



P-ISSN: 2528-5688
E-ISSN: 2528-5696

VOLT

Jurnal Ilmiah Pendidikan Teknik Elektro

Journal homepage: jurnal.untirta.ac.id/index.php/VOLT

Vol. 2, No. 2, October 2017, 73-80



INTERACTIVE MODULES BASED ADOBE DIRECTOR ON COMPUTER ASSEMBLING SUBJECTS FOR VOCATIONAL SECONDARY SCHOOL STUDENTS

Indra Wijaya^{1✉}, Rini Sefriani¹

¹Department of Informatics Engineering Education, Faculty of Teacher Training and Education
Universitas Putra Indonesia YPTK, Padang 25237, Indonesia

✉Corresponding author e-mail: indra_wijaya@upiyptk.ac.id

Received: 02 October 2017. Received in revised form: 09 October 2017. Accepted: 09 October 2017

Abstract

This study aims to create an interactive learning module that qualifies valid, practical and effective for Computer Assembling subjects in Vocational High School. This research is a Research and Development research conducted in Vocational High School class X West Sumatra. The population of this research is SMK in West Sumatra. Samples are SMKN 6 Padang SMKN 1 Painan, SMKN 2 Pulau Punjung. The results of the assessment of the three validators overall validator test assessment of the Interactive Module of 88.67% so that the level of validity can be interpreted Valid used. Overall assessment of the practicality of the Interactive Module as a learning resource of 86.08%, so the level of practicality can be interpreted Very Practical used. And the effectiveness assessment of Interactive Module as learning resource equal to 85,25%, so the level of effectivity can be interpreted Highly Effective used.

Key words: Adobe Director, Interactive Module, Computer Assembly

© 2017 Department of Electrical Engineering Vocational Education, FKIP, UNTIRTA

INTRODUCTION

Limitations of learning media that exist in schools have an impact on the achievement of student learning outcomes. The use of learning media that is often used in the learning process in schools is still widely used in the form of

textbooks, Student Worksheets (LKS), and print modules. This causes the learning process less effective and less fun for students so that will make students saturated. Learning variations are still less due to ordinary teachers deliver lesson material using the book as a guide and rarely found the use of an Interactive Module in

delivering the subject matter so as to lead to the learning process rather boring.

Teachers are at the forefront of the learning process, as it helps students to find a good source of learning. Especially in today's development, teachers need to be creative and innovative in choosing good learning resources to create teaching and learning activities, so that learning activities are more active, creative, innovative, and fun so as to create multi interaction between teacher and student, student with teacher, students with learning media and learning resources, as well as students with other students so as to obtain good learning outcomes.

Based on the results of research that has been done by Sawitri (2016) showed an increase in learning results of computer assembly subjects, but the module is only applied for one semester. While in the current study conducted, intended for one year (two semesters).

The Interactive Module is expected to foster students' motivation in learning. Rusman, Riyana (2012), (Interactive Multimedia Development Guidelines: p3) writes "In many ways, the instructional materials or modules that are arranged manually are not able to overcome the learning problems faced by the training participants to easily and quickly achieve the competence to be achieved, therefore it is necessary to develop alternative teaching materials or modules that enable overcome them, among others by bringing the Program video and Interactive Multimedia Module.

Research by Febrianto, Osman, Yuanita, Suasty (2015) also stated that the process of teaching and learning using constructive learning media has increased the achievement of SPS and Science among students. The interactive modules include learning animation, tutorial tutorials, exercise questions and tests, related

to computer assembly subjects. This computer assembly subject is a practical subject in Vocational High School (SMK). This subject contains material dismantle pairs of Personal Computer (PC) which often resulted in damage to the components caused by the often dismantled pairs. For that use the interactive module as a simulation for the assembly of this computer. With this interactive module students will be guided through interesting animations that can be tried as a substitute for direct practice.

The development and utilization of ICT advances especially on the use of computer technology, the making of teaching materials can be made into an interactive program because images and messages can be displayed through computer keys (Miarso, 2009: 490). According to Pradirawilaga et al (1994: 42) The advantage of computer-based learning is to be a tutorial where learning can be given training and repetition, games and simulations. From the above it can be understood that printed materials can be developed into interactive programs including creating computer-based interactive modules. It is said to be interactive because users will experience interaction and be active eg actively pay attention to the picture, pay attention to writing varying colors or moving, sound, animation and even video and movies.

Create interactive modules can be created using one of the software programs or a combination of some computer software such as microsoft power point, authorware, multimedia captive, macromedia flash, adobe audition, photoshop, movimaker and other. The resulting module is text, images, sound and can even be combined with video, movies and features interactive buttons, and interactive evaluations. This module can be accessed by using computer, can be copied via flash disc, Module

and external memory. The interactive module will make learning more active, simple, easy, beautiful and fun. Even learning can be done by penetrating space and time. Thus the interactive module can be economical and practical.

The principles of designing the Interactive Module are: (1) learning must be fun (challenging, fantasy, and curious); (2) interactivity (dynamic computer support, dynamic social support, outside activism, and power); and (3) the opportunity to practice that can memorize, match, and available feedback.



Figure 1. Research Design Thinking Skeleton Computer Based Interactive Module

The purpose of this interactive module research is to create interactive module as a supplement in Computer Assembling learning, and to know the validity, practicality and effectiveness of Interactive module on Computer Assembly class X Department of Network Computer Engineering Vocational Secondary School (SMK).

METHOD

The design of interactive learning module based on Adobe Director on computer assembly subject for Computer Networking student is a research and development (research and development). According Sugiyono (2006: 333) Development research method is a research method used to produce a particular product, and test the effectiveness of the product. The resulting product is not always in a form like books, stationery, and other learning tools. But it can also be in the form of software (software)

The learning media of Adobe Director's interactive module is developed using four-D models developed by Thiagarajan (1974):

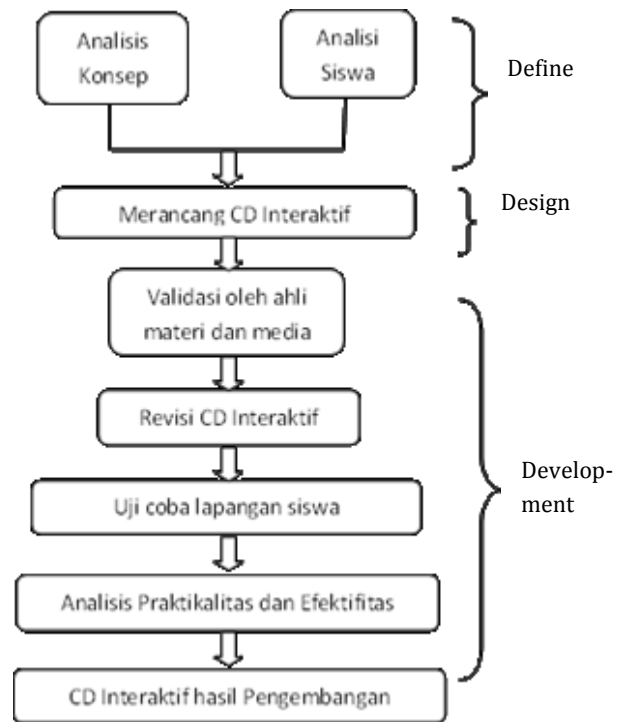


Figure 2. Research Procedure

Define

The define stage is the stage to define and define learning requirements. This define stage includes some basic steps, namely student ana-

lysis (learner analysis), concept analysis (concept analysis) and the formulation of learning objectives (specifying instructional objectives). This stage is done with three steps :

Before designing this media, first the reference to the curriculum. Curriculum Analysis is useful to know the standard of competence, basic competence and what indicators to be achieved by students.

Media Analysis aims to produce a product in the form of an interactive module on the subject of Computer Assembly of TKJ students.

Student analysis is done to know the ability of students which include academic ability, age and psychomotor, especially must be considered also any skill which have owned by student especially in Computer Assembling

Design

Thiagarajan divides the design phase into four activities: constructing criterion-referenced test, media selection, format selection, initial design. Activities undertaken at this stage include: a) develop test criteria, as the first action to determine the initial ability of learners, and as an evaluation tool after the implementation of activities; b) selecting instructional media that match the material and characteristics of learners; c) the selection of the form of presentation of learning is adapted to the learning media used. When teachers will use audio visual media, at the time of learning, of course, learners were asked to see and appreciate the audio visual media show; d) simulates the presentation of the material with the media and the learning steps that have been designed. At the time of the simulation of learning took place, also the assessment of peers.

Development

At this stage, the validity and practicality test has been revised based on the input given by the validators:

Validity test aims to determine the feasibility of interactive module based on Adobe Director. Validity test is performed by media experts from multimedia lecturers, computer hardware experts, and computer assembly material subject matter experts.

The steps of learning media validation to the validator are as follows: 1) ask the validator for the use of the learning media; 2) ask the validator to assess the learning media; 3) after the assessment, the researchers revised the interactive learning media.

After the validity test is done, then the test of practicality is the media test in the learning done in 2 stages: 1) practice test by teacher: researchers provide measures of media use to teachers; teachers try out the interactive learning media in learning; teachers are asked to provide an assessment of the media that has been tried; 2) Student practice test: provide guidance to students on how to fill out an assessment questionnaire, students are directed to observe media use by their teachers; students are directed to provide an assessment of the use of such media; students are required to fill in the provided questionnaire.

Dissemination

This stage is the stage of use of devices that have been developed on a wider scale. Results Interactive Module that has been through 3 tests of validity, Praktikalitas, and Effectiveness will be multiply and deserve to be disseminated.

Data analysis of this research is done by using descriptive analysis. The analysis includes Interactive-module validity analysis, analysis

Interactive module-practice and Interactive module effectiveness analysis

Interactive module-practice and Interactive-module effectiveness analysis.

Provide score answers with criteria based on Likert scale modified by Sugiyono (2014: 93)

Table 1. Assessment of Answers

Option	Score
Strongly Agree	5
Agree	4
Less Agree	3
Disagree	2
Strongly Disagree	1

Source: Sugiyono (2014 : 93)

Determine the highest score

Highest score = number of validator x number of item x questions maximum score.

Determine the number of scores from each validator by summing up all the scores obtained from each indicator. Determine the scores obtained by summing the scores of each validator. Determination of validity value modified from Purwanto (2010: 102) as follows:

$$NP = \frac{R}{SM} \times 100 \tag{1}$$

NP : the percent value sought or which are expected

R : raw score obtained students

SM : ideal maximum score of the test concerned

100 : fixed number

Provide an assessment of validity with the modified criteria from Purwanto (2010: 82) follows:

Table 2. Classification of Assessment Aspects

No	Average Value	Rated aspect
1	90%-100%	Very Valid

No	Average Value	Rated aspect
2	80%-89%	Valid
3	65%-79%	Enough
4	55%-64%	Less Valid
5	≤ 55%	Invalid

Source: Purwanto (2010: 82)

Then determine the modified frequency distribution distribution value as follows:

$R = \max - \min.$

$K = 1+3.3\log n$

$$P = \frac{R}{K} \tag{2}$$

Information

P = Length of interval class

R = Calculate the distance or range

K = Number of classes

RESULT AND DISCUSSION

The preliminary view is the view when the initial view of the options menu is in Module -Interaktif. The preview image is as follows:



Figure 3. Display Introduction

This view is a display of basic competency/competency standards (SK/KD) based on RPP. The SK/KD display image is as follows:

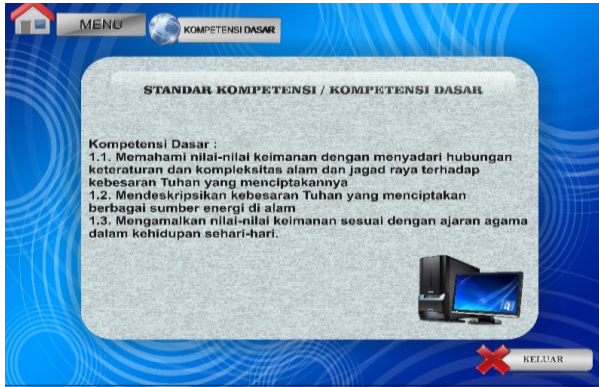


Figure 4. Display SK/KD

The appearance of the material is the display of subject matter based on the RPP. The material view image is as follows:



Figure 5. Content View

This view is a view of tutorial video of some features of technological sophistication. This display image is as follows:

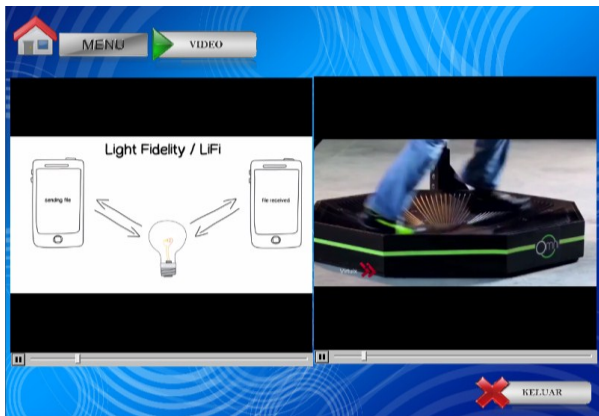


Figure 6. Video Views

This view is a view to try the exercise of the material explanation in this Interactive Module. This view has the following sections:

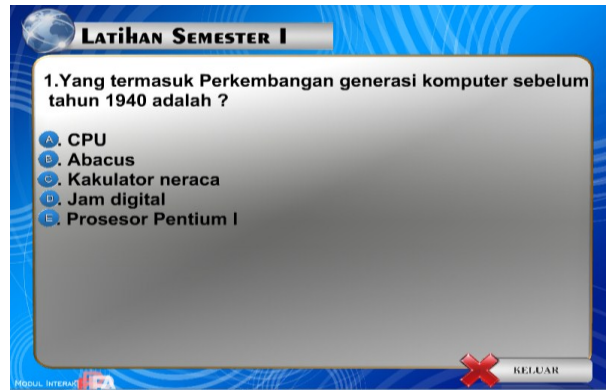


Figure 7. Exercise View

This view is the end result of the answer to the question. The picture can be seen below:



Figure 8. Score Views

Validation of Interactive modules from validator is done to assess interactive module design. The validator provides assessment, comments and comments on the interactive module design by filling out a questionnaire that has been provided. Interactive module validation is validated by three validators. The validator is a media expert who comes from PTI lecturer amounting to 1, one computer lecturer and 1 subject matter expert Computer Assembly from teachers of Vocational Secondary School by completing interaktif-feasibility questionnaire.

The average value of the calculation of the value of 3 validator of media experts and computer assembly material experts is 88.67 and see the interpretation of the interpretation table 2 by Purwanto (2010: 82), it is concluded that the validation of the three validators of media development module interactive learning is stated Very valid used in the learning process

The data of Module-Interactive practicability is through practicality test by 32 students with 20 items of statement. The average result of the calculation of practicability is 86.08 and see the table of interpretation criteria proposed by Purwanto (2010: 103), it is concluded that the development of instructional media- Interactive otherwise very practical use in the learning process.

Data of effectiveness of Interactive Module through effectiveness test by 32 students with 25 items of multiple choice. The average result of the effectiveness calculation is 85.25 and see the table of interpretation criteria proposed by Purwanto (2010: 103), it is concluded that the effectiveness of the development of Interactive Module learning media is declared effective in the learning process.

Table 3. Results of Validity, Practicality, and Effectiveness

No.	Aspect	Result	Information
1	Validity	88,67%	Very Valid
2	Praktikalitas	86,08%	Very Practical
3	Efektiveness	85,25%	Very Effective

CONCLUSION

Based on the theoretical basis and supported by data analysis, the results of research instruments can be summarized as follows:

The results of the assessment of the three validators overall validator test assessment of Interactive Module-learning media of 88.67% so that the level of validity can be interpreted Valid used. Overall assessment of the practicality of Interactive Module-learning media of 86.08%, so the level of practicality can be interpreted Very Practical use. The effectiveness assessment of the Interactive Module-learning medium is 85.25%, so that the effectiveness level can be interpreted effectively used.

In the use of learning media to support better learning, it is recommended things as follows: better teachers are able to provide learning with a wide range of learning media that make the appeal of students to learning. Students in computer learning more assembly attention and more focus, so that learning media more work well.

ACKNOWLEDGEMENT

Kementerian Riset, Teknologi dan Pendidikan Tinggi (Kemristekdikti) who has funded this research in Penelitian Dosen Pemula (PDP). Thank you for Dean of Faculty of Teacher Training and Education Universitas Putra Indonesia YPTK Padang, chairman of research institute and dedication community to the University of Putra Indonesia YPTK Padang, principal and teacher of SMKN 6 Padang, principal and teacher of SMKN 1 Painan, principal and teacher of SMKN 2 Pulau Punjung.

REFERENCES

- Arikunto, S. (2010). *Prosedur Penelitian Pendidikan*. Jakarta: Rineka Cipta.
- Arsyad, A. (2011). *Media Pembelajaran*. Jakarta: Raja Grafindo Persada

- Departemen Pendidikan Nasional. (2003). *Undang-undang RI Nomor 20 Tahun 2003, Tentang Sistem Pendidikan Nasional*. Jakarta: Depdiknas.
- Febrianto, R., Osman, K., Yuanita, P., & Suasty, F. (2015). *Effectiveness Of The Use Of E-Learning Portal Of Biomind To Improve Motivation And Overcoming Misconception Of Student*. (Undergraduate thesis, Universitas Riau).
- Hendratman, H. (2008). *The Magic of Macromedia Director*. Bandung: Informatika.
- Irianto, A. (2010). *Statistik Konsep Dasar, Aplikasi, dan Pengembangannya*. Jakarta: Kencana.
- Khikmah, T. Y. (2013). *Pengembangan Media Pembelajaran CD Interaktif Materi Struktur Dan Fungsi Sel Dilengkapi Teka-Teki Silang Berbasis Flash* (Undergraduate thesis, Universitas Negeri Semarang).
- Laksana, D. (2010). CD-Interaktif. Tersedia pada: <https://belajarmultimedia.wordpress.com/2010/09/16/pengertian-cd-interaktif/>. Diakses pada: 12 Maret 2017
- Miarso, Y. (2009). *Menyemai benih teknologi pendidikan*. Jakarta: Kencana.
- Purwanto, M. N. (2000). *Prinsip-prinsip dan teknik evaluasi pengajaran*. Jakarta: Remaja Rosdakarya.
- Rusman, M. P., & Cepi, R. (2012). *Belajar dan Pembelajaran Berbasis Komputer*. Bandung: Alfabeta.
- Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung. Alfabeta.
- Sulistiyani, S. (2009). *Mahir dalam 7 Hari Adobe Flash CS4*. Yogyakarta: Andi Offset
- Suyono, H. (2014). *Belajar dan Pembelajaran (Teori dan Konsep Dasar)*. Jakarta: Remaja Rosdakarya.
- Thiagarajan, S. (1974). *Instructional Development for Training Teachers of Exceptional Children: A Sourcebook*.
- Wijaya, I., & Sefriani, R. (2016). Interactive Multimedia CD Design Chemistry Lesson In Concept Training Material and amendment For Class X Vocational High School (SMK). *Journal of Dynamics*, 1(1).