The Perceptions of Vocational School Students of Video Animation-Based Learning Media to Operate Lathes in Distance Learning

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A B S T R A K

SMK mempunyai tantangan melaksanakan pembelajaran jarak jauh yang bermakna dengan menggunakan media video animasi sesuai persepsi siswa. Namun, persepsi siswa tentang penggunaan media video animasi dalam pembelajaran jarak jauh belum diketahui. Penelitian ini bertujuan untuk mengukur persepsi siswa SMK Teknik Pemesinan tentang penggunaan media video animasi untuk pengembangan keterampilan mengoperasikan mesin bubut dalam pembelajaran jarak jauh. Subjek penelitian terdiri dari 73 siswa SMK Teknik Pemesinan. Teknik pengumpulan data menggunakan kuesioner. Uji kelayakan media dilakukan oleh dua orang ahli materi dan media. Studi ini menggunakan metode analisis statistik deskriptif kuantitatif, t-test, dan One-Way ANOVA dengan post-hoc advanced test yaitu uji Dunnett C dan Tukey untuk mengetahui perbedaan persepsi siswa terhadap penilaian.Hasil validasi kelayakan media oleh ahli materi sebesar 81,875% dan ahli media 90,625% termasuk kategori sangat layak. Penilaian kelayakan media oleh siswa 83,714% kategori sangat layak. Jadi, tidak ada perbedaan yang signifikan antara siswa laki-laki dan perempuan dalam penilaian terhadap media video animasi pembelajaran jarak jauh.

A B S T R A C T

SMK has the challenge of implementing meaningful distance learning using animated video media according to student perceptions. However, students' perceptions about the use of animated video media in distance learning are not yet known. This study aims to measure the perceptions of Mechanical Engineering Vocational School students about the use of animated video media for the development of skills to operate a lathe in distance learning. The research subjects consisted of 73 students of Mechanical Engineering Vocational Schools. The data collection technique used a questionnaire. The media feasibility test was carried out by two material and media experts. This study used quantitative descriptive statistical analysis methods, t-test, and One-Way ANOVA with post-hoc advanced tests, namely the Dunnett C and Tukey test to determine differences in students' perceptions of assessment. The results of the media feasibility validation by material experts were 81.875% and media experts 90.625% were in the very feasible category. The assessment of the feasibility of the media by students was 83.714% in the very feasible category. So, that there was no significant difference between male and female students in the assessment of distance learning animated video media.

1. INTRODUCTION

The Covid-19 Pandemic period made learning in vocational schools change, from face-to-face to distance learning. Distance learning is becoming more and more intensive all over the world, especially in vocational education institutions. Distance learning is a learning approach that has been applied worldwide through the use of media as a means of interaction between students and educators (Costa et al., 2020; Rajendra & Sudana, 2017). Distance learning is learning facilitated by internet technology between students and educators (Bozkurt, 2019). Students in distance learning rely on the use of media and the internet as distance facilities to support learning (Hamilton, 2020; Tayo et al., 2020). Even though distance learning is applied, it is hoped that the use of learning media can help students and teachers to achieve learning goals. One of the institutions that conduct distance learning is SMK, SMK is an educational institution that has the role of guiding students to acquire skills so they can work. Vocational education is designed to be able to prepare individuals in the form of developing skills to get a job (Pavlova, 2009; Sudira, 2017, 2018). One important element to support learning activities is the use of learning media. Learning media is an intermediary used by teachers to deliver material to students in order to create effective and interesting learning. The use of instructional media can increase students' understanding of the subject matter and be able to increase learning motivation so that the goal of making

learning more effective and efficient can be achieved (Priambodo & Arifin, 2019). The use of media in distance learning is very necessary to maintain the quality of learning by increasing student understanding and motivation (Thaitami & Maksum, 2020; Wisada et al., 2019).

The results of observations of the implementation of distance learning that are applied in Vocational High Schools, especially in the competency of Mechanical Engineering expertise, there are several problems that arise, including: (1) student interest in participating in learning is low because it is not accompanied by the use of attractive media; (2) the use of animated videos in distance learning has not been implemented even though animation has many advantages; (3) the explanation of the material presented by the teacher has not provided optimal stimulus to students; (4) learning is still cantered on the teacher as the only source of information; and (5) the competency value of the students' lathe machining technique is not satisfactory. Based on the preliminary study, the data on the results of the student competency assessment in learning lathe machining techniques show that 42.40% of the student's score is below the minimum completeness criteria. The total number of students in 4 groups was 92 students, on average 53 students had completed the minimum completeness criteria value, while 39 other students had not met the score. This condition shows that students still have difficulty understanding the correct work steps regarding the operation of a lathe. As a result, the competence of students in operating the lathe does not reach the minimum standard. However, when the learning process is carried out using distance learning, students expect the procedure to operate a lathe and the workpiece processing can be displayed in a near-real form supported by learning media.

One of the appropriate media to support distance learning is an animated video. Animation is one of the most active learning media used in distance learning so that learning can continue effectively without being hampered by distance (Kör et al., 2014; Priambodo & Arifin, 2019). Animation is defined as a stable image that displays moving objects and sequences (Hwang et al., 2012). Animated videos will make it easier for teachers to deliver learning material. Productive subjects will feel easy to understand by students if they are supported using animation media because material that looks abstract can be displayed more real. Animation in learning can be used to attract students' attention and interest, to show the demonstration of a process or procedure, and to explain to students the understanding of a concept (Kurniawati, 2020; Priambodo & Arifin, 2019). Animated video is one of the media developments in learning that is able to provide a stronger visual display of abstract information to improve the quality of the learning process and student learning outcomes (Anjarwati et al., 2016).

Animated videos can be seen and understood by students without having to come to school because the essence of distance learning is to make it easier for students to study material using easily accessible media. Measuring the level of effectiveness of animated video media in distance learning needs to be done through students' perceptions of animated video media in their carrying capacity for learning. Perception is a process where individuals control and express to give meaning to a situation. Meaning is given by individuals by responding directly to information whose process is preceded by sensing (Robbins, 2000; Saragih, 2019). Given the use of animated video media has various positive impacts on the distance learning process as described above. Therefore, this study aims to measure the perceptions of vocational students about the use of animated video learning media for developing skills to operate a lathe in distance learning.

2. METHOD

This type of research uses a survey method as the primary study material. The survey method in this study was used to determine the development and level of students' perceptions of using animation video-based media to support distance learning. The data collection technique used a questionnaire aimed at material experts, media experts, and vocational students of the department of Mechanical Engineering. The number of respondents is 2 lecturers for material experts and 2 lecturers for media experts in the mechanical engineering department. Furthermore, students of Mechanical Engineering Vocational High School as research subjects were considered to be 73 respondents who were obtained using sampling techniques. The material expert consists of aspects of content feasibility, language, presentation, and benefits. Media experts consist of aspects of appearance, ease of use, consistency, format, and graphics. Students consist of aspects of material, language, graphics/appearance, and benefits. The number of statement items on the questionnaire for expert lecturers amounted to 20 questions, while for students totalled 18 questions. Student perception data were analysed and described based on real conditions using quantitative descriptive analysis. Quantitative descriptive is the statistic used to analyse data by describing or describing the collected data as it is (Sugiyono, 2017). Determination of the feasibility category of animation video-based media using a Likert scale which has 4 alternative answers, as shown in Table 1.

Table 1. Category of Data Acquisition Interpretation

Scale	Category	Percentage
4	Very Feasible	>81.25% - 100%
3	Worthy	>62.5% - 81.25%
2	Feasible Enough	>43.75% - 62.5%
1	Not Feasible	25% - 43.75%

(Daryono & Rochmadi, 2020).

The parametric statistical test uses comparative analysis which is used to determine differences in student perceptions of video animation-based learning media to support distance learning. The t-test was conducted to determine the average gender differences in assessing learning media. While the Dunnett C test on the age dimension. The age range for mechanical engineering students is <16 years to >17 years. Then Tukey test on class dimension class. This study took 73 students consisting of 4 class subjects, namely A, B, C, and D. Detailed information on respondents in this study is shown in Table 2.

Table 2. Frequency and Percentage of Respondent Information Details

Dimendion	Subdimension	Frequency	Percentage
Gender	Male	67	91.781%
	Female	6	8.219%
Age Range	<16 years old	17	23.288%
	16-17 years old	43	58.904%
	>17 years old	13	17.808%
Class Subject	A	25	34.247%
	B	19	26.027%
	C	14	19.178%
	D	15	20.548%

3. RESULT AND DISCUSSION

The development of video animation-based learning media have been adjusted to the basic competencies of the lathe machining technique subject. The material for lathe machining technique consists of 8 sub lessons, namely machine types and parts, equipment, workpiece specifications, parameters, occupational safety and health, step work, quality results, and references. The parts of developing an animation video-based are shown in Figure 1. The feasibility of animation video-based as a media for distance learning can be seen from the results of the assessment or validation of material experts and media experts. The assessment or validation of the material aspects includes four categories, namely the feasibility of content, language, presentation, and benefits carried out by two experts who obtained a total score of 131 out of 160 with a percentage of 81.875% including in the very feasible category. This category can be interpreted that the suitability of the material in the animation video-based of the lathe machining technique is very suitable to be used to support distance learning. Validation by 2 media experts covered five categories, namely appearance, ease of use, consistency, format, and graphics with a score of 145 out of 160 with a percentage of 90.625% included in the very feasible category. This category can be interpreted that the suitability of the media in the animation video-based of the lathe machining technique is very feasible to be used to support distance learning. The presentation of each aspect of the feasibility of animation video-based media results of the validation of material and media experts can be seen in the graph in the following Figure 2 and 3.
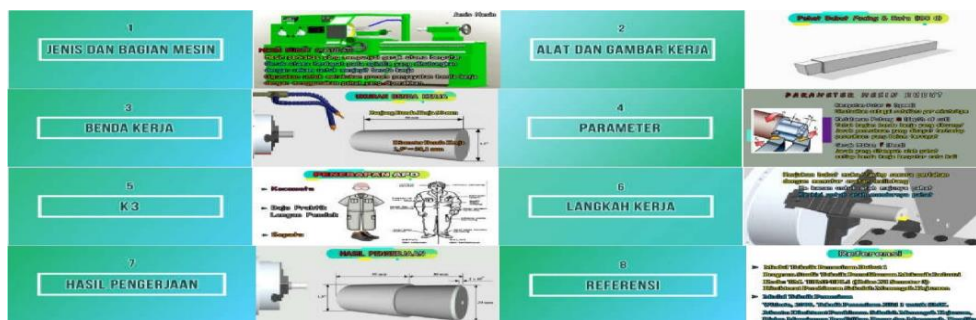

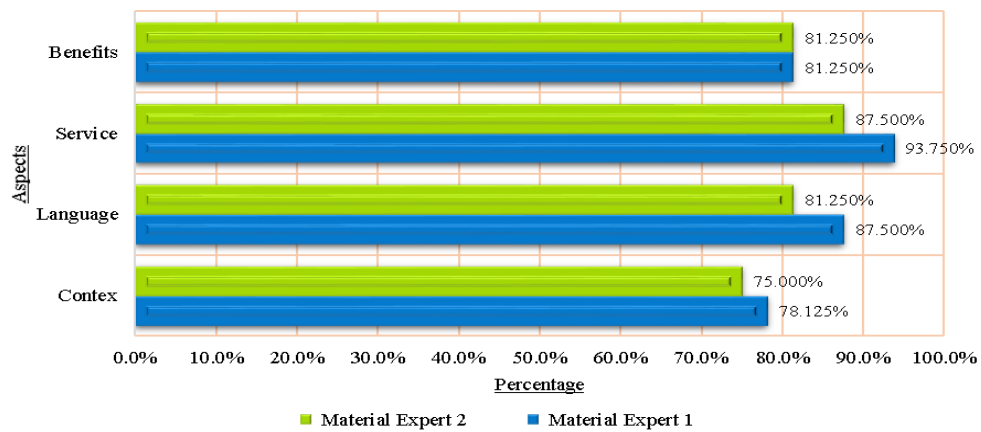**Figure 1.** The Display of Video Animation-Based Learning Media

Figure 2. The Feasibility Results of Media Development by Material Experts
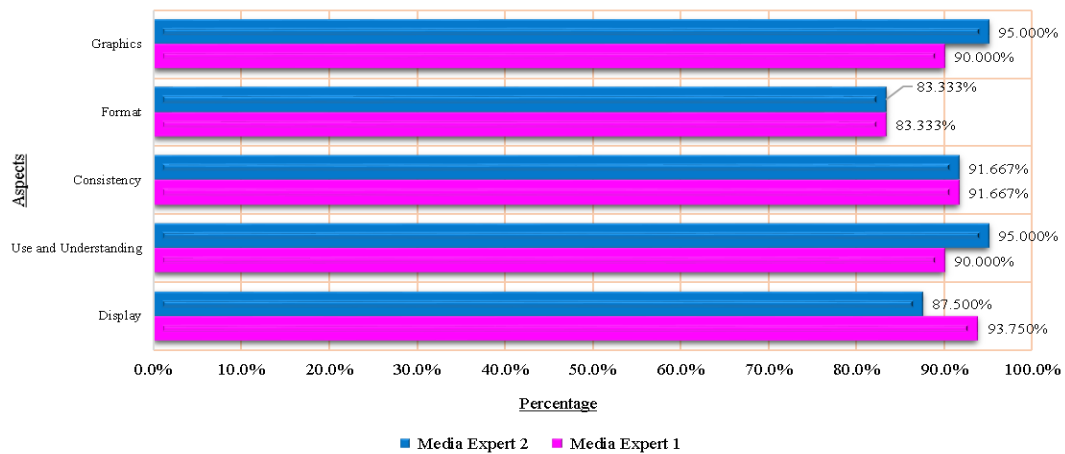

Figure 3. The Feasibility Results of Media Development by Media Experts

A sample of 73 students was involved to provide an assessment of the perception of animation video-based media of lathe machining techniques consisting of aspects of material, language, graphics, and benefits. The total score of students' perceptions was 4400 out of 5256 with a percentage of 83.714% belonging to the very feasible category. Based on these results it can be interpreted that students really understand the material in animation video, really understand the language used in animation video, really understand animation video graphics, and animation video-based media are very useful to support distance learning. The presentation of each aspect of the feasibility of the animation video-based media of the students' perceptions can be seen in the following Figure 4.
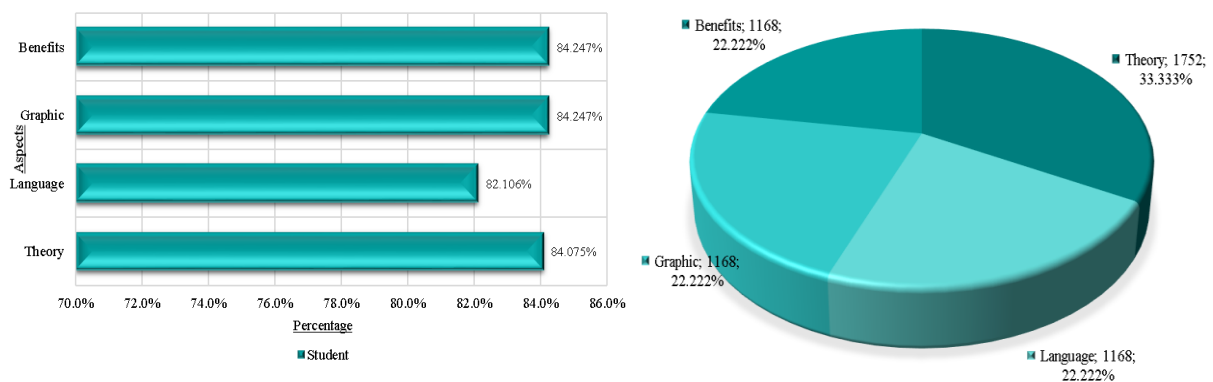

Figure 4. An assessment of media feasibility by students

The average difference test uses comparative analysis using 3 different types of analysis to determine students' perceptions of learning media to support distance learning. The dimensions of the indicators are divided into 3 categories, namely based on gender (male; female), age range (<16 y.o .; 16-17 y.o .;> 17 y.o.), and class subject (A; B; C; D). Students' perceptions of the assessment of learning media based on gender categories were carried out using t-test analysis. Table 3 shows the results of the t-test analysis by students by gender.

Table 3. The t-test analysis on the mean difference test of student assessments

Gender	N	Mean	Std. Deviation	Std. Error Mean	Sig.	t
Male	67	3.353	0.293	0.036	0.885	0.454
Female	6	3.296	0.060	0.125		

Based on the results of the t-test analysis on the gender dimension, it is known that there is no difference in the mean of students on the assessment of learning media to support distance learning. This is indicated by the t-value obtained, namely 0.454 and p (sig.) Of 0.885, the results of the analysis have met the test requirements of analysis. The hypothesis (Ho) which states that there is no difference in the average rating can be accepted if the t-value <t-table (1.993) and p (sig.) >0.05 (Alnahdi, 2020). This is attempted between male and female students in the implementation of learning media there is no difference in perception. Table 4 shows the results of the Dunnett C test analysis in the dimensions of age on perceptions of media assessment by vocational high school student.

Table 4. The Dunnett C test analysis on the difference test of students' mean assessments

Age Range	N	Subset for alpha = 0.05	F	Sig.	Inter-group differences
<16 years old	17	3.353	0.565	0.571	Uses Harmonic Mean Sample
16-17 years old	43	3.324			Size = 18.868
>17 years old	13	3.423			

Based on the results of the One-Way Anova analysis, the Post-Hoc Test for the Dunnett C test method at the age dimension is known to have no difference in the mean difference between students and learning media to support distance learning. This is indicated by the calculated F-value obtained, namely 0.565 and p (sig.) Of 0.571, the results of the analysis have met the analysis requirements test. The hypothesis (Ho) which states that there is no difference in the average rating can be accepted if the F-value < F-table (3.43) and p (sig.)> 0.05 (Çetin et al., 2020). This is attempted between age ranges in the implementation of instructional media there is no difference in perception. Table 5 shows the results of the Tukey test analysis in the class dimension of the perception of media assessment by vocational high school students.

Table 5. The Tukey-test analysis on the mean difference test of student assessments

Class Subject	N	Subset for alpha = 0.05	F	Sig.	Inter-group differences
A	25	3.240	2.038	0.117	Uses Harmonic Mean Sample Size
B	19	3.368			= 17.337.
C	14	3.409			
D	15	3.448			

Based on the results of the One-Way Anova analysis, the Post-Hoc Test for the Tukey test method in the dimension class subject, it is known that there is no difference in the mean of students towards the assessment of learning media to support distance learning. This is indicated by the calculated F-value obtained, namely 2.038 and p (sig.) of 0.117, the analysis results have met the analysis requirements test. The hypothesis (Ho) which states that there is no difference in the average rating can be accepted if the F-value < F-table (2.742) and p (sig.)> 0.05. This is attempted between subject classes in the implementation of learning media there is no difference in perception. There are previous studies that reveal the feasibility of animation video-based media, such as in this study. Animation video-based can be used as an effective learning medium and have an effect on student knowledge so that teachers can consider using animation video-based media in learning (Shiu, 2020). Furthermore, the animation video-based media used in learning can improve quality and facilitate student discussions with teachers (Bello-Bravo, 2019). Animation video-based are media that can increase student motivation in participating in distance learning (Rachmavita, 2020). Besides being able to support distance learning, through the use of animation video-based, learning outcomes will increase (Simarmata, 2020). The results of previous studies revealed that effective distance learning practices can be influenced by one thing, namely the use of media (Macinko, 2020). The use of digital virtualization technology such as animation video-

based media can support distance learning (Skripak, 2020). Animation video-based media used to support the distant learning process can increase student motivation. Increasing learning motivation in students is a good indicator in improving the quality of the learning process and learning outcomes (Leow, 2014).

Given that this animation video-based can be accessed via a student's smartphone, it is classified as multimedia. This is reinforced from the research findings that multimedia-based learning media that utilize the internet, computers, video, and audio combined in hardware and software are effective in providing benefits as learning facilities for specific individual needs. Multimedia technology empowers the learning process between teachers and students, is an innovative way to make learning more dynamic, durable, and more intense outside the classroom (H. Almara'beh, E. F. Amer, 2015). As a medium in distance learning, students can use animation video-based without being limited by time and space. Positive student perceptions of using easily accessible and attractive media can be positive motivation to continue learning (Yusuf et al., 2017). Based on the results of this study and previous studies, it is proven that animation video-based media is suitable to be used to support distance learning. In addition, animation video-based media can improve learning outcomes and student interest in learning. This is because of the benefits of the learning media itself.

The parametric statistical test results with comparative analysis using t-test analysis, and One-Way Anova with the Post-hoc advanced test including the Dunnett C and Tukey test to find out the average difference between senior high school students' assessment of perceptions of media feasibility as a support for distance learning. Perceived assessment is based on 3 classification dimensions consisting of gender, age range, and class subject. The results of the study prove that there are no significant differences based on the 3 assessment dimensions. According to the research objective, to prove students' perceptions of the appropriateness of video-based learning media animation to support distance learning can be accepted. So that the additional contribution to the results of this study suggests that vocational education teachers in various fields of study can apply animation video-based learning media in an effective and efficient learning process.

4. CONCLUSION

Animated video learning media is very important for vocational high school teachers to develop skills in operating lathes for students of mechanical engineering in distance learning. Some researchers revealed that the use of animated video media in distance learning has a positive impact on teachers and students. The appropriate learning material in the animated video can be adjusted based on the student's needs. Teachers are expected to be able to develop animated videos as learning media to create a quality learning process that is able to develop skills in improving student competencies.

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