

## **Canva-Based Adaptive Electronic Module on History Subject of Senior High School Using the ASSURE Model: A Developmental Study**



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**ABSTRACT:** This study aims to determine the results of expert validation and the level of effectiveness of learning history using Canva-based adaptive electronic modules with the application of the ASSURE model in collaboration with learning technology. This research is classified as research and development, in which pre-test and post-test were carried out to 36 students of the tenth grade to be able to find out the level of effectiveness of the product being developed. Data analysis techniques used involved paired statistics, paired correlation, paired sample t-test and normality test. Based on the T-test in the small group test, it is known that the t test value was 25.31 (df = 8) and the t test value in the large group was 58.14 (df = 35) with a significance value of 0.00. The significance value was smaller than the 5% confidence level threshold value ( $0.00 < 0.05$ ) so it can be concluded that there was a significant difference between the pre-test and post-test in the small and large group tests. Based on the results of learning using Canva-based adaptive e-modules, it can be used as a learning resource for students. This is evidenced by an increase in learning outcomes in small groups with an effectiveness value of 0.98 with high effectiveness qualifications and the results of large group trials with an effectiveness value of 0.97 with high effectiveness qualifications. Based on these results, it can be concluded that there is an increase in student learning outcomes after using Canva-based adaptive e-modules as a source of learning.

**KEYWORDS:** Electronic Modules, Adaptive Learning, Intructional Technology, Learning History

### **INTRODUCTION**

In the 21st century, educators and students are required to be able to adapt to the challenges of the times in the era of globalization [1]. There are 4 basic skills as demands in the 21<sup>st</sup> century era which include critical thinking, communication, collaboration, and creativity [2]. These challenges will become a problem if it is not addressed by adapting the skills needed to answer these demands [3]. The existence of collaboration through technology can increase student interaction, learning engagement, thinking skills, and it can increase the flexibility and diversity of their educational experience [4]. In other words, the current generation is required to be able to have digital competence, technology and media literacy. Utilization of educational technology is very useful to improve the quality of students in developing knowledge in the digital era. Technology education in a broad sense is knowledge and competence to improve an educational process [5]. The existence of technology makes students easier to learn since it can facilitate and add to the students' learning experiences [6]. According to the European Union's digital education action plan book, digital technology, when used skillfully, equitably and effectively by educators, can fully support a high-quality and inclusive education for all students.

Learning history in its application still has problems, including (1) the lack of availability of textbooks as learning materials for students; (2) there are educators who are passive towards changes in learning styles following the globalization era; (3) the learning methods taught are less attractive for students; (4) curriculum changes often occur resulting in changes in the substance of learning; (5) the lack of positive attitudes of students towards learning history [7]. Other problems faced by educators are (1) educators have difficulty in compiling complete learning tools; (2) the minimum completeness criteria have not been maximally achieved; (3) educators do not understand learning models that are in accordance with the curriculum [7].

The results of the students' performance analysis conducted in 3 schools namely SMAN 1 Genteng, SMAN 1 Gambiran, and SMAN 1 Glenmore showed the following results: (1) 42.20% of the obstacles faced during learning are difficulties in remembering learning material; (2) 44.04% of teaching materials used by educators mostly use worksheets; (3) 29.36% lack of facilitated learning resources; (4) 57.80% of the methods used by educators are mixed methods; (5) 35.78% the learning method used is less enjoyable;

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(6) 40.37% of the media used in learning uses visual media; (7) 45.87% of the learning media used are less attractive; (8) 41.28% of the instruments applied in learning use multiple choice; (9) 38.53% of the instruments used were lacking in assessing psychomotor skills; (10) 44.04% in learning using the inquiry model; (11) 33.94% of the learning model used is monotonous. The results of the analysis of the lesson plan show that the integration of technology used by educators to support learning media mostly still uses ppt and video only, assessment for learning using students worksheet.

Based on the aforementioned performance analysis, as well as the demands of the 21st century, it is important to develop teaching materials for history learning that are adaptive with the integrated technology. Based on the percentage of the previous studies that 44.04% of educators still use teaching materials in the form of worksheets and textbooks. The integration of technology, information and communication in education in general means a technology-based teaching and learning process that is closely related to the use of learning technology in schools [8]. Collaboration through the integration of technology and learning will facilitate students in the process of receiving material information so that it is expected to increase the effectiveness of learning. The learning style of the current generation tends to be autonomous in learning everything. The fact that young people who are self-direct is reflected in the many online tutorials. The learning characteristics of Generation Z are ambitious, independent and focused on self-development [9]. This indirectly has become a learning style that is liked by generation Z. In this regard, the use and integration of adaptive technology can help them in learning

Adaptation is not a new phenomenon in the world of education, good educators will always adapt to the needs of their students by modifying the learning content that will be presented [10]. Integration of learning styles in learning can lead to an intelligent and adaptive learning system, so that it can adjust content to ensure faster and better performance in the learning process [11]. Adaptive learning is learning that refers to the ability of students to be able to solve problems. Adaptation is not only done to face challenges all the time, but also to face the various differences that exist in the school environment [12]. Thus, adaptive learning can help educators to present learning content that is adapted to student learning styles. Additionally, it has been shown to increase learning effectiveness [13]. Adaptive learning itself refers to online instruction methods that involve providing personalized learning experiences from a data-driven approach to curriculum design [14].

Problems in the world of history education can be solved with adaptive historical teaching solutions, according to the conditions and development of students [15]. One of the innovations that can be used to create interesting history lessons is to use adaptive teaching materials. Adaptive e-modules can help to support the efforts of education units to be able to apply teaching materials that are integrated with technology supported by audio-visual features so that students can easily understand learning. Adaptive learning is a learning approach that utilizes technology to create personalized learning experiences for students [16]. Electronic modules are modules in electronic format that can be operated with a computer or Android and can also display animation, images, text and video via electronic devices. The development of e-modules will be packaged using Canva platform which is designed to develop adaptive e-modules and be integrated using the ASSURE model since it is based on the characteristics of this model which places more emphasis on the concept of using technology so that it makes it easier to develop rich learning experiences.

### METHOD

This research was research and development, involving the process of researching consumer needs and then developing products to meet those needs. This research was intended to produce Canva-based adaptive e-modules on history subject for the tenth grade of senior high school using the ASSURE model (analyzing learner characteristic; stating performance objective; selecting methods, media and material; utilizing methods, media and materials; requiring learner participation; evaluating and revising). Data analysis techniques used were qualitative and quantitative techniques. The data collection used in this research was observation and questionnaire. The subjects of this study consisted of 1 history educator and 36 tenth grade students of Senior High School in Glenmore. Qualitative analysis techniques were obtained from observations, expert advice, documentation, and questionnaires. Quantitative data analysis techniques were obtained from the results of the expert validation questionnaire and the data from the pre-test post-test results to determine the level of effectiveness of the application of electronic modules. The formula used to calculate the results of the questionnaire from the field of study validation, language experts, media experts and learning design in adaptive electronic modules is as follows:

$$P = \frac{\sum x}{\sum x_i} \times 100\%$$

Information:

P : presentation

$\sum x$  : the total number of respondents' answers

$\sum x_i$  : total ideal value of 1 item

100% : constant

(Cohen, Manion, & Morrison, 2018) [17]

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Based on the obtained data, it showed the quality of the adaptive e-module being developed. The following are the eligibility criteria for the product being developed.

**Table 1. Product Eligibility Criteria**

Average score	Classification	Conclusion
85%-100%	very good	no need for revision
75%-84%	good	no need for revision
65%-74%	fairly good	revision
55%-64%	not good	revision
0%-54%	very poor	revision

**Source:** Cohen, Manion, & Morrison (2018) [17]

Evaluation of relative effectiveness was carried out to see if adaptive e-modules can increase the effectiveness of student learning. At this stage, the assessment was taken based on the results of the pre-test and post-test scores of students from small and large groups using Canva-based adaptive e-module products with the ASSURE model. The following is a formula for calculating relative effectiveness using eta squared.

$$\text{Eta Squared} = \frac{t^2}{t^2 + (N-1)}$$

Information:

t = t-value

N = number of samples

(Pallant, 2007: 240) [18]

**Table 2. Criteria for Testing Effectiveness**

Value	Classification
0,01	Small Effect
0,06	Moderate Effect
0,014	Large Effect

**Source:** (Pallant, 2007: 240) [18]

## RESULT AND DISCUSSION

### Validity Trial Results

#### a) Material expert validation

The analysis was used to determine the feasibility level of the material content of the product developed. The results of the field of study expert validation values are obtained as follows.

$$P = \frac{99}{105} \times 100\% = 94,4\%$$

Based on the results of the expert assessment of the Canva-based adaptive e-module, a percentage of 94.4% was obtained. If it was adjusted to the product feasibility qualifications, it showed that the result from the validation of experts in the field of study of the products developed was in the "very good" category and did not need to be revised.

#### b) Language expert validation

The data analysis contains a description of the results of the assessment that was carried out by the linguist validator on Canva-based adaptive e-modules. The result of this analysis was used to determine the level of language feasibility of the products developed. The results of the linguist validation values obtained are as follows.

$$P = \frac{43}{50} \times 100\% = 86\%$$

Based on the results of the language expert's assessment of Canva-based adaptive e-modules, a percentage of 86% was obtained. When adjusted for product feasibility qualifications, it showed that the result of the linguist validation of the products developed was in the "very good" category and did not need to be revised.

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### c) Design expert validation

The data analysis contained a description of the result of the assessment that had been carried out by the design expert validator on Canva-based adaptive e-modules. The result of the analysis was used to determine the level of design feasibility of the products developed. The results of the design expert validation values are obtained as follows.

$$P = \frac{56}{60} \times 100\% = 93,3\%$$

Based on the results of the design expert's assessment of Canva-based adaptive e-modules, a percentage of 93.3% was obtained. If it was adjusted to the product feasibility qualifications, it showed that the result of the design expert validation of the products was in the "very good" category and did not need to be revised.

### Product Trial Results

The development of adaptive e-module products that had passed expert validation (material, language, and design) was then tested on educators as users of adaptive e-module products. The product trial stage for educators aimed to determine whether the quality of the product being developed can increase the effectiveness of student learning.

#### a) Educator user trials

Data analysis covers the assessment result obtained from educators as user tests for Canva-based adaptive e-module products. The result of the analysis was used to determine the feasibility level of the product that had been developed. The assessment result obtained from the educator user test are as follows.

$$P = \frac{46}{50} \times 100\% = 92\%$$

Based on the results of the user test assessment of Canva-based adaptive e-modules, a percentage of 92% was obtained. When adjusted for product eligibility qualifications, it showed that the results of user test validation of products that had been developed fall into the "very good" category and did not need to be revised.

#### b) Small group trials

The small group trial phase was carried out after passing the user trial stage to educators. In this small group trial, it was carried out involving 9 students. At this stage, the developer used Canva-based adaptive e-modules in the implementation of class X learning to determine the level of effectiveness of students' history learning.

**Table 3. Results of Paired Statistics**

Score	Means	std. Deviation
Pre test	44,44	6,14
Post test	85,78	5,69

Based on table 4.10, it is known that the average pre-test value was 44.44 (Std. Deviation = 6.14) and the post-test was 85.78 (Std. Deviation = 5.69). The average value of the post test was greater than the pre test value in the small group test.

**Table 4. Paired Sample T-Test Results**

t value	Df	Sig. Value
-25,31	8	0,00

Based on table 4, it is known that the t test value was 25.31 (df = 8) and a significance value of 0.00. The significance value was smaller than the 5% confidence level threshold value (0.00 < 0.05). Thus, it can be concluded that there was a significant difference between the pre-test and post-test values in the small group test. The formula used to analyze the relative level of effectiveness in the use of adaptive e-modules applied to small groups is presented as follows:

$$\begin{aligned} \text{Eta Squared} &= \frac{t^2}{t^2 + (N-1)} \\ &= \frac{25,31^2}{25,31^2 + (9-1)} \\ &= \frac{640}{640 + (8)} \end{aligned}$$

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$$= \frac{6,40}{6,48}$$

$$= 0,98$$

Based on the results of the relative effectiveness test using the eta squared formula in small groups, a value of 0.98 was obtained. If adjusted according to the qualifications table, the Canva-Based Adaptive E-module product in History Subject of the tenth grade with the ASSURE Model was included in the “Large Effect” category or high effectiveness. It can be concluded that the product developed has succeeded in increasing the effectiveness of learning history.

### c) Large group trials

This large group test phase was carried out after passing a series of small group tests, and used a larger number of subjects. The large group test was conducted on a limited basis, namely SMA Negeri 1 Glenmore Banyuwangi and involved 36 students from the tenth grade of IPS 6. At this stage, the developer carried out learning using Canva-based adaptive e-modules in history subjects for the tenth grade to determine the level of effectiveness of learning history. This effectiveness can be seen from the results of the pre-test and post-test that have been carried out by students.

**Table 5. Paired Statistics Results**

Score	Means	std. Deviation
Pre test	46,00	6,16
Post test	86,56	5,25

Based on table 5, it is known that the average pre-test value was 46.00 (Std. Deviation = 6.16) and the post-test was 86.56 (Std. Deviation = 5.25). The average value of the post test was greater than the pre test value in the large group test. Thus, it can be concluded that there was an increase in the value of knowledge of students (large group) after using Canva-based adaptive e-modules in history subject.

**Table 6. Paired Sample T-Test Results**

t value	Df	Sig. Value
-58,14	35	0,00

Based on table 4.17, it is known that the t test value was 58.14 (df = 35) and a significance value of 0.00. The significance value was smaller than the 5% confidence level threshold value (0.00<0.05). Thus, it can be concluded that there was a significant difference between the pre-test and post-test values in the large group test.

The formula used to analyze the relative level of effectiveness in the use of adaptive e-modules applied to large groups is presented as follows:

$$\text{Eta Squared} = \frac{t^2}{t^2 + (N-1)}$$

$$= \frac{t^2}{t^2 + (N-1)}$$

$$= \frac{-58,14^2}{-58,14^2 + (9-1)}$$

$$= \frac{3,38}{3,38 + (8)}$$

$$= \frac{3,38}{3,46}$$

$$= 0,97$$

Based on the results of the relative effectiveness test using the eta squared formula in large groups, a value of 0.97 was obtained. If adjusted according to the qualifications table, the Canva-Based Adaptive E-module product in history subject of the tenth grade with the ASSURE Model was included in the “Large Effect” category or high effectiveness. It can be concluded that the product developed has succeeded in increasing the effectiveness of learning history.

This research is reinforced by the analysis of the problems that have been carried out in three schools with the aim of identifying the basic problems encountered in learning history. So it is necessary to develop innovative sources of adaptive teaching materials based on Canva because they are based on conventional teaching materials used by educators. Canva-based adaptive e-module development with the ASSURE model can be an adaptive learning innovation to be able to solve major problems in learning history. Adaptive learning is learning that refers to the ability of students to be able to solve problems.

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Adaptation is not only done to face challenges all the time, but also to face the various differences that exist in the school environment [12]. Adaptive e-modules can help to support the efforts of education units to be able to apply teaching materials that are integrated with technology supported by audio-visual features so that students can easily understand learning. Adaptive learning is a learning approach that utilizes technology to create personalized learning experiences for students [16]. Adaptive learning is a learning process by adjusting the conditions, needs and environment of students so that there is mastery of knowledge, attitudes and skills. The adaptive process is carried out by measuring student learning patterns and considering them in the process of designing learning. The role of educators in utilizing technology as a learning medium will also influence the occurrence of a fun learning process and make learning more lively because there are many new things for students to learn [19]. Thus the adaptive e-module can be said to be an e-module that is effective in learning because it has been able to solve existing problems in the three schools based on the results of the effectiveness of small group and large group tests.

### CONCLUSION

The electronic module has gone through the validation stages of study experts, language experts, and design experts and has been properly validated. The results of the validation of experts in the field of study reached a percentage of 94.4% with very good qualifications, the validation of language experts reached a percentage of 86% with very good qualifications, and the results of validation of learning designs reached a percentage of 93.3% with very good qualifications. The e-module product has gone through the user trial stage and the results of the trial reached a percentage of 92% with very good qualifications. In the small group trials involving 9 students, the average pre-test score was 44.44 (Std. Deviation = 6.14) and the post-test was 85.78 (Std. Deviation = 5.69). The average value of the post test was greater than the pre test value in the small group test. Thus, it can be concluded that there was an increase in the effectiveness of students (small groups) after using Canva-based adaptive e-modules in history subject. In the large group test involving 36 students showed an average pre-test score of 46.00 (Std. Deviation = 6.16) and the post test was 86.56 (Std. Deviation = 5.25). The average value of the post test was greater than the pre test value in the large group test. Thus, it can be concluded that there was an increase in the effectiveness of the value of knowledge on students (large group). In the relative effectiveness test using the eta square formula, a value of 0.98 in the small group was obtained and in the large group, a value of 0.97 was obtained. It can be concluded that the e-module product occupied the qualification of "Large Effect or high effectiveness".

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