



E-Module: Online Learning Media for Economics Learning in Senior High School

Topit Tora^(✉) and Rino

Faculty of Economic, Universitas Negeri Padang, Padang, Indonesia
topittora@gmail.com

Abstract. This study aimed to develop the E-Module, which is a Google Sites-based online module to increase students' achievement in senior high school. It would be able to facilitate teachers' carrying out learning in an effective and efficient manner, especially when distance learning is implemented. This research and development study had five stages: analysis, design, development, Implementation and evaluate. The e-module quality is validated using expert judgment, and its applicability to students is then evaluated. The research subjects are students in of class XI senior high school. The results reveal that the E-module had high quality in the appearance and programming aspects based on expert judgment. Then, based on the practicality test, students and teacher's determined that the E-module was very practical to use because it was visually appealing, the menus and pane navigation functioned well, and the content was appropriate for students. Independent sample t-test through SPSS 20.0 obtained Sig. (2-tailed) is $0.038 \leq 0.05$. This shows that there is a significant (significant) difference between the average learning outcomes of the experimental class and the control class. As a result, it can be concluded that the E-module has high quality, practice, and would be widely used by teachers in conducting classroom learning.

Keywords: E-Module · Learning Outcome

1 Introduction

The new learning paradigm ensures learner-centred learning practices. With this new paradigm, learning is a cycle that begins with mapping competency standards, planning the learning process, and implementing assessments to improve learning so that students can achieve the expected competencies. The new learning paradigm provides flexibility for educators to formulate lesson plans and assessments according to the characteristics and needs of students [1]. In the new paradigm of learning, the Pancasila Student Profile acts as a guide that guides all policies and reforms in the Indonesian education system, including learning and assessment. Education units are given the freedom to choose or modify examples of operational curricula and available teaching tools, or make their own according to the context, characteristics, and needs of students. Teaching tools developed by educational units can be in the form of textbooks, teaching materials, subject teaching modules and Pancasila student profile projects, examples of education unit curriculum.

The teaching module is one type of teaching device. The purpose of developing teaching modules is to develop teaching tools/teaching materials that guide educators in carrying out learning [2].

There are various types of teaching materials that can be used to support the teaching and learning process. The type can be in the form of print and based on information and communication technology. The purpose of information technology-based teaching materials is to assist students in developing the skills necessary to adapt to the environment based on advanced knowledge and technology. The use of media designed by paying attention to aesthetic aspects, especially using sophisticated tools, in the learning process will create an attraction for students [3]. One of the teaching materials that can be used is an electronic module (e-module). Electronic modules or e-modules are new innovations carried out by researchers in capturing opportunities for the development of digital learning media for millennials. The idea of developing learning media in this article is certainly in line with the theme of PICEEBA this time, namely "Leap to the imminent future: Seizing Opportunities in Education, Economics, and Business".

The use of modules in the learning process is carried out because the module has the advantage of providing a lot of input so that students can find out their learning outcomes and completeness. Modules are structured with clear objectives, able to guide students to achieve success through regular and flexible steps, and are able to provide opportunities for students to correct weaknesses, mistakes, or shortcomings based on continuous evaluation [4]. The electronic module aims to increase students' interest in the learning process and provide convenience in using the module. The use of computers in the learning process can provide many and various learning experiences, increase learning motivation, and develop IT skills [5]. The use of computers also has a positive effect on empowering students [6]. The e-module is interactive so it is possible to display images, audio, video, animation, and is equipped with a formative test/quiz which is possible to get feedback as soon as possible [7]. So, the use of e-modules in the learning process can increase students' knowledge [8]. In addition, the use of e-modules in learning makes students always repeat certain parts to better understand the material, and provides independent learning opportunities for students. In addition, e-modules can be easily integrated into most curricula to support the improvement of learning outcomes [9].

Website media on the internet can be an alternative in carrying out learning. Websites can be a medium for teachers in order to improve the quality of learning anywhere and anytime [10]. In addition, the use of web-based learning media is effective and efficient because it improves student outcomes [11]. Google is a platform that provides website media features that can support the implementation of learning. One example of a website provided by Google is Google Sites which can be used for group and personal purposes. The author uses google sites for e-module applications because it is easy to use and able to maximize other google features such as google docs, sheets, forms, calendar, and others.

Research and development of e-modules for learning has been widely carried out, such as Ghaliyah et al., [12] which explains the learning process with electronic modules makes students no longer dependent on instructors (teachers) as the only source of information, thus creating interactive and centered learning. on students. In this study,

Ghaliyah gave the idea of developing an e-module using the Microsoft Office Power Point application with the help of other software such as Website 2 APK Builder, i-Spring, Photoshop, Corel Draw and Paint. Yayang, Eza [13] also developed an online learning module using the Moodle application in the library management course. Solihudin JH, Taufik [14], also conducted research on the development of web-based e-modules to improve the achievement of physics knowledge competencies in high school static and dynamic electricity materials. Fitriani, Farida Indriaturrahmi [15] implemented a web-based E-module for Indonesian subjects.

The difference between this study and previous research is that in this study, e-modules were developed using the Google Sites application where the application was designed for the implementation of learning which has advantages, one of which is mobile friendly, in other words, this application can be run not only by using a computer but also by using a computer. Also by utilizing smartphones owned by students. The product that will be developed is expected to be one of the online teaching materials, besides that this product is expected to help teachers in facilitating the implementation of learning and learning assessment.

Based on the background described by the researchers above, this study aims to; 1) developing e-modules as online teaching materials integrated with quality google sites to improve student learning outcomes, 2) testing the practicality of e-modules in learning.

2 Methods

This study uses research and development approach which has an orientation on products developed in the world of education, which aims to increase the effectiveness of the implementation of learning. The product to be developed is expected to be one of the alternative teaching materials that can be used online to make it easier for teachers and students in the learning process. The product developed is in the form of an e-module application using the Google Sites application. The development model that will be carried out in this research is the ADDIE development model which is a learning device development model. This model emerged in the 1990s which was developed by Reiser and Mollenda. According to Sugiyono [16] the 5 stages include the development research model consisting of 5 stages, namely (1) the analysis phase, (2) the design phase, (3) Development Phase, (4) Implementation Phase, (5) Evaluation.

This development activity includes the preparation of even semester modules which are made and developed based on the core competencies and basic competencies of class XI economics subjects. Furthermore, the creation of an e-module application using the Google sites application with product testing was carried out involving IT experts to validate product quality, then involving students as test subjects to test the practicality of the product. The test subjects in this study were students of class XI SMA Negeri 1 Pulau in economics, totaling 55 people. The data collection technique used consisted of two techniques, namely test and non-test techniques.

The test technique is used to test the effectiveness of the use of e-modules by conducting a significance test between the learning outcomes of students who use e-modules and students who do not use modules. The significance test used a different t-test using SPSS 20 with the criteria that if the significance level was ≤ 0.05 , it was stated that there

were significant differences in learning outcomes. Meanwhile, the non-test technique is in the form of expert judgment in the context of product validation from experts in the form of a questionnaire using a Likert scale and student and teacher response questionnaires to the practicality of the integrated e-module application of Google Sites that has been developed.

3 Results and Discussion

3.1 Google Sites Integrated E-module Development

The result of this research is to produce an e-module application integrated with Google sites to improve learning outcomes in Class XI SMA. The product produced in this study is an e-module application integrated with Google sites that can be used as teaching material for economic subjects for students at SMAN 1 Pulau Punjung. To be able to develop a product, the following steps are carried out (Fig. 1).

From the picture above, it can be seen that the main activities of developing this e-module are starting from determining the design of the media then preparing network hardware and software that will be used for the Google Sites application so that the application can run and can be used with the internet network. The hardware and software prepared are servers, OS (Operating System) windows 10 and network. The hardware that needs to be provided is a set of computers that will build a website that is integrated into Google Sites. The next stage is to create content from the e-module in the form of google docs, videos and google forms. After making the draft and website design, it's time to publish the site by clicking publish which is located on the top right side of Google Sites and a web address like this appears https://sites.google.com/view/emodul_Ekonomi2/. This web address is ready to be sent to students through their social media accounts, it can be WhatsApp, Instagram, Facebook, Telegram and it can also be via a Line account. The following is the appearance of the developed E-Modul application (Fig. 2).

To enter the application, students only need to click on the web address sent by the teacher. The following is the page view of each module in the E-Modul application (Fig. 3).

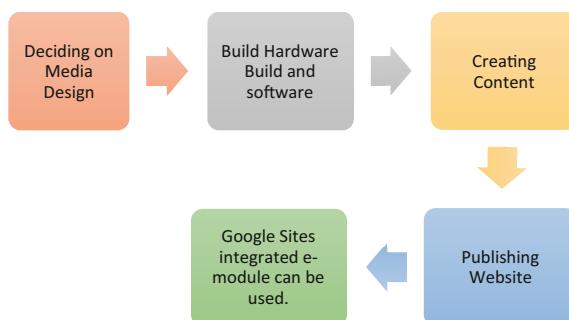


Fig. 1. Google Sites Integrated E-Modul Application Development Flow



Fig. 2. E-Module Main Page Display

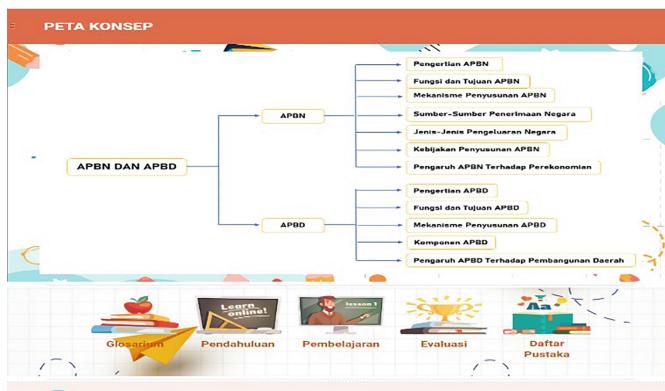


Fig. 3. E-Module Page Display

3.2 Expert Appraisal

Expert appraisal is a logical validation process carried out by experts in their fields. Expert validation is carried out before the trial is carried out and the results will be used to revise the initial product. In this study, two validation activities will be carried out, namely the first validation activity for assessing the validity of the material by material/content experts. The second activity is the validation of the Google Sites integrated e-module application by media/IT experts.

3.2.1 Material/Content Expert Appraisal

Validation activities by material/content expert validators were carried out by two expert validators, namely from a lecturer in economics education at the Faculty of Economics, Padang State University, Dra. Armida S, M.Si. and representatives of the curriculum of SMA Negeri 1 Pulau Punjung namely Ms. Musniwati, S.Pd., M.PdE. Based on the assessment by material/content experts, an average validity value of 89.33% was obtained. This

Table 1. Product Validation Results by Content/Material Experts

No	Aspect	Validator		Average	Validity Value	Criteria
		1	2			
1	Content	44	46	45	90,00%	Very Valid
2	Language	22	22	22	88,00%	Very Valid
Average				89,33%		Very Valid

Table 2. Product Validation Results by Media Experts

No	Aspect	Validator		Average	Validity Value	Criteria
		1	2			
1	Utility	19	23	21	84,00%	Valid
2	Navigation System	11	13	12	80,00%	Valid
3	Visual Communication	20	25	22,5	75,00%	Valid
Average				79,68%		Valid

value indicates that the product developed in the form of an economic learning e-module is classified as very valid. The validator also concludes that this product is feasible for field testing after revision. The results of the validation of content experts/materials for the Google Sites integrated E-module application can be seen in the Table 1.

3.2.2 Media Expert Appraisal

The second validation activity was carried out by media/IT experts. In this study, the researchers involved two media expert validators from a lecturer in Economics Education, Padang State University, namely Dr. Zul Afdal, M.Pd. and a lecturer in Informatics Engineering at Dharmas Indonesia University, Mr. Efri Yandani.S, S.Si., M.Kom. The results of the validation carried out by the two expert validators obtained the average value of the media expert's validity of 79.67%. This value indicates that the product developed has valid criteria. However, there are some suggestions for improvement from the validator, so that the product developed is feasible to be tested. The results of the validation of content experts/materials for the Google Sites integrated E-module application can be seen in Table 2.

3.3 Product Trial

In product testing activities, a practical test of the Google Sites integrated e-module application was developed. Practical analysis is obtained by analyzing student responses given through a questionnaire. The questionnaire given to students is a questionnaire that contains aspects of the appearance of the application, aspects of material presentation and aspects of the benefits of the developed e-module application. From the results of

Table 3. Application Practicality Test Results

No	Aspect	Practically Value	Criteria
1	Appearance	92,00%	Very Practical
2	Material Presentastion	84,00%	Practical
3	Benefit	88,67%	Very Practical
Average		87,83%	Very Practical

the questionnaire given to students, data about student responses to the Moodle-based online test application are as Table 3.

Based on the table, it can be seen that the students' responses to the developed application are in the range of 79%–100%. So it can be concluded that the application of the developed economic learning e-module is “very practical” so that it can be used as teaching material in learning activities in the classroom.

3.4 Significance Test Results Experiment Class with Control Class

From the results of statistical test analysis with SPSS-20 obtained the value of Sig. (2-tailed) is $0.038 \leq 0.050$, so as for the basis for decision making in the independent sample t-test, it can be concluded that $H_0 = \text{rejected}$. Thus, it can be concluded that there is a significant (significant) difference between the average learning outcomes of classes that use e-modules and classes that do not use e-modules. As seen in Table 4.

Based on the results of the development of the economic learning e-module for class XI SMA which was tested in small groups and field trials and has been implemented

Table 4. Independent Sample Test Control Class and Experimental Class

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Result	Equal variances assumed	5.301	.023	2.037	128	.044	5.615	2.756	.161	11.069
	Equal variances not assumed			2.037	121.145	.044	5.615	2.756	.158	11.072

in the learning process, it meets the desired standards, namely valid, very practical and very effective.

The learning media developed is said to be feasible to use in the learning process if it has met construct validity and content validity. Yusuf [17] suggests that the basic key to getting high construct validation is the accuracy, suitability, and correctness of the previously compiled constructs. This validation concerns the content of learning media in this case the suitability of the content of learning media with the basic competencies learned in class XI even semesters as well as the ability of the media to visualize macroscopic, sub microscopic and symbolic aspects, and allow students to learn at different speeds.

In terms of language, the learning media has used communicative language, the information conveyed is easy to understand and the terms used do not cause double interpretation. Munir [18] stated that in a medium, the structure of the text is one thing that needs to be considered so that the message conveyed becomes communicative.

Practicality relates to the degree of consistency and stability of the data or findings. Van der Akker [19] said "practicality refers to exams that users for the intervention as appealing and usable in normal" means that practicality refers to the extent to which the use or other experts consider the intervention to be preferable and used under normal conditions. Thus it can be concluded that practicality is the ease and pleasure of users in using the resulting product.

Thus, the economics learning e-module class XI SMA can be accepted and liked by users. The value given by teachers/educators and students illustrates that the product developed can be used easily and is liked by users.

According to Asikin and Cahyo [20] research and development of learning a product can be said to be effective if the product provides results in accordance with the objectives set by the developer. Effectiveness shows the level of success in achieving the desired product. Effectiveness refers to the extent to which the experience and learning outcomes after using the product are consistent with the intended purpose. This is in line with this according to research conducted by Woo [21]. Woo found that the electronic module was more satisfying and enriching the student learning experience when compared to the print module. In addition, e-modules are very effective in improving students' ability to understand the material [22] and the addition of an e-learning module will allow students to be better engaged with the content and more actively involved in their own learning [23].

4 Conclusions

From the results and discussion of research on the development of economic learning e-module products for class XI SMA as teaching materials, it can be concluded as follows: (1) From the results of application development that has been carried out and based on the results of validation by two material expert validators and two experts the media obtained that the developed e-module application data obtained an average value of 89.33% for material validation with very valid criteria. Meanwhile, media experts obtained an average of 79.67% with valid criteria. (2) To test the practicality of the e-module application, it is done by analyzing the data on the questionnaire that has been

distributed through the trials carried out. The results of product trials obtained an average of 87.83% for small groups, 86.67% of field test results and 91.67% of educators/teacher test results. These results indicate that the developed e-module is very practical to use in learning.

It is recommended for teachers to use interesting teaching materials in increasing students' understanding of concepts, one of which is through e-economic learning module teaching materials. Economics learning e-modules can be accessed using the internet. So that in the implementation process, students need to be supervised in order to continue to access learning materials and it is hoped that further researchers will develop economic learning e-module teaching materials for class X and class XII. Thus enriching the literature on economics teaching materials.

References

1. Pusat Asesmen dan Pembelajaran. (2021). Panduan Pembelajaran dan Asesmen Jenjang Pendidikan Dasar dan Menengah. Badan Penelitian dan Pengembangan dan Perbukuan Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Jakarta.
2. Pusat Asesmen dan Pembelajaran. (2021). Pembelajaran Paradigma Baru. Badan Penelitian dan Pengembangan dan Perbukuan Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Jakarta.
3. Fikri, H., Madona, A. S., & Morelent, Y. (2018). The Quality of Interactive Multimedia in Indonesian Language Learning at the 5th Grade of Elementary School: The Practicality and Effectiveness after Wide-Scale Tryout. Asia Proceedings of Social Sciences, 2(4), 105–109. <https://doi.org/10.31580/apss.v2i4.352>
4. Nasution, S. (2006). Berbagai pendekatan dalam proses belajar mengajar. Bumi Aksara: Jakarta
5. Nurchali. (2010). Pengaruh media pembelajaran dengan teknologi informasi dalam pembelajaran kimia terhadap peningkatan hasil belajar siswa. Jurnal Pendidikan dan Kebudayaan, 16(6), 648–658. <https://doi.org/10.24832/jpnk.v16i6.493>
6. Munadi, S. (2011). Pengembangan modul pembelajaran konstruktivistik kontekstual berbantuan komputer dalam matadiklat pemesinan. Jurnal Pendidikan Vokasi, 1(1), 51–67.
7. Suarsana, I. M., & Mahayukti, G. A. (2013). Pengembangan e-module berorientasi pemecahan masalah untuk meningkatkan keterampilan berpikir kritis mahasiswa. Jurnal Pendidikan Indonesia, 2(2), 264–275. <https://doi.org/10.23887/jpi-undiksha.v2i2.2171>
8. Kim, H. J., Pederson, S., & Baldwin, M. (2012). Improving user satisfaction via a case-enhanced e-learning environment. Education+ Training. Vol. 54 No. 2/3, pp. 204–218. <https://doi.org/10.1108/00400911211210305>
9. Kowitlawakul, Y., Chan, MF, Tan, SSL, Soong, AS K, & Chan, SWC (2017). Development of an e-learning research module using multimedia instruction approach. CIN:Computers, Informatics, Nursing, 35(3), 158–166 <https://doi.org/10.1097/CIN.0000000000000306>
10. Jubaiddah, Siti, and M. Rizki Zulkarnain. "Penggunaan google sites pada pembelajaran matematika materi pola bilangan SMP kelas VIII SMPN 1 Astambul." Lentera: Jurnal Pendidikan 15.2 (2020): 68–73.
11. Sari, H. V., & Suswanto, H. (2017). Pengembangan media pembelajaran Berbasis Web Untuk mengukur hasil Belajar siswa pada mata pelajaran Komputer Jaringan Dasar program Keahlian teknik komputer dan jaringan. Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan, 2(7), 1008–1016.

12. Ghaliyah, S., Bakri, F., & Siswoyo. (2015). Pengembangan Modul Elektronik Berbasis Model Laerning Cycle 7E pada Pokok Bahasan Fluida Dinamik untuk Siswa SMA Kelas XI. Prosiding Seminar Nasional Fisika (E-Journal) SNF2015, IV, 149–154. <https://doi.org/10.29303/jpft.v6i1.1731>
13. Yayang, E., & Eldarni, E. (2019). Pengembangan e-modul berbasis web dengan menggunakan aplikasi Moodle pada mata kuliah pengelolaan perpustakaan. Edutech, 18(1), 25–36. https://doi.org/10.1007/978-3-540-30494-4_16
14. Jh, T. S. (2018). Pengembangan e-modul berbasis web untuk meningkatkan pencapaian kompetensi pengetahuan fisika pada materi listrik statis dan dinamis SMA. WaPFi (Wahaha Pendidikan Fisika), 3(2), 51–61 <https://doi.org/10.17509/wapfi.v3i2.13731>
15. Fitriani, F., & Indriaturnrahmi, I. (2020). Pengembangan e-modul sebagai Sumber Belajar Mata Pelajaran Bahasa Indonesia Kelas X MAN 1 Lombok Tengah. Jurnal Penelitian dan Pengkajian Ilmu Pendidikan: e-Saintika, 4(1), 16–25.
16. Sugiyono. (2017). Metode Penelitian Pendidikan Kuantitatif,Kualitatif, dan R&D. Bandung: Alfabeta.
17. Yusuf, M. (2005). Dasar-Dasar dan Teknik Evaluasi Pendidikan. Padang: Universitas Negeri Padang
18. Munir. (2009). Pembelajaran Jarak Jauh Berbasis Teknologi Informasi dan Komunikasi. Bandung: Alfabeta
19. Akker & Ploom. 1999. Design Approaches and Tools in education and Training. Dordrecht: Kluwer Academic Publisher.
20. Asikin, M. (2001). Komunikasi Matematika dalam RME. Makalah. Yogyakarta: Seminar Nasional RME di Universitas Sanata Dharma.
21. Woo, T. K. (2011). Developing quality learning materials for effective teaching and learning in an ODL environment: Making the jump from print moduules to online modules. Asian Association of Open Universities Journal, 6(1), 51–58.
22. Wolla, S. (2017). Evaluating the effectiveness of an online module for increasing financial literacy. Social Studies Research and Practice, 12(2), 154–167. <https://doi.org/10.1108/SSRP-04-2017-0014>.
23. Logan, R. M., Johnson, C. E., & Worsham, J. W. (2021). Development of an e-learning module to facilitate student learning and outcomes. Teaching and Learning in Nursing, 16(2), 139–142.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

