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Research Paper

Effectiveness of Interactive E-Module Based on Mobile Learning in Management Accounting Course: Profit Planning and Performance Evaluation

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Abstract.
The need for electronic modules to support effective learning and adapt to the development of the digital space. The current generation is starting to abandon printed books which are considered the traditional way of acquiring knowledge. The purpose of developing this E-module product is to assist students in understanding lecture material that is easy to understand, fun, and under current trends. The development product specifications are using RAD models and questionnaire to collect the response from the users. By presenting visuals in the form of image creations from students with the theme "Daily College Life". The development method uses the model prototype, which triggers the developer to only create an example resolution to officially show the user the functional essence of the product. The developer will make various necessary changes according to user requests. The result of the E-module usage in the management accounting course can increase effectiveness and expand student material mastery to improve the quality of learning. Not only good reviews were obtained during the preparation of the module, but negative opinions regarding the packaging of the material contained in the module needed to be revised and readjusted. For the next stage, this product still needs some improvement as well as refinement at the system.

Keywords: E-Module, performance evaluation, profit planning

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1. Introduction

Based on the National Alibaca Index (Kemdikbud, 2019) states that the results of calculating the Alibaca Index show that the average national reading interest index was in the low literacy activity category at 37, 32%. The value is composed of four-dimensional indices, including the Proficiency Dimension Index of 75.92; Access Dimension Index of 23.09; Alternative Dimension Index of 40.49; and the Cultural Dimension Index of 28.50 (Kemdikbud, 2019). Since 2016, The Government through the Ministry of Education and Culture improving public literacy by launched a National Literacy Movement program such as the School Literacy Movement (GLS). Based on the Minister of Education and

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Page 69

Culture Regulation Number 23 of 2015, one of the goals is to reinforcement the literacy culture of students. Therefore, to assist the learning process and increase interest in reading literacy, it is necessary to develop modules that are following the learning and reading styles of today's generation. The specific purpose of developing this e-module product is to assist students in understanding lecture material related to material that requires a lot of practice and has a certain format but is difficult to understand in class.

The development of this interactive e-module is very much needed by students in any learning condition, both online and offline. E-modules do not require expensive costs and are easily accessible, efficient, and environmentally friendly (Sirwan, Kamal, & Nurkhamid, 2021). Specifications for the development of interactive modules in the form of contemporary electronic novels with a choice of quizzes and questions that can directly explain profit planning and performance evaluation because profit planning and performance evaluation materials are essential components in a company, for example, the use of a Balance Score Card. Product development specifications present visuals in the form of image creations from students with the theme "Everyday Campus Life".

E-modules on topics in management accounting such as performance evaluation and profit planning contained in management accounting courses, management control systems, and strategic management which are usually presented in even semesters for management accounting and management control systems in Odd semesters. This is due to the characteristics of management accounting material which is quite dense with the many terms that appear and will spend time studying in class. Therefore, students need learning media that can be accessed anywhere and anytime. The product of this media development are design of a hardcover module and also an electronic module that can be accessed at Learning Management System. The peculiarity of this e-module is the presentation of an attractive module with an eye-catching such as reading a novel and accompanied by illustrations that depict "students" in their daily lives on campus.

The illustrator in this development is a student of the State University of Malang himself with a drawing style that suits his characteristics. This helps make it easier for the development team to understand the styles of students when they are on campus. Illustrations of images and characters are designed as well as possible to attract the interest of the reader. In addition, in terms of the material presented, it will be designed as completely as possible by the development team so that the material is presented in detail, complete, and easy to understand. It's like reading novels by famous authors but in fact the content is the same as in textbooks in general, this is what makes this e-module very unique when compared to other e-modules.

The expected benefit of developing an e-module in this management accounting course is to help students understand management accounting material independently, especially if the material has not been explained by the lecturer about a material due to insufficient time or reduced meetings due to holidays. To catch up with material, students can open this e-module anytime and anywhere.

One of the education challenges in building 21st-century skills includes information and communication technology literacy skills, critical thinking skills, problem-solving skills, and effectiveness of communication skills. Information and communication technology (ICT), has enormous potential as a means or tool to develop these skills in the learning process. Mac Kinnon (Muderawan, 2011) states that technology will help develop all types of thinking skills from the most basic level to the level of critical thinking skills. Along with the rapid development of ICT, especially the internet, the opportunity for implementing e-learning is very large. The ICT skills acquired will certainly be useful when working and later in life. Sometimes to become a professional teacher, cognitive ability alone is not enough, it is also important to be equipped with certain skills, for example in the field of ICT. Moreover, few teachers can use computers in their learning (Sucita, 2010).

According to Galvin (2011) "An effective way to teach students with evidence-based skills and approaches is to use a Blended Learning method or known as technology-mediated instruction". Expected learning process are able to collaborate between face-to-face and online because it is very compatible with the tendency of learning culture in universities. In designing a lecture with blended learning at first you will experience a lot of things to do but it will be easy for the next step, the meaning of this expression is that the most important thing in the application of blended learning is the preparation of learning tools to support the continuity and smoothness of further learning so that blended learning to improve quality, not even lower quality than face-to-face lectures. Given that the application of blended learning requires students' independence in learning, the development of learning tools that is prioritized is e-modules (electronic-modules). This product is an ICT-based module that has advantages compared to printed modules, including being more interactive and easy to operate, displaying/loading images, audio, video, and animation, as well as being equipped with formative tests/quizzes that allow immediate automatic feedback. E-Module is used as a digital-based independent learning media that aims to realize the learning competencies to be achieved (Rahmi, 2018). Mertasari (2010) added that web modules usage and learning media will ensure student control, flexibility, context-free, and also social conventions were relatively free.

E-modules are equipped with pictures so that learning becomes more interesting and does not get bored quickly (Zulkarnain et al., 2015). The results that Basuki (2015) found on the development of Moodle-based learning as a source of independent learning. Moodle-based e-learning in learning was also responded very well by students. Based on the existing problems and the results of relevant research, the authors developed an e-module based on Moodle on Management Accounting material. This moodle is very important for learning management accounting because students need to get a lot of material for problem-based learning so that they can understand the real problems in an organization. Based on the results from Iswandari, et al (2020) which stated that the results of the response test to the use of Moodle-based e-modules from students obtained a score of 91.67% and teachers 93.45%. E-modules can be used in the learning process because this Moodle-based module presents more interesting material by displaying videos, animations, and images and is carried out remotely. Faraway, educators can control, evaluate and award badges to the best students. The feasibility of developing E-Modules can be measured by 3 indicators, including quality of content and purpose of preparation, instructional quality, and technical quality (Arsyad, 2017).

2. RESEARCH METHODS

The specific purpose of developing this e-module product is to assist students in understanding easy course material understandable, fun, and in accordance with current trends. The E-Module product will make students easier to access study material so as the expected competencies can be achieved. The method for developing this E-module uses a Rapid Application Development model that uses an iterative and incremental approach, but emphasizes deadlines and cost efficiency in accordance with needs. RAD can reuse existing components (reusable objects) so there is no need to build from scratch again. The faster of the integration process and the more effective it is, the less chance of errors or mistakes. That is the reason for choosing the use of the RAD method compared to other methods. The RAD model is the latest adaptation of the linear sequential model using a component-based construction approach. Identification of direct goals with communication and planning is the initial stage of the RAD Method. Furthermore, the second stage is the process of designing the system or software as needed.

The customer or user is involved in testing the software. Fixes are immediately applied if the user finds an error. Students as users are given a number of questions

on a questionnaire containing four elements in a module. Questionnaire results were analyzed using SPSS with multiple regression analysis method as a measure of product success. When the user is satisfied with the software design, after going through various improvements, then the work process enters the final stage, namely implementation. Software designs began to be translated into machine language and could be used. There are four stages of the SDLC of this RAD model, the first is requirements planning, the second is design, then construction, and the last stage is transition. The following are the stages of the Development Process in the Rapid Application Development (RAD) Model, namely: Business Modeling This phase is to find the flow of information that can answer the following questions:

a. What information controls business processes?

b. What information is displayed?

c. Where is the information used?

d. Who processes it?

Data modeling is part of the product modeling phase that focuses on a series of data objects to support the product. The attributes of each object and the relationships between these objects are identified. Process modeling for the information flow is converted into useful for business function implementation flow. In addition to using third-generation programming languages, RAD uses existing program components or creates reusable components. Tools can be used to facilitate software construction. Testing and Turnover Because the RAD process emphasizes reuse, many program components have been tested. This reduces the overall testing time. But the new parts must be tested, and interfaces must be fully rehearsed.

3. RESULTS AND DISCUSSION

The preparation of an e-module in the form of a 3D Flipbook is intended to meet the needs of learning media in distance learning. In addition to meeting these needs, improvisation of the use of technology needs to be familiarized during teaching and learning activity. Technological media usage needs to be adapted to the current situation and conditions of society. The mobility of a person and the space for students to move in the current Covid-19 pandemic has made laptops and cellphones as a substitute for face-to face activities with lecturers.

One of the challenges in conducting distance learning is monitoring the behavior of students when receiving material and observing the understanding of the material. Another obstacle is boredom in receiving material because they only stare at the screen

and minimal interaction because students do not borrow books. As a lecturer, I usually allow students to look for book references or learning resources that can be accessed freely on the Google platform. However, it is often a feeling of laziness in reading that arises and makes students not access the material. There needs to be a media that is able to steal the attention of students so that they are more enthusiastic in understanding the material.

This study uses 4 offerings in the budgeting course as respondents in reading the material that has been outlined in the 3D Page Flip Book, which is a kind of e-module in the form of a book but without having a textbook suggested by the lecturer. Based on the students' responses, most of the students really liked the 3D flipbook, which was expected to help them understand the material without opening the book directly. In addition, the various and very contemporary book designs make students read books with enthusiasm. The following are the results of the questionnaire analysis on the 2nd trial after the content development and design are presented.

Classical assumption test
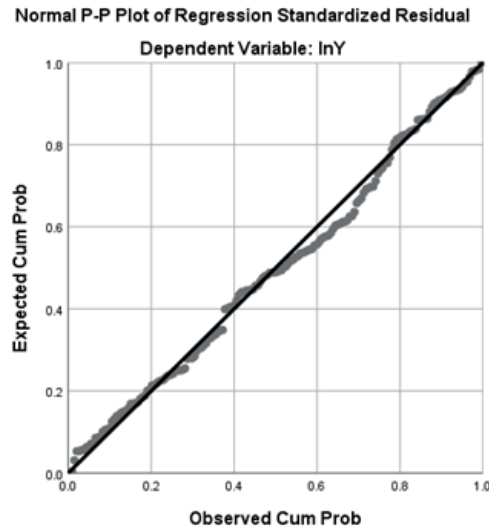
a. Normality Test
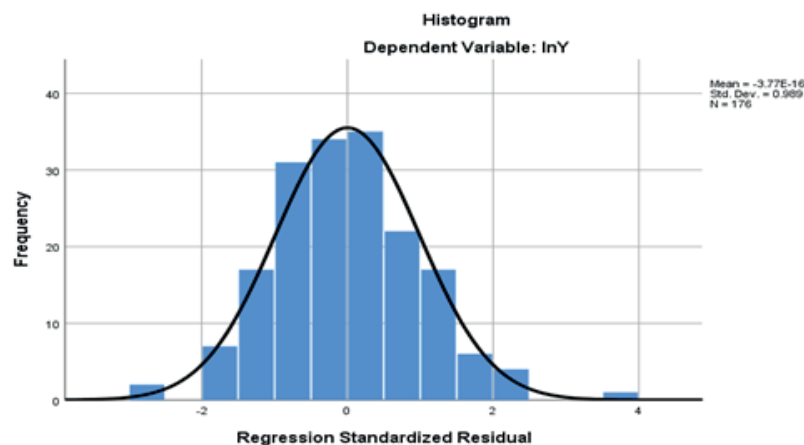
Source: SPSS 25.0 data processing output

Figure 1: Normality Test Results (Histogram Graph)

Based on the histogram display in Figure 7.1 it conclud that the pattern is normally distributed, and the regression model has met the normality assumption

According to the normal P-Plot chart in Figure 7.2, it shows that the data spread around and follows the direction of the diagonal line, then the regression model meets the assumption of normality.

Based on table 1.3 above is the result of processing after being tested several times by reducing several samples, namely from 215 samples to 176 samples using

Source: Output data processing SPSS 25.0

Figure 2: Normality Test Results (PP Plot Normal Graph).

		Unstandardized Residual
N		176
Normal Parameters[a]	Mean	0
	Std. Deviation	1.9665594
Most Extreme Differences	Absolute	0.06
	Positive	0.06
	Negative	-0.034
Test Statistic		60
Asymp. Sig (2-tailed)		0.200[c,d]

Figure 3: Normality Test Results (Kolmogorov-Smirnov).

the *Kolmogorov-Smirnov* (KS) test, a significance value of 0.200 is obtained. This value is greater than 0.5 which means that the data is normally distributed.

a. Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	*Durbin-Watson*
1	0.286	0.082	0.06	1.98943	0.911

Source: SPSS data processing output 25.0

Figure 4: Autocorrelation Test Results.

Test results of Durbin-Watson show a value of 0.911. If this value were compared with the table value using a 5% confidence degree, the number of samples (n) is 253, the independent variable (k) is 4, it can be determined that the dL value is 1.77344, the dU

value is 1.82010 and 4-dU is 2.1799. With the DW value not between dU and 4-dU, it shows that there is no autocorrelation in the tested data.
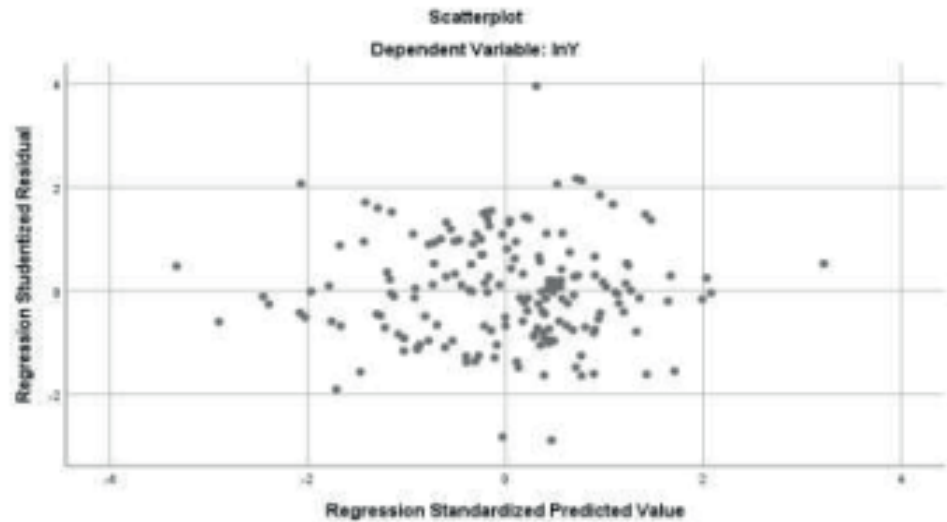
b. Heteroscedasticity Test

Figure 5: Heteroscedasticity Test Results. Source: SPSS data processing output 25.0.

graph *scatterplot* above shows that there is no heteroscedasticity in the regression model so the regression model is feasible to use to predict *intellectual capital* based on the independent variables, namely the *attractiveness of e-modules, convenience, usefulness* and effectiveness of use e-module.

3.1. Multiple Linear Regression Test

Based on table 1.5 which is a table of multiple linear regression analysis results, it can be obtained multiple linear regression equations in this study as follows:

TABLE 1: Multiple Linear Regression Analysis Test Results Unstandardized.

Model		Unstandardized Coefficients		Standardizt Coefficien		Sig.
		B	Std. Error	Beta		
1	(Constant)	1.018	1.290		.789	.432
	PERSEPSI_KEBERMANFAATAN	.362	.082	.377	4.435	.000
	PERSEPSI_KEMUDAHAN_PENG	.214	.088	.205	2.440	.016
	PERSEPSI_KEMENARIKAN	.219	.097	.181	2.264	.026
	EFEKTIVITAS_MODUL	.143	.069	.176	2.072	.041

Source: SPSS 25.0 data processing output.

Based on the regression results above, it can be seen that the existence of this E-Module will increase students' understanding in using digital literacy in studying accounting courses, especially management accounting. There are four important points proposed to research participants in the context of testing the e-module that has been developed, namely the *attractiveness of the e-module, the convenience, the usefulness* and *the effectiveness of the use of the e-module*. Based on the results of a survey of 4 offerings (Classes) at the UM Faculty of Economics and Business, it was found that it was easier for students to understand management accounting material with a more attractive appearance and could be accessed anywhere. Very Effective for distance learning activities carried out during the Covid 19 pandemic and also after the pandemic occurred. However, for one of the indicators, namely the effectiveness

of using the module, it still needs improvement in terms of content that is less interactive. Several respondents mentioned that there needs to be practice questions or real case studies from companies that support the effectiveness of the developed e-modules.

Coefficient of Determination (Adjusted R2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	*Durbin-Watson*
1	0.286	0.082	0.06	1.98943	0.911

Source: SPSS data processing output 25.0

Figure 6: Test Results of Coefficient of Determination.

Based on table 1.6 which has been presented above, it can be seen that the value of the coefficient of determination contained in the Adjusted R Square value is 0.060 or 6%. This means that 94% is explained by other variables not discussed in the current study.

The preparation of books with a combination of colors, a selection of images, material summaries, and book designs that are appropriate for the age of the students will improve conditions for better psychological adjustment. Giving bright colors makes the overall appearance of the book more attractive and improves *mood* of students. However, some inputs received from both the validator and students asked for the material provided to be more concise. The design and character of a book that is indeed material-intensive can make an extraordinary boredom to study alone.

The image presented above is a glimpse of the appearance of the e-module which will be opened automatically like a digital book. We will attach the 3D Flipbook attachment in the form of a google drive link and also a link to the flipbook application. The number

of pages of this e-module is almost the same as that of a typical Module Book with summaries of each material.

Figure 7:

The image presented above is a glimpse of the appearance of the e-module which will be opened automatically like a digital book. We will attach the 3D Flipbook attachment in the form of a google drive link and also a link to the flipbook application. The number of pages of this e-module is almost the same as that of a typical Module Book with summaries of each material.

4. Conclusions

Based on the explanation above, an interactive e-module using the 3D Flip Book application will be more effective in tackling remote learning. The use of the E Module in the Management Accounting course can increase effectiveness and expand student material mastery to improve the quality of learning. Not only good reviews were obtained during the preparation of the module, but negative opinions regarding the packaging of the material contained in the module needed to be revised and readjusted. Furthermore, it is still necessary to add interactive features such as case studies from companies and practice questions that are developed to increase students' knowledge of management accounting.

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References

[1] Arsyad A. (2017). Learning Media. Jakarta: Raja Grafindo Persada.

[2] Basuki, GD (2015). Development of MOODLE-Based E-Learning for Natural Science Learning (IPA) for Class V Students at SD Negeri Kotagede 1. E-Jurnal of TP Student Thesis, 5(1).

[3] Galvin B. A blended learning course teaching information literacy for substance use prevention work. J Inf Lit. 2011;5(1):65–88.

[4] Iswandari SN, Copriyadi J, Noer AM, Alberta SW. Development of Moodle-Based E-Module on hydrocarbon material development of E-Module Based on Moodle in hydrocarbon topic. Education. 2020;12(1):81–88.

[5] Ministry of Education and Culture. Index of reading literacy activities in 34 Provinces. Jakarta: Center for Research on Education and Culture Policy, Research and Development Agency, Ministry of Education and Culture; 2019.

[6] Muderawan IW. "The development of information and communication technology and its applications in learning". Paper Presented in the National Seminar on Optimizing the Utilization of IT Applications in the World of Education. Department of Information Engineering Education. Singaraja. 20 September 2011.

[7] Rahmi L. Design of E-module assembly and installation of personal computers as learning media for vocational high school students. 2018;21(1):105-111. http://ecampus.iainbatusangkar.ac.id/ojs/index.php/takdib/index. ISSN 2580-2771.

[8] Sirwan, Kamal, Nurkhamid. Developing E-module based on mobile learning as a preparation media. J Phys Conf Ser. 2021;1833;012049. https://doi.org/10.1088/1742-6596/1833/1/012049

[9] Sucita IN. Mapping of mathematics teacher competencies. Saraswati Magazine. Edition. 2010;II:15–17.

[10] Zulkarnain A, Kadaritna N, Tania L. Development of web-based E-Module of quantum mechanics atomic theory with scientific approach. Journal of Chemistry Education and Learning. 2015;4(1):222–235.