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Developing Project-Based E-Modules for Correspondence Subject

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Abstract:

This study aims to develop and analyze the feasibility of project-based e-modules for correspondence subjects. This study used an adapted Research and Development (R&D) model consisting of Define, Design, Development, excluding the dissemination stage. The findings of this study showed strong validation scores from material experts (86.81%), language experts (90.55%), and graphics experts (81.11%) categorized as "Very Strong". Furthermore, students' responses achieved a high rating of 90.66%, while teachers' responses was 89.33%, both classified as "Very Strong". Therefore, it can be concluded that Project-Based E-Modules for Correspondence subjects are feasible for use in learning and expected to achieve the learning objectives.

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

INTRODUCTION

The quality of human resources, which can be assessed by the standard of education in the country, drives the Indonesian government to improve education quality in preparation for future changes. Teachers are important human resources to support education in meeting industrial needs. (Wulandari et al., 2020). Teachers, as educators, play an active role in improving education quality by guiding and facilitating students' learning needs. Teachers must adapt to technology to improve knowledge in line with current technological developments because it creates engaging, dynamic, and flexible learning experiences.(Oksa & Soenarto, 2020).

Technology in education is widely used to present teaching materials, such as E-Modules for student learning resources. The E-Module, an essential electronic resource, systematically organizes materials, methods, and evaluations to achieve the expected competencies. (Iklina & Fadilah, 2022). The E-Modul Flip PDF Corporate Edition is one application that can be used to create digital teaching materials such as E-Modules (Khoiriyah et al., 2022). This application converts PDF documents into flipbooks in HTML or Android application formats, accessible online or offline. Its benefits include features like adding text, images, audio, video, animation, and hypertext to improve E-Module development. (Zinnurain, 2021). Using Flip PDF Corporate Edition, teachers can integrate all necessary materials within the platform, providing students with a comprehensive learning resource and eliminating the need for external material search outside the E-Module.

The interview with teachers teaching tenth grade students from Automation Office Management Program (AOMP) 1 at Vocational High School 1 Jombang found that printed teaching materials from the school library and self-made handouts are used in class. The teacher used traditional lecturing methods, making students passive in class. The students can only borrow one textbook per table from the school library, despite the distance between their homes and their peers' houses. According to students, the textbook content, particularly in the "Commercial Letters" chapter of the Correspondence subject, was incomplete, lacking in various commercial letters. Hence, there is a demand for innovative interactive teaching materials that prioritize accessibility, completeness, and the enhancement of students' mastery of the subject matter. The developed E-Module has been adapted to the Project-Based Learning model. This model consists of several learning methods, including lectures, discussions, Q&A sessions, and demonstrations, helping interactive communication between students and teachers, which is expected to solve the problem of passive students in the classroom.

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

Developing E-Modules as teaching materials aims to provide students an engaging learning resource, prioritizing ease of access and completion and increasing students' mastery of the content. This study aims to describe the process of developing Project-Based E-Modules for the Correspondence subject and determine its feasibility.

METHODS

The study used R&D (Research and Development) method to create new products, improve existing ones, and test their effectiveness. (Sugiyono, 2015). The development process used the 4-D development model developed by Thiagarajan in 1974, which consists of 4 stages: defining, designing, developing, and disseminating (Widodo, 2021).

Data were collected from validation questionnaires by material expert validators, linguists, and graphic experts. This study also presented the results of interviews conducted with students and teachers specializing in AOMP. The product validity assessment is prepared based on an assessment instrument guided by National Education Standards Agency (BNSP) (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 used to assess material experts, linguists, and graphic experts employed a Likert scale adapted from Riduwan (2015). The scale included ratings such as "very suitable" (5), "appropriate" (4), "sufficient" (3), "less" (2), and "very less." Data analysis in this study involved qualitative and quantitative techniques, followed by descriptive analysis to present the data in a descriptive form. (Hermanto et al., 2022).

Qualitative data were collected through the expert review sheet 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 validation results from material experts, linguists, and graphic experts are calculated as percentages and then categorized according to the assessment criteria on the Likert scale. Based on the interpretation criteria, the Project-Based E-Module for Correspondence subject is considered feasible if it achieves a percentage result of ≥61%, meeting the 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, known as the defining stage, consists of various steps, starting with initial analysis. In this phase, researchers examined the implementation of the 2013 curriculum at Vocational High School 1 Jombang, which emphasizes student-centered learning activities and employs a scientific approach. However, classroom learning has followed a direct instructional model, primarily through lecturing. Learner analysis showed that students felt traditional teaching methods as monotonous and boring, leading to disengagement. Moreover, students used incomplete printed books from the school library and frequently supplemented their

learning with online resources. Task analysis involved identifying structured assignments related to Commercial Letter materials, including both Project-Based Learning tasks and independent assignments. Concept analysis was conducted by identifying the subject matter of learning the basic competencies of Commercial Letters which includes: 1) defining commercial letters, 2) understanding the functions of commercial letters, and 3) recognizing the various types of commercial letters. Formulating learning objectives for Commercial Letter materials resulted in the following: 1) the ability to articulate the definition of commercial letters, 2) proficiency in preparing commercial letters, 3) skill in analyzing the structure of commercial letters, and 4) competence in crafting commercial letters.

The second step, known as the design stage, consists of several key steps, beginning with media selection based on students' frequent use of smartphones in their daily lives. As a result, digital media was chosen to meet with students' preferences for smartphone-based learning activities. Inline with Pratita et al., (2021) who found that students respond to digital instructional materials because they prefer to participate in digital activities such as reading, viewing, and listening on smartphones or computers. The format of the E-Module is adjusted to the structured module guidelines developed by BSNP (2014) and Depdiknas (2008), which include: (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 includes a glossary and bibliography. Teaching materials can be easily designed using the Canva application. The designs can then be transformed into E-Modules using 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, development, involves several key steps, beginning with creating E-Modules using the Flip PDF Corporate Edition application. According to Putri & Slamet (2021), one advantage of this program is its ability to include images, hyperlinks, videos, and music in the final product. The resulting E-Module remains in HTML_5 format and subsequently requires conversion into .apk format using the Website 2 APK builder application. After that, the E-Modules are examined and validated to determine feasibility by material expert validators, linguists, and graphic specialists facilitated by lecturers from

Universitas Negeri Surabaya. Product revisions are made in response to suggestions and feedback from the experts' review sheet.

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 distribute tested products on a wide scale, although the subject of this research is limited to a small scale. Septiarini & Puspasari (2020) explain that the dissemination stage typically involves conducting effectiveness trials to determine the actual impact and effectiveness of the products produced. However, in this study, only validity and limited trials were conducted to measure the feasibility of the product.

Results of Material Expert Validation

The validation results conducted by material experts were 86.81%, categorized as "Very Strong" interpretation. Despite the feasibility of material expert validation, revisions were suggested for improvement, including: 1) clarifying Project-Based Learning syntax within the E-Module, and 2) adding logos, signatures, and seals to examples of commercial letters. Furthermore, revisions were made as improvements to achieve product completion 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	Assessment Aspects		Criteria
1.	Eligibility of content	88%	Very strong
2.	Feasibility of presentation	84,44%	Very strong
3.	Contextual assessment	88%	Very strong
Average percentage		**86,81%**	Very strong

Sources: (Researcher, 2023)

Table 3 shows the feasibility factor obtained a lower percentage than other aspects, at 84.44%. The gap comes from the E-Module's failure to emphasize the six syntaxes of Project-Based Learning, which results in a lack of differentiation from other learning modules. Furthermore, the E-Module's examples of commercial letters are less professional because they lack corporate logos, sender signatures, and stamps. As a result, material experts recommend refining the syntax in Project based E-Module , including logos, signatures, and seals in commercial letter examples.

Results of Language Expert Validation

The validation results conducted by linguists were 90.55%, categorized as a "Very Strong" interpretation. Despite the feasibility of linguist validation, revisions were suggested for improvement, including: 1) paying attention to the correct formatting of words that should be italicized, such as words or sentences in foreign languages, and 2) simplifying command sentences for easier comprehension. Subsequent revisions were implemented to enhance the product based on linguists' feedback. The summary of linguist validation results is presented in the following table:

Table 4. Linguist Expert Validation Results

No	Assessment Aspects	**Percentage**	Criteria
1.	Suitability to student development	100%	Very strong
2.	Communicative	100%	Very strong
3.	Dialogic and interactive	80%	Very strong
4.	Straightforwardness	86,66%	Very strong
5.	Conformity with linguistic rules	90%	Very strong
6.	Use of terms/symbols/icons	86,66%	Very strong
Average percentage		**90,55%**	Very strong

Sources: (Researcher, 2023)

Table 4 shows that the communicative aspect obtained a lower percentage than other aspects at 80%. This lower score is attributed to inefficient words used in the directions or command sentences within the E-Module. Consequently, the linguist recommends simplifying the command sentences to facilitate better understanding for students.

Results of Graphics Expert Validation

The results of the validation conducted by the graphics expert were 90.55% categorized as "Very Strong" interpretation. Despite the feasibility of the graphics expert validation, revisions were suggested for improvement, including: 1) paying attention to the correct formatting of words that should be italicized, such as words or sentences in foreign languages, and 2) simplifying command sentences for easier comprehension. Subsequent revisions were made to improve the product based on the feedback received from the graphics expert. A summary of the expert validation results is presented in the following table.

Table 5. Linguist Expert Validation Results

No	Assessment Aspects	percentage	Criteria
1.	E-Module Size	80%	Strong
2.	E-Module cover design	83,33%	Very strong
3.	E-Module content design	80%	Strong
Average percentage		**81,11%**	Very strong

Sources: (Researcher, 2023)

Table 5 shows that E-Module size and E-Module content design obtained a lower percentage than other aspects at 80%. This is attributed to the placement of less proportional objects and the use of background colors with inconsistent text box colors, consequently affecting the reader's focus. Thus, the graphic expert recommends paying 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:

Table 5. Recapitulation of experts' validation scores

No	Validator	percentage	category
1.	Materials Expert	86,81%	Very strong
2.	Linguist	90,55%	Very strong
3.	Graphic Expert	81,11%	Very strong
Average percentage		**86,15%**	Very strong

Sources: (Researcher, 2023)

Table 5 shows that each assessment by expert validators categorized as "Very Feasible". Therefore, it can be concluded that the Project based E-Modules for Correspondence subjects b is suitable for use in learning.

In agreement with (Amril & Thahar, 2022) and (Isnaini et al, 2021), expert judgment was used to assess the feasibility of the developed product. In addition, the qualitative data collected from the expert review was analyzed, and improvements were made to align with the objectives of the E-Module and meet the learning needs. This approach is consistent with (Hermanto et al., 2022), which suggests using expert input or suggestions as guidance for necessary improvements to ensure that E-Modules align with student learning needs. Once the E-Module

is deemed feasible for use as teaching material by expert validators, the next step involves conducting trials with students to collect their responses and identify the advantages and disadvantages during the learning process (Septiarini & Puspasari, 2020). Thus, the developed E-Module can be integrated into student learning, aiming to improve the competencies of class X AOMP students through the designed learning model. Thus, an E-Module that has been validated and verified feasible to help achieve the expected learning objectives.

CONCLUSION

The development of the Project based E-Module for Correspondence subjects, 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. Despite this, the E-Module was categorized as "Very Feasible," achieving a score of 86.15% out of a maximum score of 100%. The assessment scores from material experts, linguists, and graphic experts were 86.81%, 90.55%, and 81.11%, respectively. Consequently, the developed E-Module is considered valid and highly feasible for use in learning and can potentially improve the competencies of class X AOMP students and achieve the expected 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 product's effectiveness 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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