysis (Hermanto et al., 2022).

Qualitative data obtained from the results of the review sheet by experts in the form of written notes containing input and improvements that are useful for the perfection of the products developed. Then the quantitative data results were analyzed to obtain a percentage of feasibility using the following formula:

$$\text{Percentage of Eligibility} = \frac{\text{Total Score of all Validators}}{\text{Highest Score}} \times 100\%$$

Sources: (Riduwan, 2015)

The results of the calculation of the percentage of validation of material experts, linguists, and graphic experts are then grouped based on the assessment criteria on the Likert scale. Based on the results of the interpretation criteria obtained, the Project Based Learning-based Correspondence subject E-Module can be said to be feasible if it obtains a percentage result ≥61% with strong and very strong criteria.

Table 2. Criteria

Precentage	Interpretation
0%-20%	Very Weak

21%-40%	Weak
41%-60%	Enough
61%-80%	Strong
81%-100%	Very Strong

Sources: (Riduwan, 2015)

RESULTS AND DISCUSSION

Developing E-Module

The first stage is the defining stage which consists of several steps including initial analysis where researchers found information on Vocational High School 1 Jombang implementing the 2013 curriculum which centers students in their learning activities. This curriculum applies a scientific approach. However, so far the learning in the classroom has not shown a learning structure with a scientific approach pattern because it still uses a direct learning model with the lecture method. Learner analysis shows that students feel bored listening to the delivery of material from monotonous teachers and are burdened with many tasks. Learners only have printed books borrowed from the school library which are considered incomplete, so students more often add references by utilizing the internet as a learning resource. Task analysis is carried out by identifying structured assignments on Commercial Letter material including Project Based Learning assignments and independent assignments. Concept analysis is carried out by identifying the subject matter of learning the basic competencies of Commercial Letters which include: 1) definition of commercial letters, 2) functions of commercial letters, and 3) types of commercial letters. The formulation of learning objectives on the Commercial Letter material resulted in 1) being able to explain the definition of commercial letters, 2) being able to apply the preparation of commercial letters, 3) being able to analyze the composition of commercial letters, 4) being able to make commercial letters.

The second step is the design stage, which consists of several steps including media selection that is adjusted to the phenomenon of students who tend to use smartphones in their daily lives so that digital media is expected to support the use of smartphones for learning. In line with the opinion of (Pratita et al., 2021) that students tend to be interested in digital teaching materials because they prefer digital activities (reading, viewing, and listening to information) through smartphone or computer devices. The choice of E-Module format is adjusted to the module writing structure developed by BSNP (2014) and Depdiknas (2008). This e-module is composed of (1) the introduction section which includes: the front cover; preface; table of contents; instructions for using the e-module; and concept map. (2) the content section includes basic competencies: competency achievement indicators; material description;

material summary; project-based skills test; and competency test. (3) the closing section which includes: a glossary and bibliography. The design of teaching materials is made simple by utilizing the Canva application, the results of the design that have been designed are then developed into E-Modules with the help of the Flip PDF Corporate Edition application. The white base color was chosen because white reflects a pure color and gives the impression of freedom and openness, so it helps reduce pain and eye fatigue (Zharandont, 2015).

The third stage is the development stage (develop) consisting of several steps including the development of E-Modules using the Flip PDF Corporate Edition application. Putri & Slamet (2021) states that one of the advantages of the Flip PDF Corporate Edition application is that the author can insert images, hyperlinks, videos, and audio into the product he created. The resulting E-Module is still in HTML_5 format and needs to be converted into .apk format with the help of the Website 2 APK builder application. Next is the review and validation to measure the feasibility of E-Modules consisting of material expert validators, linguists, and graphic experts by Surabaya State University lecturers. Product revisions were made based on input and suggestions on the review sheet from the experts.

The fourth stage is the dissemination stage. This stage was not carried out in this study due to the limitations of researchers in disseminating E-Modules. According to Winarni (2018), the dissemination stage aims to spread products that have been tested on a wide scale, while the subject of this research is only limited to a small scale. Septiarini & Puspasari (2020) explain that the dissemination stage is carried out through the experimental stage first to determine the effectiveness of the products produced through effectiveness trials, while this study only used validity trials and limited trials to measure product feasibility.

Results of Material Expert Validation

The results of validation carried out by material experts were obtained at 86.81% which showed the interpretation of "Very Strong". The material expert validation was declared feasible with a note of revision by the input and suggestions for improvement, namely 1) clarifying the Project Based Learning syntax on the E-Module, 2) adding logos, signatures, and seals to examples of commercial letters. Furthermore, revisions were made as improvements to achieve product perfection based on input from material experts. The recapitulation of the material expert validation results is presented in the following table:

Table 3. Material Expert Validation Results

No	Aspek Penilaian	Persentase	Keterangan
1.	Kelayakan isi	88%	Sangat kuat

2.	Kelayakan penyajian	84,44%	Sangat kuat
3.	Penilaian kontekstual	88%	Sangat kuat
	Rata-rata persentase	**86,81%**	**Sangat Kuat**

Sources: (Researcher, 2023)

Based on Table 3, the presentation feasibility aspect obtained a lower percentage than other aspects, namely 84.44%. This is because the E-Module still does not emphasize the six-syntaxes of Project Learning so there is no differentiation with other learning modules. In addition, the examples of commercial letters in the E-Module look less official because the letter is not equipped with a company logo, signature of the letter sender, and stamp. So in this case the material expert provides suggestions to clarify the Project Based Learning syntax in the E-Module as well as adding logos, signatures, and seals to the examples of commercial letters.

Results of Language Expert Validation

The results of validation conducted by linguists were obtained at 90.55% which showed the interpretation of "Very Strong". The validation of this material expert was declared feasible with a note of revision in accordance with the input and suggestions for improvement, namely 1) pay attention to the writing of words that should be italicized such as words / sentences in foreign languages, 2) simplify the command sentence so that it is easier to understand. Furthermore, revisions were made as improvements to achieve product perfection based on input from linguists. A recapitulation of the mater expert validation results is presented in the following table:

Tabel 4. Hasil Validasi Ahli Bahasa

No	Aspek Penilaian	Persentase	Keterangan
1.	Kesesuaian dengan perkembangan peserta didik	100%	Sangat kuat
2.	Komunikatif	100%	Sangat kuat
3.	Dialogis dan interaktif	80%	Sangat kuat
4.	Kelugasan	86,66%	Sangat kuat
5.	Kesesuaian dengan kaidah kebahasaan	90%	Sangat kuat
6.	Penggunaan istilah/simbol/ikon	86,66%	Sangat kuat
	Rata-rata persentase	**90,55%**	**Sangat Kuat**

Sources: (Researcher, 2023)

Based on Table 4, the communicative aspect obtained a lower percentage than other aspects at 80%. This is because there is a waste of words in the directions or command sentences in the E-Module. So in this case the linguist provides advice to simplify the command sentence so that it is easily understood by students.

Results of Graphics Expert Validation

The results of the validation carried out by the graphics expert were obtained at 90.55% which showed the interpretation of "Very Strong". The material expert validation was declared feasible with a note of revision by the input and suggestions for improvement, namely 1) pay attention to the writing of words that should be italicized such as words or sentences in foreign languages, 2) simplify the command sentence so that it is easier to understand. Furthermore, revisions were made as improvements to achieve product perfection based on input from linguists. A recapitulation of the expert validation results is presented in the following table:

Tabel 5. Hasil Validasi Ahli Bahasa

No	Aspek Penilaian	Persentase	Keterangan
1.	Ukuran E-Modul	80%	Kuat
2.	Desain sampul E-Modul	83,33%	Sangat kuat
3.	Desain isi E-Modul	80%	Kuat
Rata-rata persentase		**81,11%**	**Sangat Kuat**

Sources: (Researcher, 2023)

Based on Table 5, in the aspect of E-Module size and E-Module content design, the percentage is lower than in other aspects, which is 80%. This is due to the placement of less proportional objects and the use of background colors with inconsistent text box colors that affect the focus of the reader. So, in this case, the graphic expert provides advice to pay more attention to the selection of color contrast and consistency of object proportions.

Theoretical Implications, Research Limitations, and Future Research

Based on the results of the assessment by material experts, linguists, and graphics experts, an average percentage of 86.15% was obtained, which when interpreted according to (Riduwan, c2015) is classified as a "Very Strong" category, so it can be concluded that the E-Module for Correspondence subjects based on Project Based Learning is suitable for use in learning. The recapitulation of the percentage results of the assessment by the validators is presented in table 5 below:

Tabel 5. Rekapitulasi skor validasi para ahli

No	Validator	Persentase	Keterangan
1.	Ahli Materi	86,81%	Sangat kuat
2.	Ahli Bahasa	90,55%	Sangat kuat
3.	Ahli Kegrafikan	81,11%	Sangat kuat
Rata-rata persentase		**86,15%**	**Sangat Kuat**

Sources: (Researcher, 2023)

Based on the validation results in Table 5, it shows that each assessment by expert validators is in the "Very Feasible" category. So, it can be said that the E-Module of Correspondence subjects based on Project-Based Learning is suitable for use in learning.

In agreement with (Amril & Thahar, 2022) and (Isnaini et al, 2021) which used expert judgment to test the feasibility of the product developed. In addition, the qualitative data generated from the review by experts is analyzed in depth and improvements are made according to the needs of the E-Module developed to suit the learning objectives achieved. This is in line with (Hermanto et al., 2022) which states that the results of input or suggestions from experts can be used as guidelines for the necessary improvements so that the E-Modules produced follow the learning needs of students. After the E-Module is declared feasible for use as teaching material by expert validators, the next step is to conduct trials with students in learning to get responses from students to the E-Module developed so that the advantages and disadvantages can be known directly in the learning process (Septiarini & Puspasari, 2020). So, in this case, the E-Module developed can be used with students in learning and is expected to improve the competencies possessed by class X AOMP students through the learning model that has been designed. Thus, it can be stated that the E-Module that has gone through the validation process and is declared feasible, then the E-Module has the potential to help achieve the expected learning objectives.

CONCLUSION

The development of E-Modules of Correspondence subjects based on Project Based Learning using the 4D development model which consists of four stages, namely the defining stage (define), the design stage (design), the development stage (develop), and the dissemination stage (disseminate) was not carried out in this study. This E-Module was declared "Very Feasible" by obtaining a percentage of 86.15% of the maximum score of 100%. The assessment of the material expert was 86.81%, the assessment of the linguist was 90.55%, and the grading expert was 81.11%. Thus, it can be concluded that the E-Module developed is declared valid and very feasible to use in learning and is expected to improve the competence of X AOMP class students and achieve the desired learning objectives.

This research is limited to feasibility testing through validity testing by validators consisting of material expert validators, linguists, and graphic experts. Thus, this development research requires follow-up to test the effectiveness of the product to students on a wider scale. In addition, it is necessary to expand the material by adding material according to the syllabus in one semester.

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