

## **Improving Vocational School Student's Autonomous by Using E-Module Based on Predict Observe Explain (POE)**

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**Abstract:** The development of science and technology encourages the education sector in Indonesia to continue to innovate in learning activities. Teachers are required to be innovative and creative in creating an attractive learning environment. This study aims to produce an e-module product based on Predict Observe Explain (POE), determine the feasibility level of an e-module based on Predict Observe Explain (POE), and determine the level of student learning independence. This study adapted the Borg and Gall research steps by simplifying it into seven research steps. The e-module feasibility test was carried out by module experts and content experts. Product trials were carried out on students of vocational high school taking Office Automation Major in Archives Management subjects. The results showed that the e-module product developed was declared valid or feasible to be used as a student learning resource, and the results of the student product trial provided interesting criteria and made it easier to understand the material, the learning outcome test resulted in very high learning autonomy criteria.

**Keywords:** E-module, learning autonomy, predict observe explain, vocational school

### **INTRODUCTION**

Today's rapidly advancing science and technology have a tremendous impact on all aspects of human life. The education sector is one of them; this provides potential for the education sector in Indonesia to improve the dynamism of learning activities by providing students with novel learning resources that can be accessed anywhere and at any time (Suyoso & Nurohman, 2014). E-Module is an innovative form of media-based learning materials that emphasizes student learning autonomy (Malik et al., 2020).

Autonomous learning is a learning activity whose actions are determined by the learner's own will, choices, and responsibilities (Dimiyati & Moedjiono, 2006). According to (Munir, 2009), independent learning is the process of a person determining his or her own learning activities. Having students studying independently, the function of the teacher will transform from information provider to facilitator. According to (Goodman & Smart, 1995), there are three components of learning independence: 1) Independence which is defined as self-directed behavior, does not demand direction from others. 2) Autonomy establishes the right to care for oneself or the disposition to act in a free and creative manner. 3) Self-Reliance is a belief in oneself-based activity.

E-module is a package of digital learning resources that is systematically organized and used for independent learning since the module incorporates instructions and methods for students to engage in independent learning (Widiana & Rosy, 2021). In accordance with previous study (Santosa et al., 2017), e-modules

can be utilized to train students' autonomous learning, as students are forced to understand and solve issues or phenomena on their own.

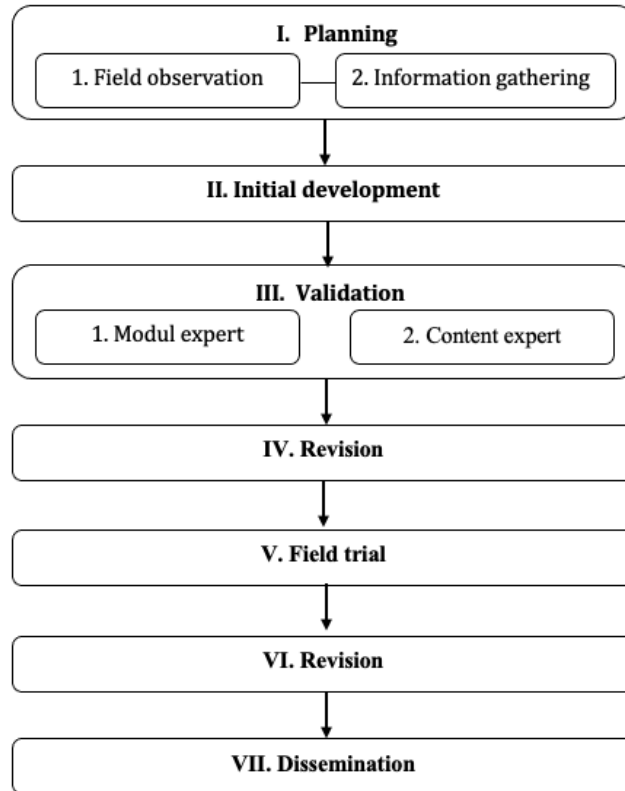
Currently, student learning independence is low, according to (Bungsu et al., 2019), since there are still many students who depend on teachers, students tend to be passive in learning activities, and students lack the initiative to study independently. In addition, there are still many students who rely on their peers to accomplish teacher-assigned activities. Based on the observations and interviews that the researcher conducted with the Archives subject in Class X SMK Muhammadiyah 2 Pagak, it was determined that: (1) Archival learning activities in class X were still teacher-centered learning; (2) In learning, students only relied on the summary material given by the teacher at class X. every meeting; (3) the students' learning independence is lacking, it is known because every time a learning activity begins, almost all students do not participate independently; and (4) the students' learning motivation is low.

Independence in learning is crucial because it fosters student drive to continue studying, which in turn influences student learning accomplishment (Matsani & Rafsanjani, 2021). There are numerous reasons for the significance of student learning independence, and the K-12 curriculum requires that students be able to solve classroom problems without relying on others. Teachers must seek to implement learning models that promote student learning freedom in recognition of its significance (Fahrdina et al., 2014).

To attain student learning independence, it is vital to create an atmosphere and learning environment that fosters an engaging learning process, and to employ a learning model that actively engages students. The Predict Observe Learning (POE) learning approach stresses how students autonomously construct and discover new knowledge (Matsani & Rafsanjani, 2021). According to (Safitri & Suputra, 2015), the Predict Observe Explain (POE) learning model can increase student learning activities because it can simultaneously apply three abilities throughout each meeting and enable students learn independently. The POE learning paradigm has the advantage of addressing three key tasks for students: predicting a phenomenon by exploring their own knowledge, observing to discover the truth, and explaining predictions using observations collected as concept reinforcement (Budiarni, 2008). Thus, it can encourage students to think critically and independently discover topics. Therefore, the researchers attempted to construct an e-module for the Archives subject based on predict observe explain (POE).

## **METHODS**

This research employed a Research and Development (R&D) approach which aims to produce e-module product, and test its effectiveness. The steps of the procedure in this study were adapted from the steps of the Borg and Gall research model and it was modified into seven main stages as shown in Figure 1.



**Figure 1.** Research Procedure

As a validator to assess the viability of e-modules, module experts conducted validity tests on issues such as curriculum conformance, accuracy of use of learning methods, correctness of presentation of learning assessments, and display consistency. The content expert verified the conformance with the curriculum, the suitability of the material's substance, the use of language, and the precision of the learning evaluation's presentation. For the purpose of determining the value of the validation score, a questionnaire with five alternatives was used: highly suitable, suitable, fairly suitable, less suitable, and not suitable. The collected score results were then processed according to the following formula:

$$\text{Percentage} = \frac{\text{Total score obtained}}{\text{Maximum total score}} \times 100\%$$

The quantitative score data from expert validation was then converted into qualitative values with the eligibility criteria as shown in Table 1.

**Table 1.** Validation Criteria

Scale (%)	Degree of Validity
85.01 - 100.00	Very Valid
70.01 - 85.00	Valid
50.01 - 70.00	Less Valid
01.00	Not Valid

Source: (Akbar, 2013)

According to the table, if the validation results reach 70.01 percent, the e-module can be verified and utilized as a learning resource for Archives

Management subjects after the product has been revised. At the level of product evaluation, students examine characteristics such as material, language, usage, and display. The evaluation utilizes a closed-ended questionnaire with the following alternatives: very good, good, good enough, less good, and poor. The quantitative value data derived from student responses are converted into qualitative ratings using the criteria outlined in Table 2.

**Table 2.** Attractiveness Criteria Scale

Quality Score (%)	Criteria
90 - 100	Very interesting
70 - 89	interesting
50 - 69	Less interesting
0 - 49	Not interesting

Source: (Akbar, 2013)

For the purpose of measuring the level of student learning autonomy, a closed-ended questionnaire with five response options was utilized as follows: highly agree, agree, fairly agree, disagree, and strongly disagree. Aspects of independence, self-confidence, sense of responsibility, initiative, learning pace, usefulness, and the capacity for self-reflection are evaluated. The obtained score results were calculated using the following formula:

$$\text{Percentage} = \frac{\text{Total score obtained}}{\text{Maximum total score}} \times 100\%$$

The quantitative value data is then converted to a qualitative assessment based on the Table 3 independence criteria. In this study, the success level of student learning independence is achieved if it reaches a success rate of more than 75%.

**Table 3.** Autonomy Criteria Degree Scale

Accomplishment Degree (%)	Autonomy Degree
≥ 80	Highly autonomous
75 - 79	Autonomous
70 - 74	Less autonomous
65 - 69	Not autonomous

Source: (Aqib, 2009)

## RESULTS & DISCUSSION

### Development Results

The product produced in this research is an e-module based on Predict Observe Explain (POE) in Archives. The following is a display of the e-module products that have been developed (see Figure 2).

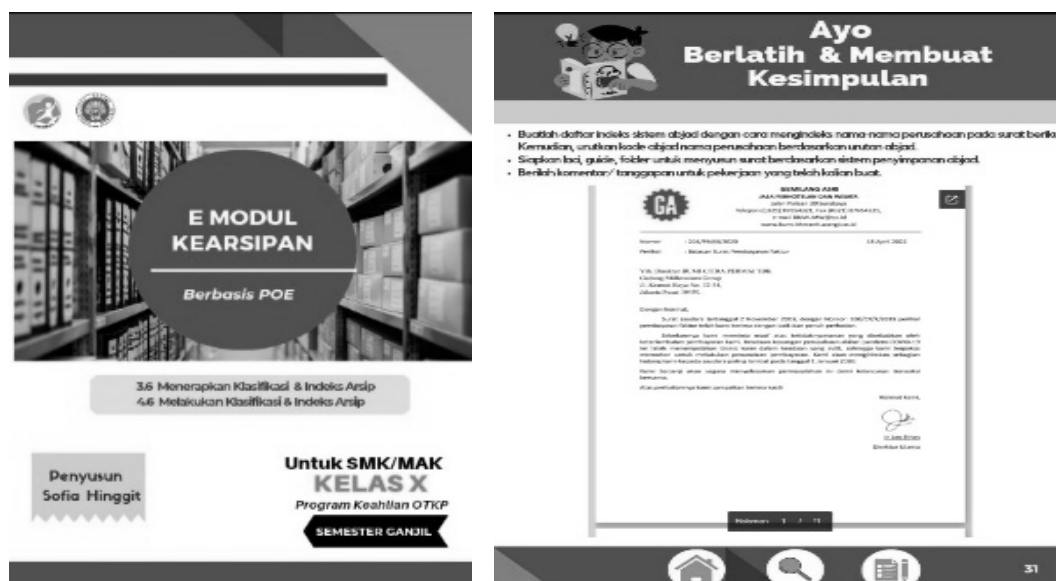


Figure 2. E-Module Cover and Content Illustration

The specifications of the e-module developed are as follows: (1) The e-module contains some Archives Management subject including Basic Competence 3.6 Applying classification and archive index, and Basic Competence 4.6 Performing archive classification and index. (2) The learning activities in the e-module are presented based on the steps of the Predict Observe Explain (POE) learning model. (3) E-module is stand alone (does not require other applications to run). The e-module can be accessed online via a browser or the Canva application available on a smartphone. (4) There are three menus that can be used as follows: home menu, table of contents, and competency test. (5) The e-module is equipped with instructions for use. (6) E-modules are equipped with videos and pictures. (7) There are practice questions given at the end of each learning activity or at the stage of practicing and making conclusions. (8) At the end of the learning activity there is a competency test for students in the form of multiple choice which is directly connected to the google form. (9) In the closing section there is a glossary, reference list, and author's biography.

In the preparation of this e-module referring to, and following the development steps contained in the electronic module development guidelines according to (Depdiknas, 2010). Based on the characteristics of the MoNE electronic module, this product can be said to qualify as an e-module and can be used by students in learning activities. In addition to fulfilling the characteristics, the researchers equipped the e-module with an inspirational wall filled with motivational words. Also, videos and learning exercises are presented directly (not using links) so there is no need to open another browser. This is what makes this e-module different from other e-modules.

The results of this research and development are strengthened by previous research conducted (Anggaraeni & Winarno, 2021) which states that e-modules can encourage student learning independence and create a pleasant learning atmosphere. In addition, other studies also mention that POE-based e-modules are effective in increasing students' learning independence (Kumalasari et al., 2017).

### Validation results

The e-module that has been developed has passed the validation stage by module experts and content experts to find out whether the e-module in terms of material and appearance is suitable for use before being tested on students. The validation data from the experts are as shown in Table 4.

**Table 4.** Expert Validation Results

Validation	Percentage	Criteria
Module Expert	81,33%	Valid
Content Expert	80%	Valid
Average	80,66%	Valid

Table 4 indicates that 81.33 % of module expert validation criteria are valid, whereas % of content expert validation criteria are valid. The average percentage achieved from the two validations was 80.66 %. The validation conducted by module and media specialists yielded comments and suggestions, such as: enhancement of text tidiness, visual clarity, and full articulation of learning objectives in e-modules. The researchers utilized feedback and ideas to enhance the e-module prior to testing it on students. On the basis of the validation results, it is determined that the e-module is valid and feasible for use by students in learning activities.

From the test results to students X OTKP 3, a total of 28 students achieved an average score of 86.27 %, based on intriguing criteria. Students gave the POE-based e-module a positive reaction. Students' smartphones can be used to access the e-module, which makes it user-friendly and practical, according to the comments and suggestions gathered from the questionnaire. Moreover, because e-modules may be accessed anywhere and at any time, they are believed to be of great benefit to students engaged in learning activities, particularly outside of the classroom. To access the e-module, for example, a steady internet connection was required because the process would take longer if the available internet connection was shaky. Therefore, ensure that users have access to a stable internet network so that they may swiftly and easily access the e-module (see Table 5).

**Table 5.** User Interface Assessment Results

Aspect	Percentage	Criteria
Content	85%	Interesting
Language	87.14%	Interesting
Usage	84.76%	Interesting
Presentation	88.21%	Interesting
Average	86.27%	Interesting

Based on the validation results of module experts, subject experts, and student trials, it can be concluded that the e-module based on Predict Observe Explain (POE) is suitable for use as a learning resource in Archives for class X OTKP students and can assist student learning activities. The validation results are supported by research (Oktaviara & Pahlevi, 2019) which indicates that the produced e-module is highly valid and practicable as a source of student learning based on validation from experts and trials. This is consistent with study (Widyowati, 2018) indicating that,

based on student evaluations of e-modules, students receive a very good grade and are highly enthusiastic and encouraged to comprehend the topic.

### **Student Learning Independence Level**

In accordance with the purpose of making an e-module based on Predict Observe Explain (POE), which is to improve and encourage student learning independence, based on the student learning independence questionnaire, the following scores were obtained in Table 6.

**Table 6.** Student Learning Autonomy Results

<b>Aspect</b>	<b>Percentage</b>	<b>Criteria</b>
Autonomy	84.04%	Very High
Confidence	83.92%	Very High
Responsibility	83.92%	Very High
Initiative	83.57%	Very High
Learning Pace	81.78%	Very High
Usability	84.28%	Very High
Reflection	87.5%	Very High
Average	84.14%	Very High

In accordance with the data presented in Table 6, 84.14 percent of students demonstrate high levels of learning autonomy. This demonstrates that e-modules based on the PEO can promote and improve student learning autonomy. This is consistent with research (Kismati, 2020) indicating that e-modules have a considerable impact on student learning autonomy, particularly in terms of initiative. Similar to the research completed (Karimah, 2021), a questionnaire resulted in a high score for learning independence, and e-modules are utilized effectively to promote student learning autonomy. According to (Rahmawati, 2014), based on the findings of field testing, the use of e-modules can encourage and increase high school students' learning autonomy. According to another study, the development of e-modules led to a considerable improvement or change in the learning autonomy of moderately independent students (Mulyasari & Sholikhah, 2021).

A high average score was reached based on the validation results of module experts, subject matter experts, trials and assessments of the level of student learning independence. These findings suggest that the e-module based on Predict Observe Explain (POE) in Archives Management subject is an appropriate learning resource for class X OTKP students, and that the e-module may be used to solve the problem of the lack of student learning resources.

## **CONCLUSIONS**

This development research produced an e-module product based on Predict Observe Explain (POE) for class X OTKP Archives Management subject, with e-module specifications comprising information for applying and executing archive classification and indexing. Using the Predict Observe Explain (POE) learning methodology, the e-module is offered. There is a test of competency and an

evaluation of learning. The e-module includes an instructional video. Based on the validation of module experts and content experts, scores were acquired in a valid category, and based on student feedback, the e-module is included in a category that is interesting to use. The results of the student learning independence survey indicated that the level of student learning independence has reached the extremely independent level. Therefore, the proposed E-module is appropriate for application in student learning activities and can promote and enhance student learning autonomy.

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