

## AN ANALYSIS OF THE FEASIBILITY LEVEL OF THE INTERACTIVE LEARNING MEDIA ON WORKSHOP WORK AND ENGINEERING DRAWINGS SUBJECT

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### ABSTRAK

Penelitian ini bertujuan untuk memperoleh hasil analisis tingkat kelayakan media pembelajaran interaktif pada Mata Pelajaran Kerja Bengkel dan Gambar Teknik Kelas X Teknik Audio Video di SMK Negeri 1 Sumatera Barat. Metode yang digunakan dalam penelitian ini adalah metode deskriptif dengan menggunakan pendekatan kuantitatif dan kualitatif. Jenis data yang digunakan dalam penelitian ini adalah data kuantitatif dan data kualitatif. Instrumen penelitian berupa angket yang digunakan untuk memperoleh data tentang tingkat validitas media pembelajaran. Angket ini diisi dua orang oleh ahli materi dan dua orang ahli media. Aspek yang divalidasi pada penelitian ini adalah aspek content (materi) dan aspek tampilan (media). Teknik analisis data yang digunakan adalah analisis deskriptif kuantitatif dan analisis deskriptif kualitatif. Hasil penelitian menunjukkan bahwa media pembelajaran interaktif memperoleh skor rata-rata 87% dari kedua ahli materi dan 84% dari kedua ahli media. Berdasarkan hasil penelitian tersebut media pembelajaran interaktif pada Mata Pelajaran Kerja Bengkel dan Gambar Teknik masuk dalam kategori "Sangat Valid".

**Kata kunci:** Analisis Tingkat Kelayakan, Media Pembelajaran Interaktif, Kerja Bengkel dan Gambar Teknik

### ABSTRACT

*This study aimed to obtain the results of the feasibility level analysis of the interactive learning media on the Workshop Work and Engineering Drawings subjects for class X students of Audio Video Engineering at SMK Negeri 1 West Sumatra. This research used the descriptive method by using quantitative and qualitative approaches. The data used types in this research were quantitative data and qualitative data. The research instrument was in the form of a questionnaire that was used to obtain the validity level of learning media data. It was validated by two material and media experts. The aspects that were validated in this research were the aspects of content (material) and appearance (media). The data analysis technique of this research used quantitative and qualitative descriptive analysis. The results showed that the interactive learning media obtained an average score of 87% from the two material experts and 84% from the two media experts. Based on the research results, the interactive learning media in Workshop Work Subjects and Engineering Drawing were included in the "Very Valid" category.*

**Keywords:** Feasibility Level Analysis, Interactive Learning Media, Workshop Work, and Engineering Drawing



### INTRODUCTION

Vocational High School (SMK) as an implementing unit of vocational education is obliged to increase the quality of graduates following their fields. So that, it produced the graduates which were ready to work and to continue their education at university. SMK is a form of formal education unit which equips the students with knowledge,

expertise, and skills. So, the students can get a job, have competence, and foster professional attitudes in the field of expertise, and have good quality graduates.

Since the development of science and technology has increased, the teachers as the main component in the world of education were required to be able to keep up with and even go beyond the development of science and technology that was

developed in society lately. The teachers were required to create an effective and innovative learning process, including the use of interactive and creative learning media to create a pleasant learning atmosphere and motivate students to learn.

Learning media is a very important element in the teaching and learning process. The main function of instructional media became a teaching media that helps to motivate students, influences the learning process situations and the learning atmosphere created by the teacher. However, in the pandemic Covid-19 as currently, it requires teachers to facilitate the learning media in order to deliver materials at a distance to streamline the time and online learning process. Indonesia as one of the affected countries by this global disaster, the pandemic Covid-19, has taken a special policy related to the teaching and learning process implementation at all education levels. This policy was explained in Circular Letter Number 4 of 2020 the Minister of Education and Culture on the implementation of education policies in the Covid-19 period [1], Circular Letter Number 4 of 2020 the Minister of Education and Culture which was concerning the Prevention of COVID-19 in the Education Unit, and Number: 36962/MPK.A/HK/2020 which was concerning Online Learning and Working from Home in order to Prevent the Spread of Corona Virus Disease (COVID-19), and Circular Letter and instructions from the District head.

Based on the contents of the circular letter from the Minister of Education and Culture in point 2, it contains: The Learning from Home Process is carried out with the following conditions: (a) The Learning from Home through online/distance learning is implemented to provide meaningful learning experiences for the students without being burdened with the demands to complete all of the curriculum achievements for the students' grade up and graduation; (b) The Learning from Home can be focused on life skills education, including regarding the Covid-19 pandemic; (c) The Learning from Home learning activities and assignments may vary among the students, it depends on the individual interests and conditions, including considering gaps in access/learning facilities at home; (d) The evidence or products of Learning from Home activities are given the qualitative and meaningful feedback from the teacher, without being required to give a quantitative score. Based on the circular letter, the West Sumatra Education Office has carried out an online/distance teaching and learning process, including at SMK Negeri 1 West Sumatra. Regarding the online/distance learning process, teachers need

learning media that can be accessed easily by students.

At this time, it was found that many students were less motivated in taking part in online learning that was being implemented during the Covid-19 pandemic. It can be seen that the teachers can no longer apply the learning media that was usually used during face-to-face learning. They need innovative learning media that can help them carry out online learning effectively and efficiently. It became a new problem for teachers and students. The teachers need innovative learning media that are practical and easy to use by both the teacher and students. While for students learning online via smartphones makes understanding the material presented by the teacher difficult to understand.

To increase the learning stimulus and students' motivation, so that the researchers made innovation; an interactive learning media. Through interactive learning media, the students will not feel bored and become more interested in learning with text, images, audio, video, and evaluation for each basic competency (KD). Other advantages of interactive learning media are accessible through a variety of media such as laptops and it can also be accessed via a smartphone that allows students to be able to learn anywhere and anytime [2].

Based on the results of the learning media observations used by teachers at SMK Negeri 1 West Sumatra during the Covid-19 pandemic, the learning media used were PowerPoint slides which were uploaded through the Online Teaching and Learning Activities (KBM) application. Conceptually, the Online KBM application allows teachers and students to enter online classes at the same time, the teacher recapitulates attendance, uploads materials, the teacher can also interact with students using chat or comment facilities, and can meet face to face using the application meeting in each students' online class.

However, the online learning process has not been implemented optimally because of the unpreparedness of teachers and students so that it needs adjustments first. Various obstacles also arise in the use of this KBM Online application. The problem that often arises is internet problems, in using the internet, sometimes it gets the problems with the network. This problem certainly interferes with ongoing learning activities, because when the network is disconnected, students cannot enter the class and miss learning materials.

At this time, where the development of information technology is so fast, there are many application programs for making interactive learning media. In addition to the many types, how to use and

get the application program is also easy. Articulate storyline 3 is an application that can be used to create interactive learning media that is easy and interesting. Interactive learning media created using the software is Articulate Storyline 3 no less interesting than other interactive media such as Macromedia Flash and Adobe Flash [3]. The difference with Flash, which is most often used as an application to create interactive learning media, is that Articulate Storyline 3 does not require a programming language or script in the manufacturing process. All animation commands that are needed in making interactive learning media can be done with the menu "trigger" so that it can help the teachers to create interactive learning media.

From the description of these problems, the researcher will create interactive learning media that can help teachers and students in the teaching and learning process. Interactive learning media can be used anytime and anywhere without limited time so that it can help the teachers and students in the online learning process. This interactive learning media can be used on laptops or smartphones by teachers and students respectively. Before the media is used in learning, the media needs to be tested on several indicators of feasibility assessment from the media and material aspects. Based on the background described, researchers were interested in conducting this study with the title "Analysis of Feasibility Levels of Interactive Learning Media on Workshop Work and Engineering Drawing Subjects Class X Audio Video Engineering at SMK Negeri 1 West Sumatra".

## **METHOD**

The method used in this research was a descriptive method by using quantitative and qualitative approaches. According to [4] descriptive research was a research method that seeks to describe and interpret objects according to what they were. Descriptive research can be in the form of research using quantitative or qualitative approaches [5]. The subjects of this study were two material experts and two media experts. The research stages can be described as follows:

### **1. Preparation stage**

The steps in the preparation stage were as follows:

- a. Analyzing Core Competencies (KI) and Basic Competencies (KD) in Workshop Work and Engineering Drawing Class X Audio Video Engineering following the 2013 Curriculum

which was used in SMK Negeri 1 West Sumatra.

- b. Creating a Lesson Plan (RPP) that was adjusted to the existing methods in SMK Negeri 1 West Sumatra.
  - c. Creating learning materials based on the syllabus and lesson plans.
  - d. Creating interactive learning media.
  - e. Developing research instruments as a means of collecting data in the form of a questionnaire. The questionnaire was prepared by the researcher under the guidance of the supervisor.
- 2. Implementation Stage.**  
The steps in the implementation stage were as follows:
- a. Prepare and administer research permits.
  - b. Contact teachers who teach the subject of Workshop Work and Engineering Drawing as well as expert lecturers in learning media to determine the timing of the research.
  - c. Test the validity of learning media using research instruments. The validation of learning media was carried out by distributing research instruments in the form of questionnaires filled out by teachers of Workshop Work and Engineering Drawing subjects as experts and lecturers as media experts.
  - d. Collecting the results of filling out a validation questionnaire for interactive learning media in the Workshop Work and Engineering Drawing subjects.

### **3. Completion Stage**

The steps in the completion stage were as follows:

- a. Analyzing the data that has been obtained in the research implementation process for the preparation of research results.

- b. Concluding from the research results obtained following the data analysis technique used.

The research instrument used in this study was a questionnaire filled in by material experts and media experts. A questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents in order to respond to the following user requests [6]. Interactive learning media was categorized as feasible/valid if it fulfilled two aspects, namely the aspect content (materials) and the display aspect (media). The material validator in this study was Mrs. Dra. Enny Erita, M.Pd, and Mr. Ridcel Yandres, S.Pd., M.Pd.T. as a teacher for Workshop Work and Engineering Drawing for Class X Audio Video Engineering at SMK Negeri 1 West Sumatra. Meanwhile, the media validator in this study was

Mrs. Titi Sriwahyuni, S.Pd., M.Eng, and Mr. Drs. Almasri, MT as a lecturer in the Department of Electronics Engineering, Engineering Faculty of Padang State University.

The data analysis technique used in this research was the quantitative and qualitative descriptive analysis technique, which described the validity test results of the interactive learning media.

The quantitative descriptive analysis was to determine the validity level of interactive learning media. Analyzing the validity values with the formula:

$$\text{Validation Value} = \frac{\sum \text{Score per item}}{\sum \text{Ideal maximum score}} \times 100\%$$

Providing an assessment of the validity of this interactive learning media with the following criteria, then describing it by using descriptive techniques:

Table 1. Learning Media Validity Category

No.	Achievement Level (%)	Category
11	0% - 20%	Invalid
22	21% - 40%	Less valid
33	41% - 60%	Quite valid
44	61% - 80%	Valid
55	81% - 100%	Very valid

Source : [7].

Qualitative data analysis for the interactive learning media validity was obtained from learning media and material validators' suggestions. The results of the analysis were taken into consideration to make improvements to interactive learning media.

## RESULTS AND DISCUSSION

This research was conducted at SMK Negeri 1 West Sumatra Class X Audio Video Engineering Skills Competency which was located at M. Yunus street of Lubuk Lintah, Padang. The research was carried out from July to October 2020. This study aimed to determine the feasibility of interactive learning media in Workshop Work and Engineering Drawing Subjects Class X Audio Video Engineering at SMK Negeri 1 West Sumatra. The explanation of the research results based on the steps of the research procedure was as follows:

### 1. Preparation stage

At this stage, the preparation to create the interactive learning media in Workshop Work and Engineering Drawing subjects. Several steps have been taken and the results of each step were as follows:

- a. Analyzing Core Competencies (KI) and Basic Competencies (KD) in Workshop Work and

Engineering Drawing for Class X Audio Video Engineering following the 2013 Curriculum used in SMK Negeri 1 West Sumatra.

- b. From the syllabus, the researcher developed it into a Learning Lesson Plan (RPP). The creating of the RPP was adjusted to the existing method in SMK Negeri 1 West Sumatra.
  - c. Creating the learning materials based on the syllabus and lesson plans.
  - d. Creating interactive learning media. The following was a description and specifications of interactive learning media in the Workshop Work and Engineering Drawing subjects that have been made.
  - e. Developing the research instruments as collecting data tools in the form of a questionnaire. The questionnaire was prepared by the researcher with the guidance of the supervisor based on the grid.
- ### 2. Implementation stage
- a. Prepare and administer a research permit. At this stage, the researcher submitted a research letter at Akama Engineering Faculty of Padang State University. with the purpose of the letter of Education Office of West Sumatra. Furthermore, they issued a reply letter in the form of a research permit at SMK Negeri 1 West Sumatra. After the Head of the Electronics Expertise Program (KPK) at SMK Negeri 1 West Sumatra approved the disposition sheet from the Vice Curriculum, researchers could carry out the research. The research permit and disposition sheets can be seen in the attachment.
  - b. Contacting the teacher or material and media validators in Workshop Work and Engineering Drawing in order to determine the execution time of the study.
  - c. Test the validity of learning media using research instruments. This validity instrument was a validation sheet in the form of a questionnaire that was used to obtain data about the validity level of interactive learning media. The validation of learning media was carried out by distributing research instruments in the form of questionnaires filled out by teachers of Workshop Work and Engineering Drawing subjects as media experts and teachers. The aspects to be validated at this validation stage were divided into two, namely the aspects of content (material) and aspects of display (media). Each aspect was validated by two validators or experts.

Table 2. List of Validator Names

No.	Validator Name	Aspects that are validated
1.	Dra. Enny Erita, M.Pd	Content (material) interactive learning media
2.	Ridcel Yandres, S.Pd., M.Pd.T	Content (material) interactive learning media
3.	Titi Sriwahyuni, S.Pd., M.Eng	Display (media) interactive learning media
4.	Drs. Almasri, M.T.	Display (media) interactive learning media

d. Collecting the results of filling out a validation questionnaire for interactive learning media in the workshop work and technical drawing subjects. After the validator or material expert and media expert filled out the questionnaire, the researcher then collected the questionnaire to process the research data. Collecting the validation questionnaire results for interactive learning media in Workshop Work and Engineering Drawing subjects. After the material and media validator filled out the questionnaire, the researcher collected the questionnaire to process the research data.

3. Completion Stage

a. Analyze the data that has been obtained in the research implementation process for the preparation of research results. Analyze the data that has been obtained in the research implementation process for the preparation of the research results.

1) Validation of Analysis Content (Material) Aspect

The material expert's assessment focus was to assess interactive learning media on the aspect content, which consisted of 10 assessment indicators. The material validator in this study was Mrs. Dra. Enny Erita, M.Pd, and Mr. Ridcel Yandres, S.Pd., M.Pd.T. as a teacher for Workshop Work and Engineering Drawing of Class X Audio Video Engineering at SMK Negeri 1 West Sumatra.

The validation was carried out on September 22, 2020, at SMK Negeri 1 West Sumatra. Validation was carried out by using a material expert validation questionnaire. The quantitative data in the form of scores were used to determine the validity of interactive learning media. While the qualitative data in the form of suggestions was then used to improve the interactive learning media products for

Workshop Work and Engineering Drawings subject. The results of the material expert's assessment of the content aspect can be seen in Table 3 below.

Table 3. Results of Aspect Assessment Content (Material)

No	Statement	Validator	
		I	II
1	The media are made based on the suitability of KI and KD	5	5
2	KI, KD, and Indicators are described appropriately following the syllabus	4	5
3	Learning objectives are formulated and displayed referring to Indicators Achievement of Competence	4	4
4	The suitability evaluation with indicators on interactive learning media	4	5
5	The clarity of the language used in interactive learning media	5	4
6	The suitability of language with target users of material on interactive learning media following the material in the syllabus	4	4
7	The clarity of information on media pictures interactive learning supports a conceptual understanding of learning materials	4	4
8	The clarity of information on interactive learning media videos supports the concept of understanding learning materials	5	5
9	Organizational structure/content sequence of interactive learning media materials following the learning materials	4	4
10	The clarity of instructions for using interactive learning media	4	4
	$\Sigma$ Score per item	43	44
	$\Sigma$ Ideal maximum score	50	50
	Validation value	86	88
	Average (%)	87	
	Categories of Learning Media Validity	Very Valid	

Data in Table 3 showed the validation results of interactive learning media by the material validator 1 got a score of 43 with a percentage of 86%. The validation results by material validator 2 got a score of 44 with a percentage of 88%. So that the average validation score obtained from the two material validator was 87% or it was included in the category "Very Valid". Also, besides the validation results on the content aspect can be seen in the table form, it also can be seen in the graphical form below.

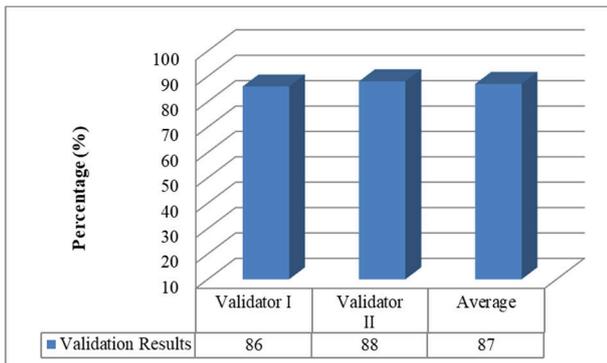


Figure 1. The graph of the validation results on the aspect of content (material)

Media in this category was suitable to use in the learning process. However, several things need to be revised following the advice of the validator. The material validator provided some suggestions for media improvement, and it can be seen as follows:

- a) In KD 3.1, which discussed Occupational Safety and Health (K3) based on OSHA, in order to get the additional material on how to make a Monthly Safety Report. This material was needed because it was rarely discussed in making a Monthly Safety Report in the learning process. While the practical equipment in the workshop was almost the same as the standard in the industry. Display material on how to make a Monthly Safety Report in the media. After getting the revision, it can be seen in Figure 2 below.



Figure 2. Display of monthly safety report material

- b) In the submenu, if there was already a "BACK" button, it was no need to add the "HOME" button. Furthermore, if the button on the previous submenu was named "BACK", then the other buttons were also given in the same name. So, it maintained the consistency of the display.



Figure 3. Display of teaching materials sub menu before revision.

The result after getting some revisions was to delete the "HOME" button and change the name of the "KEMBALI" button to the "BACK" button in order to make it compatible with other buttons. The display of the teaching materials sub-menu after getting the revision can be seen in Figure 4 below.



Figure 4. The sub-menu display of teaching materials after getting the revision

## 2) Display Aspect Validation Analysis (Media)

The focus of the media assessment was to assess interactive multimedia products on the display (media) aspect. The media validator in this study were Mrs. Titi Sriwahyuni, S.Pd., M.Eng, and Mr. Drs. Almasri, M.T. as a lecturer in the Department of Electronics Engineering, Engineering Faculty of Padang State University. The validation was carried out on September 28, 2020. Quantitative data in the form of scores were used to determine the validity of the media. While qualitative data in the form of suggestions were used to improve interactive learning media products. Validation was carried out by using a media validity test questionnaire to the validator. The questionnaire consisted of 10

assessment indicators. The results of the material assessment of the display (media) aspects can be seen in Table 4 below.

Table 4. The Results of the Display Aspect (Media) Assessment

No.	Statement	Validator	
		I	II
1	The proportion of pictures in interactive learning media is clear and attractive	4	5
2	The pictures contrast on interactive learning media is clear	4	4
3	The color composition of the display in interactive learning media is clear and attractive	3	5
4	The clarity of the sound in interactive learning media	4	5
5	The use of sound and music in interactive learning media is appropriate and interesting	5	5
6	The selection of letters (text) displayed in interactive learning media is clear and easy to understand	4	3
7	The contrast of letters (text) displayed in interactive learning media is clear and easy to understand	3	4
8	The suitability of video with interactive learning media	5	5
9	The quality of interactive learning media video	4	4
10	The proportion of text presentation in interactive learning media is easy to understand	4	4
	$\Sigma$ Score per item	40	44
	$\Sigma$ Ideal maximum score	50	50
	Validation value	80	88
	Average (%)		84
	Categories of Learning Media Validity	Very Valid	

Data in Table 4 showed the validation results of interactive learning media by the media validator 1 got a score of 40 with a percentage of 80%. The validation results by media validator 2 got a score of 44 with a percentage of 88%. So that the average validation score obtained from the two media validator was 84% or it was included in the category "Very Valid". In addition, besides the validation results on the display aspect can be seen in the table form, it also can be seen in the graphical form below.

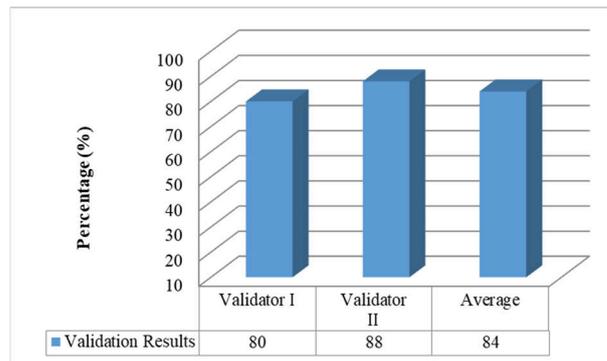


Figure 5. Graph of the validation results on the display aspect

## CONCLUSION

Based on the results above, it can be concluded that the interactive learning media on Workshop Work and Engineering Drawings subject which was made in the study was feasible/valid in order to use in the Workshop Work and Engineering Drawing learning process. This feasibility was based on:

1. Validated by material validator 1 which got a score of 43 with a percentage of 86% and validated by material validator 2 got a score of 44 with a percentage of 88%. So that the average validation score obtained from the two material validators was 87% or it was included in the "Very Valid" category.
2. Validated by media expert 1 which got a score of 40 with a percentage of 80% and validated by media validator 2 which got a score of 44 with a percentage of 88%. So that the average validation score obtained from the two media validators was 84% or it was included in the "Very Valid" category.

## SUGGESTION

Based on the research that has been conducted, there were several things that researchers can provide suggestions for developing further research, namely:

1. It is necessary to conduct a workshop in order to make interactive learning media by using the Articulate Storyline 3 application to the teachers of SMK Negeri 1 West Sumatra who teach Class X Audio Video Engineering. It is because the Articulate Storyline 3 application is very easy to use as well as using Microsoft Office PowerPoint.
2. Further research is needed regarding the effectiveness test and practicality test of using interactive learning media in Workshop Work and Engineering Drawing subject.

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