

Video Tutorials on Education Statistics Course Assisted with Screencastify: Validity and Feasibility

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ABSTRAK

The students' difficulty understanding lecture material is due to the lack of learning media that can help students learn independently. This study aims to develop a learning video tutorial based on the Screencastify screen record. This type of research is developmental research. The development model used is the Plomp development model. The development of the learning model is divided into three stages, namely the initial research, the prototype production, and the model assessment stage. The technique of collecting data in this research is observation and interview. The instrument used to collect data was a questionnaire. Data analysis was carried out to know the feasibility or validity of the product being developed. Media testing uses expert judgment. The validity measurement uses the Likert scale. The results of the validity and practicality of the validators were carried out by using the Intraclass Correlation Coefficient (ICC) test using the SPSS program. The results showed that the educational statistics tutorial videos were classified as valid for all categories and very practical, with a score of 85.5 based on students' answers as respondents. It can be concluded that the learning video developed is valid so that it is feasible to be applied in the learning process.

ABSTRACT

Kesulitan mahasiswa dalam memahami materi perkuliahan dikarenakan minimnya media pembelajaran yang dapat membantu mahasiswa dalam belajar secara mandiri. Penelitian ini bertujuan untuk mengembangkan video tutorial pembelajaran berdasarkan screen record Screencastify. Jenis penelitian ini adalah penelitian pengembangan. Model pengembangan yang digunakan adalah model pengembangan Plomp. Pengembangan model pembelajaran dibagi menjadi tiga tahap, yaitu tahap penelitian awal, pembuatan prototipe, dan tahap penilaian model. Teknik pengumpulan data dalam penelitian ini adalah observasi dan wawancara. Instrumen yang digunakan untuk mengumpulkan data adalah angket. Analisis data dilakukan untuk mengetahui kelayakan atau validitas produk yang dikembangkan. Pengujian media menggunakan penilaian ahli. Pengukuran validitas menggunakan skala likert. Hasil validitas dan kepraktisan validator dilakukan dengan menggunakan uji Intraclass Correlation Coefficient (ICC) menggunakan program SPSS. Hasil penelitian menunjukkan bahwa video tutorial statistik pendidikan tergolong valid untuk semua kategori dan sangat praktis dengan skor 85,5 berdasarkan jawaban siswa sebagai responden. Sehingga dapat disimpulkan bahwa video pembelajaran yang dikembangkan valid sehingga layak untuk diterapkan dalam proses pembelajaran.

Introduction

Currently, learning is done in the classroom and can be done anywhere or termed as *E-learning*. Electronic learning or *E-learning* has started in the 1970s (Waller & Wilson, 2001). Various terms are used to express opinions, including online learning, internet-based learning, virtual learning, or web-based learning (Khamparia & Pandey, 2017; Putra & Sudarti, 2015). Three essential things in the activity *E-learning* namely: (a) learning activities carried out via the internet, and (b) learning support services provided, and (c) the availability of tutor support services, which can assist students in learning (Kurtz, Tsimerman, &

Steiner, 2014; Rosy, Ranu, Nugraha, & Handini, 2018). The components that make up *E-learning* are infrastructure *E-learning*, systems and applications *E-learning*, and content *E-learning*. The infrastructure is the equipment used in *E-learning* in the form of a computer, laptop, or other network devices connected using specific communication media. Meanwhile, the E-learning content as learning media in integrated images, photos, audio, video, and animation is also essential.

The problem that occurs today is the lack of learning media that can facilitate students' learning (Qumillaila, Susanti, & Zulfiani, 2017; Rahmi, Budiman, & Widyaningrum, 2019; Tegeh, Simamora, & Dwipayana, 2019). This problem was also found in one university. Based on the results of observations and interviews in Pahlawan Tuanku Tambusai University found the problem that there is a lack of learning media that can help students in learning. This college has implemented E-learning but there is a lack of learning content on E-learning, especially in statistics courses. Based on the results of observations, some students considered that the Statistics course was quite a complex subject because this course was mainly related to counting numbers so that it had to be studied through quite complicated calculation steps, especially for social science students. Students are interested if the learning material is presented with a live explanation video by the lecturer (90%). The results of the lecturers' interviews showed that 2 out of 3 lecturers interviewed revealed that learning statistics during a pandemic requires interactive media to make it easier for lecturers to deliver the material. All lecturers admitted that they did not have the Statistics learning video presented to students during the pandemic. So far, the learning process in statistics courses has been carried out by making live presentations at online meetings via Google Meetings or Zoom and Whatsapp.

Based on these problems, one of the solutions offered is developing instructional videos. Instructional videos are learning media that have audio and visual components making it easier for students to understand the subject matter (Krishna, Sudhita, & Mahadewi, 2015; Yuliani, Antara, & Magta, 2017; Yusnia, 2019). The advantages of instructional videos are 1) can explain the actual situation of a phenomenon or event, 2) can enrich the explanation when combined with other media such as images or text, 3) students can do a repetition, 4) help in teaching material in the realm of behavior, 5) more effective and fast in conveying material than text media, and 6) can clearly show a step or method procedurally (Naharir, Dantes, & Kusmaryatni, 2019; Taqiya, Nuroso, & Reffiane, 2019; Tegeh et al., 2019). Learning videos have unique features that make for effective learning that can change the way teachers teach. Videos can also help in visualizing things. In addition, videos can grab students' attention, thus motivating them and engaging them to enhance their collaboration (Tegeh et al., 2019). This statement is in line with the results of research conducted by Busyaeri (2016) stated that learning videos could make it easier for students to learn to improve student learning outcomes. Research conducted by Naharir et al., (2019) also states that instructional videos can improve student learning outcomes. Research conducted by Krisna, D, & Abadi (2013) also stated that instructional videos make students interested in learning to increase student motivation in learning. It can be concluded that learning media in the form of instructional videos can improve student understanding.

This description is why this research was carried out by considering the positive instructional video media towards the learning process. Learning videos with the screencast technique are usually tutorial types, such as tutorials on using software or in the form of exposures. Many software can be used to create video screencasts (Christian, 2010). Screen recording with the Screen cap method is one possible opportunity for teachers to apply E-learning learning. The essence of the screencast is to record the work with a narrator. The recording is digital via a computer screen and usually contains narrative audio. Video is one of the learning media, which is quite interesting. Screen casting is one of the suggested techniques used to produce instructional videos. A screencast or widely known as a video screen capture or screen recorder, is a digital recording of a computer display with guided narration recorded using a microphone.

This research aims to develop a Screencastify screen record-based learning video tutorial. It is hoped that developing Screencastify screen record-based learning video tutorials can help students understand statistical material to increase student motivation and learning outcomes.

Method

This type of research is development research. The development model used is the Plomp development model. This model was chosen because it has practical steps and is suitable for developing video tutorial for educational statistics courses. Plomp, T. & Nieveen (2013) states that the development of the learning model is divided into three stages, namely the initial research stage and the prototype production stage, and the model assessment stage. This development research will be carried out at the University of Pahlawan Tuanku Tambusai. The technique of collecting data in this research is through observation and interviews. They were collecting research data using a questionnaire instrument that will be distributed to students and lecturers who use video tutorials and observations on video tutorials in learning. Data analysis was carried out on video tutorials to determine the feasibility or validity of the media to be used as E-learning for students of the Faculty

of Education, the University of Pahlawan Tuanku Tambusai, which are posted on Youtube. To test the validity of the product, an expert judgment was used. The validity measurement uses the Likert scale. The results of the validity and practicality of the validators were carried out by using the Intraclass Correlation Coefficient (ICC) test using the SPSS program. This test aims to determine the relationship or contribution to the validity and practicality of the product being assessed

Result and Discussion

This research resulted in the development of instructional videos whose stages refer to the Plomp development model. There are three stages in Plomp development, namely preliminary research, prototyping, and assessment. Needs analysis is carried out at the preliminary research stage by conducting interviews with lecturers, student interviews, curriculum analysis, concept analysis, and student characteristic analysis.

The initial stage is carried out in an interview. The results of the lecturers' interviews showed that 2 out of 3 lecturers interviewed revealed that learning statistics during a pandemic requires interactive media to make it easier for lecturers to deliver the material. All lecturers admitted that they did not have the Statistics learning video presented to students in learning during the pandemic. So far, the learning process has been carried out by making live presentations at online meetings via Google Meetings or Zoom and Whatsapp social media. In this study, three (3) students interviewed consisted of the high, medium, and low ability students. The results of the students' interview revealed the need for a more detailed explanation from the lecturer about statistics material to understand the concept of educational statistics.

The next stage is analysis. This concept analysis is needed so that the Education Statistics learning video tutorial is more focused according to the curriculum. Based on the analysis result, it was found that the characteristics of students were quite varied in their mathematical abilities. Only two statement items received high scores, including the ability to identify problems (70%) and do calculations correctly (95%), while the other 6 statement items were answered "no" by the students, meaning that the student answered "no" Low problem-solving ability. In students' answers to online learning, three things that have high scores, namely for items that are interested in online learning with direct explanation (70%), requiring a more detailed explanation in elaborating course material to solve statistical problems (80%), and interested if the learning material is presented with a direct explanation video by the lecturer (90%). For the other three items, the scores obtained were low, namely, those related to explanations via website links, assignments via social media, and the ability to describe sources or course materials to solve problems and be interested when learning materials were presented with material. Live explanation videos by lecturers (90%). The next stage is to develop a product. The result of prototype 1 is an initial product design in the form of a Statistics learning tutorial video which is poured through recording using Screencastify by first carrying out the program installation process on the Google Web store so that it becomes an application for recording screens obtained as follows.

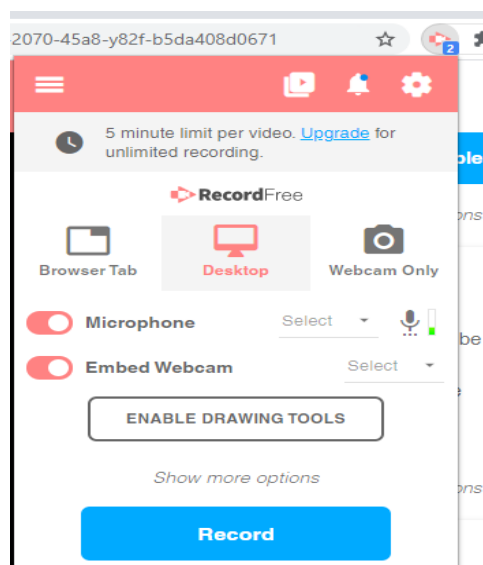


Figure 1. Screen Record Screen Castify menu

The initial product design was a recording of the explanation of the Statistics material, which was carried out using Screencastify. The tool used is a headset so that the voice can be heard clearly. The recording process display can be seen as shown below:

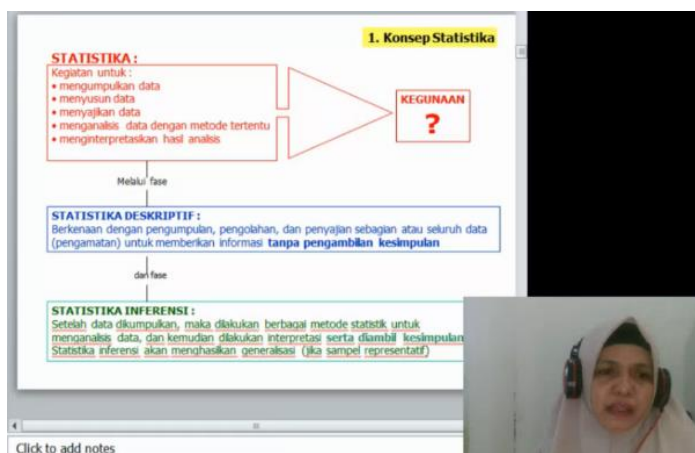


Figure 2. Screen Record Screen Castify Process

The recording process using Screencastify is limited to five minutes per video to avoid student boredom in watching videos and facilitate partition in presenting the material. According to the syllabus and Semester Learning Plan (RPS), the content is presented sequentially, and a Learning Implementation Plan (RPP) has been prepared. The material presented at the beginning of the recording process was about the introduction of statistics and statistics and types of statistics. The material is presented using power points that have been compiled before the recording process is carried out.

After the initial product design has been prepared, it is then evaluated. Evaluation is carried out following the sequence of Tessmer's (1993) formative evaluation stages, starting with self-evaluation. Evaluation needs to be done by researchers themselves as an initial correction to the product design that has been compiled. In general, based on the self-evaluation of the learning videos that have been made, the entire recording process has been done well, the volume is correct, and there are no typing errors on the PowerPoint display. However, there are still some notes that need to be revised, as in the following table.

Table 4. Results of Self Evaluation of Prototype 1 Model Book

Before the Revision	Revision Efforts
There is still the pronunciation of the explanation that is too fast	A video that was pronounced too fast was re-recorded
Some of the letters on the PowerPoint are too small	Improvements were made to the PowerPoint font size
It is necessary to group the material so that it is more focused on the presentation	Check again and revise the group of material that has not been partitioned according to the subject being taught

After a product has been revised based on self-evaluation, the product is consulted with an expert to obtain product validation. All instruments used by experts in providing assessments have gone through a validation process first. The assessment includes several aspects, namely presentation, language, and content. Presentation category assessment consists of two aspects, namely sound, PowerPoint display. The recapitulation of expert judgment can be seen in the following table.

Table 5. Expert's Assessment on Presentation Categories.

Indicator	Expert Rating	
	1	2
Sound Volume	3	4
Power point	11	14
Amount	14	18
Average	16	

The average expert rating was 16, which indicates that the category of view was included in the value B, which could be used with minor revisions. The linguistic category assessment consists of three aspects. In this category, the language in question is Indonesian, as described in the following table.

Table 6. Results of Expert Assessment of Language Categories

Statement of Language Usage Items	Expert Rating		
	1	2	3
Language is easy to understand	4	4	3
Language used is according to the rules of the Indonesian language	4	3	4
The use of the term in the video is consistent	3	4	4
Amount	11	11	11
Average Validator Ratings	11.00		

The average rating of the linguist category expert is 11.00, which is classified as a B value, meaning that the video in terms of language can be used with bit of revision. Content category assessment consists of two aspects, namely content feasibility, language mathematics. The results of the content field assessment can be seen in the following table.

Table 7. Expert's Rating for Content Categories

Indicator	Expert Rating		
	1	2	3
The material is sorted according to the syllabus	4	4	4
The material is easy to understand	3	3	4
Complete material with relevant symbols and pictures	4	3	4
Amount	11	10	12
Average Validator Ratings	11		

The expert's assessment for the content category is 11, which is included in the B value interval because, according to the expert, several improvements must be made to the contents of the lecturer's book. Expert's judgment is an effort that can be made to test the validity of the product. Usually, at least three (3) experts are used for one category, for example, three (3) experts for language, three (3) for graphics for three (3) experts, content and learning also three (3) experts each.

Prototype 1, which has been revised according to expert advice, is called prototype 2. Evaluation of prototype two (2) is carried out by one-to-one evaluation. At this stage, the researcher involved two students consisting of one low-ability student and one high-ability student. The techniques described in a one-to-one evaluation are described in the following table.

Table 8. Technical Activities of One-to-One Evaluation

No.	Activities
1	The lecturer sends a video to each student
2	Students are asked to watch videos and detect parts that are not understood
3	Students are given a questionnaire
4	Recapitulation of the questionnaire to calculate practicality

The practical results can be seen from the questionnaire filled out by 37 Semester II students of the Mathematics Study Program at the University of Pahlawan Tuanku Tambusai regarding their responses to the Educational Statistics learning video.

Table 9. Practical Results of Screencastify-Assisted Statistics Teaching Videos at Stage One-to-One

Rated aspect	Score		%	Category
	1	2		
Learning using screen recording videos is a lot of fun	4	5	90	Very Practical
I can easily understand the statistical material presented with the help of screen recording videos	5	5	100	Very Practical

Rated aspect	Score		%	Category
	1	2		
I can solve the statistical problems presented in the lecture	4	3	70	Practical
I have benefited from learning to use screen recording videos during a pandemic	5	4	90	Very Practical
I can clearly understand the statistical troubleshooting steps through the explanation of the screen record video	4	3	70	Practical
I am interested in following the next lesson by presenting the material through a screen recording video	4	4	80	Very Practical
I can solve the problem within the allotted time	5	5	100	Very Practical
Screen recording video display is very interesting and not boring	4	3	70	Practical
I can easily read every letter, number, word and sentence in video view	5	5	100	Very Practical
Average			85.56	Very Practical

Table 9 shows that the average student response reached 85.56, which fulfilled the efficient category. Although some improvements need to be made, in general, the criteria for practicality have been met. It can be concluded that the learning videos that have been developed are valid and feasible to be applied in the learning process. Some of the factors that cause the developed learning videos to be feasible to be applied in the learning process are as follows.

First, the learning video developed is feasible in the learning process because it can increase student motivation in learning. The learning videos developed can attract students' attention in learning. The learning videos developed have several components such as audio such as sound and visuals such as text so that they can attract students' attention in learning (Coal & Coal, 2020; Tegeh et al., 2019). In addition, the instructional videos developed can also increase student interest and are practically used in learning. Widjningsih, Sugiyono, & Gafur (2014), in their research states that the use of instructional videos can improve student understanding and attract students' attention in learning.

Second, the learning video developed is feasible in the learning process because it can make it easier for students to learn. The instructional video developed is designed to make it easier for students to understand the subject matter. This learning video also helps lecturers deliver material (Imamah, 2012; Novita, Sukmanasa, & Pratama, 2019; Purwanti, 2015). This is because the learning videos are developed according to the characteristics of students. Students are interested in presenting the material using the Screencastify video recording screen. Students hope that the examples of questions given are complete to make it easier for students to solve problems and analyze problem-solving. It can be concluded that the learning media instructional videos can make it easier for students to learn.

Research conducted by Wisada, Sudarma, & Yuda S (2019) stated that learning videos could make it easier for students to learn to improve student learning outcomes. Research conducted by Engineering (2020) states that the creative learning model combined with instructional media instructional videos can improve students' problem-solving abilities. Research conducted by Novita et al., (2019) also states that instructional videos can improve student learning outcomes. It can be concluded that innovative learning media can make students interested in learning to improve student learning outcomes.

Even though this learning media is classified as valid and meets practical criteria, in the implementation of learning, the lecturer still has to prepare a learning model that can support with the help of this screen recording video. (Colvin Clark, R., & Mayer, 2011; Febriana, 2017; Redhana, 2019). Emphasize that E-learning must remain focused on learning rather than technology. The delivery of content through various technological formats must match the human capacity for learning and the cognitive devices of the brain (Colvin Clark, R., & Mayer, 2011). The most effective learning methods often do not always match what people think intuitively (Colvin Clark, R., & Mayer, 2011). So, based on these descriptions, the learning media developed are feasible, practical and effective. With this media, it will greatly assist the learning process.

Conclusion

Based on expert judgment, the media developed is classified as valid. Based on the practicality test carried out, it was stated that the media developed was practical. It can be concluded that the learning video developed is feasible to be applied in the learning process.

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