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Implementation of Flip Canva-Based E-Modules in Motorcycle Engine Courses

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Abstract

Quasi-experimental research This aim for knowing: 1) the validity of the e-module for the subject Motorcycle Engine lectures, and 2) effectiveness use of learning media e-module based on the subject studying the research design used is a non-equivalent control group design. The research sample consists of two classes, namely class learned experiments using e-module and class media learned control with method conventional. Instruments data collection includes observation, interviews, questionnaires, and test. Data analysis techniques using analysis quantitative. Research results show that: 1) Validity of learning media e- module based in the Automotive Engineering Department Faculty of Engineering, Makassar State University is in the category worthy based on validation expert material (percentage 68% and 90%), very valid category based on media experts (percentage 88% and 89%), and the very valid category based on response students (91% percentage). 2) Learning media e- module based effective used based on two indicators: (a) Average class pretest score experiment (53.3) and class control (50.6) shows ability equivalent initial score. (b) Average posttest score of the class experiment (74.0) more tall in a way significant compared to class control (64.7). With Thus, e-module learning media effective used on the eyes Motorcycle Engine lecture at the Automotive Engineering Department Faculty of Engineering, Makassar State University.

Keywords: Implementation, E-module, Motorcycle Engine

1. Introduction

Education is factor key information source Power competent human being for build nation. Law no. 20 of 2003 concerning The National Education System states that education is business conscious and planned For realize atmosphere learning and learning process so that participants educate in a way active develop potential himself. Development This directed so that participants educate own religious spiritual power, control self, personality, intelligence, morals noble, as well as the necessary skills for himself, society, nation and state.

Currently, the development The Industrial Revolution 4.0 brings change big, one of them convenience for participant educate in utilise progress technology for access learning media as source study, good through websites, YouTube, and other digital platforms [1]. According to [2], Industry 4.0 in the world of education implemented through integration technology, good in a way physique both virtual and physical, to in the learning process. One of the adaptive digital learning media is module electronics (e-modules).

E- module is compiled form of learning media digitally for realize competence targeted learning and encouraging participant educate become more interactive [3], [4]. This digital module is also known as with multimedia term flipbook, which contains information integrated with audio-visual technology. One

of the platforms that can used for compile e-modules is Canva. Canva is an online design program that provides various feature instrument like presentations, posters, and pamphlets. E-module media designed using Canva can equipped with relevant audio, animation and video that makes it easier understanding participant educate.

The Motorcycle Engine course is eye studying based practical work that examines about engine, principle work, components, maintenance, care periodically, until search troubleshooting on motorbikes. Based on results interview with lecturer guardian eye lectures and Chair Automotive Engineering Department, Faculty of Engineering, University of North Sumatra, lecture process during This new utilizing media in the form of tool PowerPoint practice and presentations, but Not yet supported by books text, module, or e-module. The lecturer delivers material in a way direct accompanied by demonstration picture object or tool practice. On the other hand, the use of gadget (smartphone) inside class permitted by the lecturer for look for material lectures. Therefore that, the implementation of e-modules expected can optimizing the learning process in a way independent and overcome limitations space and time lectures.

2. Literature review

A. Instructional Media E-Module Based

along with development knowledge knowledge and technology, knowledge regarding e-module media become need for the way something learning that is urgent. This is caused by Because learning that is complex so that there is various objective difficult learning achieved only with explanation from teacher. Therefore that, so that you can maximize results from learning required utilization of media, one of which is learning media e- module based.

E-module in a way etymological consists of from two words, namely abbreviation “e” or electronic and “module”. According to Siregar [5] said that module is unit activity Study planned to help student finish goals certain with method organizing material customized lessons with personal individual That Alone so that can maximize ability intellectual. The module is designed in a way specific and clear based on Power responsiveness of each student, so that push student For Study in accordance with his abilities. Along with development of science and technology, currently This module start modified from print media become a well-known digital media as module electronics (e-modules).

Electronic module is source learning that contains materials, methods, limitations and ways evaluate the design systematic and interesting For appropriate compensation curriculum in a way electronics. According to Sitepu [6] e-module is based module computer and contains fragments with questions in each fragments to make users more easy in understand material. To reduce boredom student Study with modules, digital teaching materials in form module electronic can developed become a learning medium interactive or known as an e- module interactive.

B. Canva

Canva is an online design program that provides various equipment like presentations, posters, pamphlets, and so on are provided in application Canva. As for the types presentations on Canva like presentation creative, education, business, advertising, and so on. Canva provides features or its uses For education, explaining that canva is tool help creativity and collaboration For all class. The only design platform you need in class. Develop creativity and skills collaborative, creating visual learning and communication become easy and fun. [7].

Canva is a design platform graphic web -based that provides various templates for make presentations, posters, infographics, learning videos, modules, and various other visual media. According to Ramli [8],

Canva is a application design graphics that can help educator compose interesting and easy learning media understood participant educate. Canva also allows integration images, icons, videos, audio, and animations that can increase quality of learning media.

C. **Flipbook**

Flipbook is a digital media that displays document electronic in form virtual book with effect flip page like book print. Flipbook allows integration various multimedia elements so that learning become more interesting.

According to Gayatri [9], flipbooks are digital media that can change PDF document to be book electronic interactive with appearance resemble book real.

D. **The relationship between E-Modules, Canva, and Flipbook in Learning**

E-module can developed using Canva as tool design For produce appearance interesting material. Next, the results e-module design can converted become a flipbook so that participant educate get experience read more interactive. With Thus, the combination of e-modules, Canva, and flipbooks can increase motivation learning, engagement participant education, and effectiveness learning.

3. Research methods

Type of research used is experiment quasi - experiment with design *nonequivalent control group design.* This design involving group control, however No can functioning fully For control variables external influences implementation experiment Because taking sample No done in a way random [10]. Sampling non- random sample means every member population No own equal opportunities For chosen, but rather based on considerations or need certain researcher [10].

E-modules developed moreover formerly validated by media experts and experts material, and tested to student as respondents. Testing media effectiveness was carried out in two classes, namely class experiments (using e-modules) and classes control (learning conventional without e- module). Research This implemented in two stages test, namely test ability initial (pretest) and test ability final (posttest). Data collection techniques used covering observation, interviews, questionnaires, and tests.

Data analysis was performed with technique analysis quantitative For know influence variables independent (treatment) of variables dependent (result study) in controlled conditions [10]. Response data from validators and students counted the percentage use formula as follows [11]:

E. **Formula Percentage per Item:**

$$P = \frac{X}{X1} \times 100\% \qquad (1)$$

Information:

P : Percentage
X : Respondent's answer in 1 item
X1 : The ideal score in 1 item
100% : Constant

F. **Formula Percentage Overall :**

$$P = \frac{\sum X}{\sum X1} \times 100\% \qquad (2)$$

Information:

P : Percentage
$\sum X$: Total number of respondents' answers
$\sum X1$: The total number of ideal values in 1 item

100% : Constant

The determination of the questionnaire score interpretation criteria can be seen in the following table:

Table 1. Weight question Instrument Study

Weight	Category
5	Very good
4	Good
3	Pretty good
2	Not good
1	Not good

Table 2. Validity Achievement Criteria

Percentage Score	Qualification	Equivalent
80%-100%	Very Worthy	Very Valid
61%-80%	Worthy	Valid
41%-60%	Quite Decent	Quite Valid
21%-40%	Less than worthy	Less Valid
0%-20%	Not feasible	Invalid

To find out the difference between *the pretest* and *posttest results*, another test formula is used as follows:

$$Normalized\ Gain = \frac{post\ test\ score - pretest\ score}{maximum\ possible\ score - pretest\ score} \quad (3)$$

N-Gain value acquisition category *The score* can be determined based on the *N-Gain value* which is described in the following table:

Table 3. Categories Value Acquisition

N-Gain Value	Category
g > 7	Tall
0.3 < g, 0.7	Currently
G < 0.3	Low

4. Results and Discussion

A. Description Development of E-Module Learning Media

Development of e-modules on subjects Motorcycle Engine lecture aims For increase results learning and independence students. Development process product done through stages following:

1. **Identification Problem:** Find constraint that the learning media used Still limited to tools practice and *PowerPoint*, and not yet availability module print and electronics.
2. **collection:** Gather information through observation and interviews with lecturer guardian, Chairman Department of Automotive Engineering, Faculty of Engineering, Makassar State University, and students.
3. **Product Design:** Determine the learning model, formulate it material, material essential, as well as compiling program flow in the form of *flowchart* and *storyboard.*
4. **Expert Validation:** Do evaluation eligibility products by experts (materials and media) before tested.

5. **Limited Trial:** Involving 10 students Department of Automotive Engineering For fill in questionnaire response and provide criticism and suggestions for improvement.
6. **Effectiveness Test:** Do experiment through giving *pretest* and *posttest* For compare improvement results Study between second class.

B. Validity of E-Module Learning Media

1. Subject Matter Expert Validation

Validation material carried out by 2 experts use sheet instruments consisting of over 10 grains statement. Aspects assessed covering suitability material with Plan Semester Learning (RPS), clarity instructions, systematization exposure, and convenience in understand material.

Assessment results from Material Expert 1 obtained percentage 68% (category worthy /valid) and Material Expert 2 obtained percentage of 90% (very suitable /very valid category). The average value of second expert material is 79%, which shows that material in e- module is in the category eligible /valid and ready tested with minor revisions.

Figure 1. Flowchart for Creating an E-Module

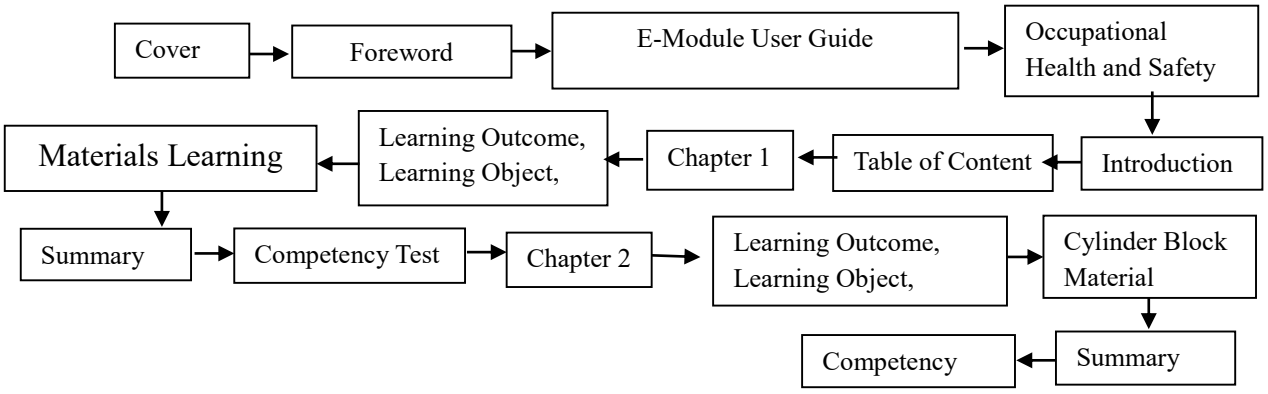
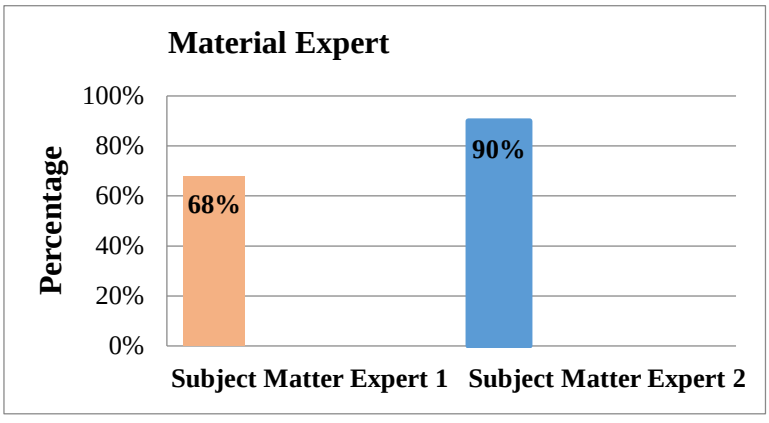


Figure 2. Diagram of Material Expert Validation Results



2. Media Expert Validation

Media validation involves 2 experts For evaluate eligibility systems, features, visual aesthetics, and navigation e- module content. Validation results from Media Expert 1 shows percentage of 88% and Media Expert 2 of 86%. Average achievement media validation was 87% with very valid category. This is prove that quality of learning media e- module based this is very worthy For applied.

Figure 3. Storyboard for Creating an E-Module

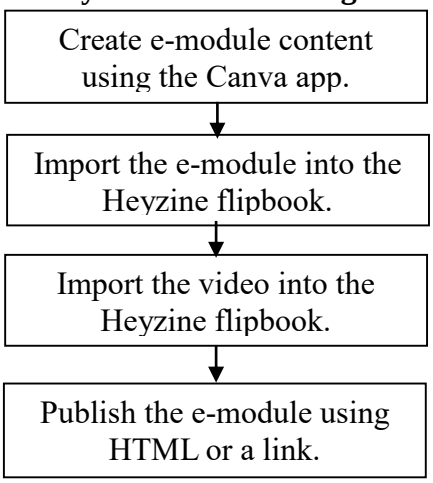
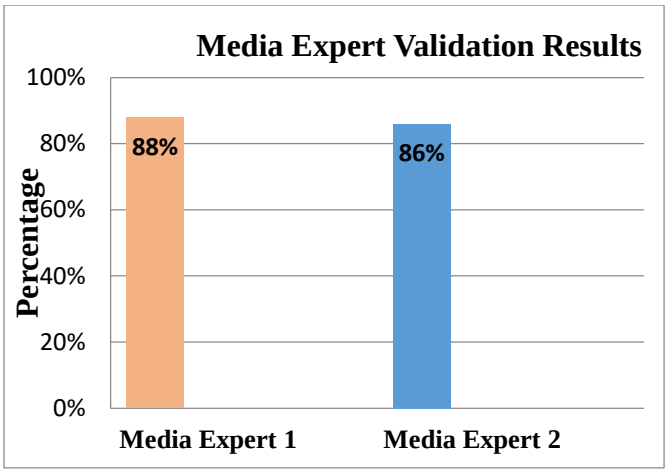


Figure 4. Media Expert Validation Results Diagram

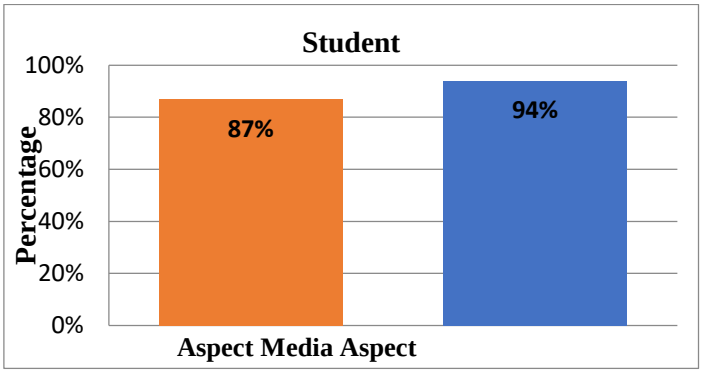


3. Student Trial

Trials limited done offline to 10 students use questionnaire containing 12 items statement (7 points) aspect material and 5 items media aspects). Response results student show percentage eligibility by 87% in the aspect material and 94% in the media aspect. The average total score response student reached 91% (very suitable /very valid category).

Validity test instrument using SPSS on trial data (N=10, alpha = 0.05, critical r = 0.632 shows mark significance count 0.000 and observer r > critical r. With Thus, all grains instrument declared valid.

Figure 5. Student Trial Results



C. Ability Test Results (Pretest and Posttest)

Based on results experiment, class experiment get average *pretest* score by 53.3 and increasing to 74.0 on *the posttest.* Meanwhile that, class control get average *pretest* score of 50.6 and *posttest* of 64.7. The difference *posttest* mean score second class is of 9.3. A larger margin of improvement high in class experiment prove that the e-module media effective Flip Canva based in increase achievements results Study student.

Table 4. Experimental Class Learning Outcomes

Mark	***Pretest***	***Posttest***
The highest score	73	93
Lowest value	47	63
Mode	53	80
Median	53	73
Mean	53.3	74

Table 5. Learning Outcomes of the Control Class

Mark	***Pretest***	***Posttest***
The highest score	60	87
Lowest value	33	47
Mode	60	60
Median	53	63.5
Mean	50.6	64.7

D. Test Results

1. **Normality Test Class Experiment:** Testing use method *Kolmogorov-Smirnov* through SPSS to produce mark significance 0.200 > 0.05. This show that class data experiment normally distributed.
2. **Normality Test Class Control:** *Kolmogorov-Smirnov* test results show mark significance 0.200 > 0.05, which means the class data controls are also normally distributed.
3. **Homogeneity Test:** Homogeneity test variance use *Levene's Test* produce mark significance of 0.684. Because the value significance 0.684 > 0.05, then second data variance class stated homogeneous.
4. **Hypothesis Testing:** Testing hypothesis using sample t-test independent (*independent sample t-test*) produces mark The significance (P-value) is 0.000. Since the value of 0.000 < 0.05, H0 is rejected and Ha is accepted. It can be concluded that there is difference significant results Study between students who use e-modules Flip Canva based with students who use method conventional.

Conclusion

Based on results research, data analysis, and discussion that has been described, can withdrawn conclusion as following:

1. E- module learning media Flip Canva based on the eyes Motorcycle Engine lectures are declared valid and very worthy used based on evaluation expert material (average 79%), media experts (average 87%), and responses students (91%).

2. E- module learning media based on Flip Canva proven effective increase results Study students in the Automotive Engineering Department, Faculty of Engineering, Makassar State University. This shown by the average *posttest* achievement class experiment (74.0) which is significant more tall than class control (64.7).

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