

YouTube Channel Development on Education: Virtual Learning Solutions during the Covid-19 Pandemic

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Abstract

Covid-19 pandemic makes all activities that involve many people must be limited. Likewise, with lecture activities, it must be diverted online. The availability of supporting facilities and infrastructure is the main problem. This study aims to provide a solution by developing a YouTube Channel that contains learning material in applied statistics courses. Development is carried out using the ADDIE model which consists of the Analysis, Design, Development, Implementation, and Evaluation stages. Video creation and editing using Camtasia. After the learning media is developed, it is uploaded to the YouTube Channel and integrated into the Google Classroom. Based on the results of evaluations conducted by student users, it is known that learning media through the YouTube Channel that was developed is very useful, easy to use, and has a relatively very good quality. Clear evidence of media utilization can be seen from the results of the YouTube Channel analysis which shows a significant development of the viewer.

Keywords: Covid-19, education, YouTube Channel, virtual learning.

1. Introduction

The epidemic of diseases caused by Covid-19 forced changes in various aspects of life [1], [2]. Learning in higher education was also affected by this Covid-19 outbreak [3]. Lectures which are all carried out face-to-face or blended learning [4]–[8], are forced to be carried out online using e-learning [9]. This sudden transition certainly requires a rapid and appropriate adaptation. The solution is to utilize a learning management system application such as Google Classroom [10], [11], Moodle [12]–[16], and Edmodo [17], [18]. Besides, it can also take advantage of social media such as WhatsApp, Facebook, Telegram, YouTube, Hangout, Zoom, Cisco Webex. Some previous research results show that social media can be used to support learning [19]–[24].

Virtual learning [25] was the solution during the outbreak of Covid-19 [26]. Virtual learning uses Skype, Zoom, Cisco Webex, Google Hangouts, and Microsoft Teams [27]. However, the reality is that not all students have easy internet access. Early research results show that as many as 79% students experience problems with internet connections. Therefore, using the conference application directly cannot reach all students equally.

One of the subjects affected is the applied statistics course. Applied Studies presents the range of statistical methods commonly used in science, social science, and engineering [28], [29]. Subjects who should practice more than theory. The learning objectives in this course are that students are able to understand and use various data

analysis techniques properly. Therefore, it needs a media that is able to guide students to understand the material while also being able to meet the learning outcomes.

The development of media in the form of learning videos uploaded on the YouTube channel is expected to be able to provide solutions. Apart from being a medium of entertainment and news, YouTube can also be a source for learning [30]. Virtual lectures in applied statistics courses can still be done. Lectures are carried out flexibly but will still be effective and efficient. Effectiveness and efficiency can be seen from the mastery of the material and learning outcomes.

This study aims to provide solutions by presenting virtual learning using audio visual media. The media in the form of learning videos are uploaded and made a special YouTube Channel. There are several advantages of learning videos available on the YouTube channel. *First*, it can be accessed easily at any time, not necessarily in the same time. So the learning process is more flexible. *Second*, learning videos can be downloaded so that they can be studied offline. *Third*, videos can be integrated with other learning management systems such as Google Classroom, Moodle, and Edmodo easily. *Fourth*, videos can be shared via social media like WhatsApp, Facebook and Telegram easily.

2. Methodology

This research is research and development (RnD). Research that seeks to produce and test the effectiveness of these products [31], is not to test the theory [32]. The product developed is an applied statistics-learning video course provided on the YouTube Channel. The development of instructional media is carried out using the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) [33], [34]. Following are the five stages of development research using the ADDIE model [34], [35].

2.1. Analysis

At this time training is carried out the importance of developing learning media. Analysis was carried out on the design of instructional media to be developed. Media must be in accordance with the needs and objectives to be achieved. At this stage also must be able to answer the question whether media developed can overcome existing problems. In addition, developed media must also be able to be applied directly.

2.2. Design

At this stage the conceptual design of learning media will be developed. The product design must be written in detail, starting from the material, the flow of material exposure, and the technique of making instructional media. In addition, the selection of software will be used to develop learning media.

2.3. Development

At this stage, learning media is developed in the form of applied statistics video tutorials. Products are developed in accordance with a previously prepared design. In this study, product development was carried out using Camtasia. Camtasia is used to record screens while editing videos.

2.4. Implementation

Learning media that have been developed are used directly in lectures. All videos are uploaded to the YouTube Channel, then connected to the Google Classroom learning management system. Examples of data and interpretation of test results are also provided for download via the link provided in the video tutorial description.

2.5. Evaluation

After the product is used, then an evaluation of the product is developed. Evaluations are conducted by students who learn to use the developed media. The results of the evaluation of these students then become a foothold in developing other learning media.

3. Results and Discussion

3.1. Results

3.1.1. Analysis

Based on the analysis conducted, it was determined that the development of applied statistical video tutorial media as one of the online learning solutions amid the outbreak of Covid-19. This media selection was based on complaints from some students who were constrained by internet connections. Learning media available on the YouTube channel are more flexible, can be accessed at any time not necessarily at the same time.

3.1.2. Design

At this stage, it was determined that the development of learning videos included one way ANOVA, two way ANOVA, covariance analysis (ANCOVA), multivariate analysis of variance (MANOVA), multivariate covariance analysis (MANCOVA), correlation and regression. The tutorial covers the stages of conducting the test using Minitab 16 and SPSS 25 software. All the learning videos developed will later be uploaded on a YouTube Channel.

3.1.3. Development

Development is the most important stage of this research series. All material was developed using Camtasia 2019 software. Camtasia plays a role in recording and editing learning videos. After successfully being developed, all of the videos were uploaded on the YouTube Channel. The following is a list of material that has been developed along with a link on the YouTube Channel.

Table 1. List of Developed Learning Video Links

No.	Material	YouTube Link
1.	One Way Anova using Minitab	https://youtu.be/2UYs6i3wrII
2.	One Way Anova using SPSS	https://youtu.be/zn-tpHf4e9s
3.	Two Way Anova using Minitab	https://youtu.be/b4D0mHF6854
4.	Two Way Anova using SPSS	https://youtu.be/msljAVTwDb8
5.	Covariance Analysis (ANCOVA) using Minitab	https://youtu.be/HYRgoexxCU
6.	Covariance Analysis (ANCOVA) using SPSS	https://youtu.be/zo09AY0PrgU
7.	Multivariate Analysis Variance (MANOVA) using Minitab	https://youtu.be/H0Dj3XSsYMI
8.	Multivariate Analysis Variance (MANOVA) using SPSS	https://youtu.be/nDFObtaqBgY
9.	Multivariate Covariance Analysis (MANCOVA) using Minitab	https://youtu.be/myC7yCZs-HI
10.	Multivariate Covariance Analysis (MANCOVA) using SPSS	https://youtu.be/JoLYUshZsj4
11.	Correlation using Minitab	https://youtu.be/PJhfG8FfkD4
12.	Correlation using SPSS	https://youtu.be/SBKUxaJOq-E
13.	Simple Linear Regression using Minitab	https://youtu.be/l8CJtiDT_jk

14.	Simple Linear Regression using SPSS	https://youtu.be/aLsDTcgtAi4
15.	Multiple Linear Regression using Minitab	https://youtu.be/P065VPIITCY
16.	Multiple Linear Regression using SPSS	https://youtu.be/zVNtQRfu-RM

All learning videos above, published through the YouTube Channel "Nawari Ide". Nawari Ide is a developer name that is written upside down and means offering ideas. The following is an example of how the "Nawari Ide" YouTube Channel appears.

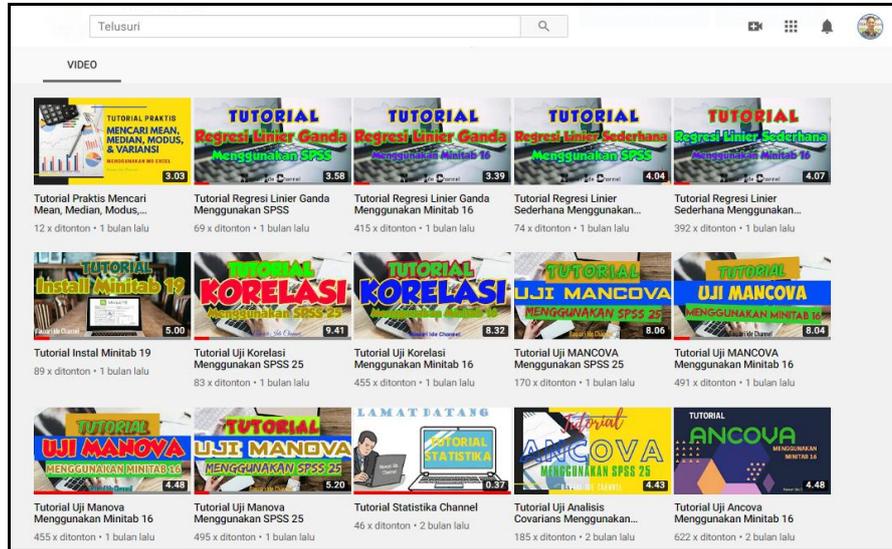


Figure 1. YouTube Channel "Nawari Ide"

3.1.4. Implementation

After the learning video has been successfully developed and is available on the YouTube Channel, it is then used in learning. In this research, the video analysis technique tutorial video is shared through Google Classroom. Google Classroom is used as a learning management system in virtual learning. Here is an example display of integration of learning videos on YouTube with Google Classroom.

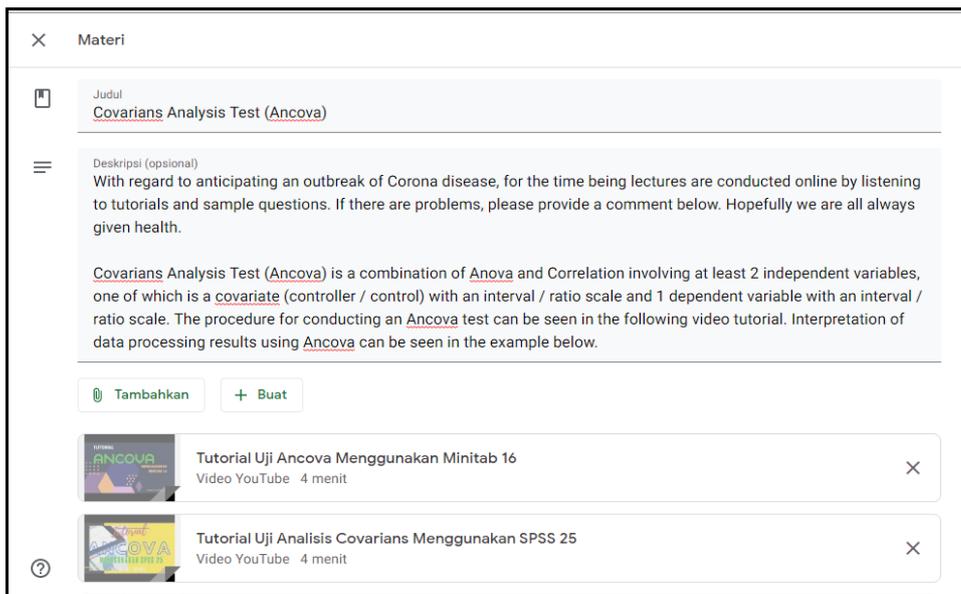


Figure 2. Integration of YouTube Channels with Google Classroom

The advantage of YouTube Channel is the ease in monitoring the progress of uploaded videos. YouTube is equipped with complete video analysis, ranging from the number of visitors, the duration of time viewing the video, visitor segmentation, to search sources. Here is an analysis of one of the tutorial videos developed.

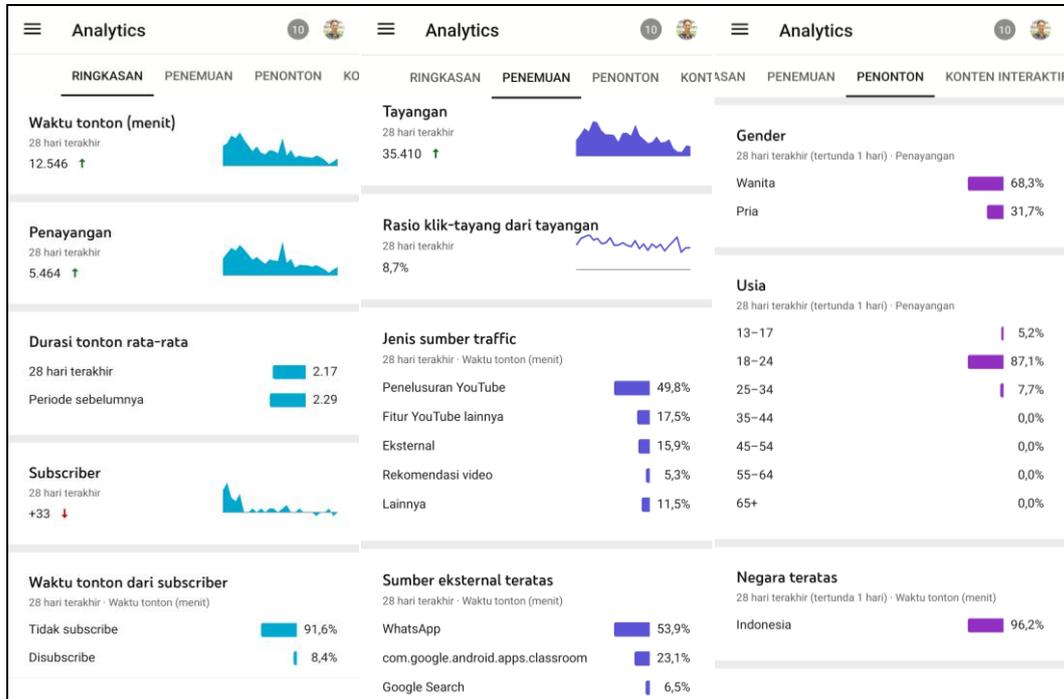


Figure 3. Analytic Learning Videos on YouTube

3.1.5. Evaluation

Evaluations are conducted by students after attending lectures, using learning videos that are developed. The evaluation was carried out on four aspects, namely the perception of usefulness, perceived ease of use, attitude of use, and actual system usage [36].

First, evaluation of perceived usefulness. Perceived usefulness is defined as the degree to which a person believes that using a particular technology will enhance his or her job performance [36]. Based on feedback from students, it is known that as many as 54% of students have a perception that the learning videos developed are very beneficial for them.

Second, evaluation of perceived ease of use. Perceived ease of use is defined as the degree to which a person believes that using the system would be free of effort [36]. Data from the feedback shows that 32% of students have a perception that the learning videos developed are very easy to use.

Third, evaluation of the attitude of use. In this aspect, respondents were asked to provide an assessment of the quality of learning media developed. As many as 44% stated that the quality of instructional media was very good and as much as 44% stated that the quality of instructional media was good.

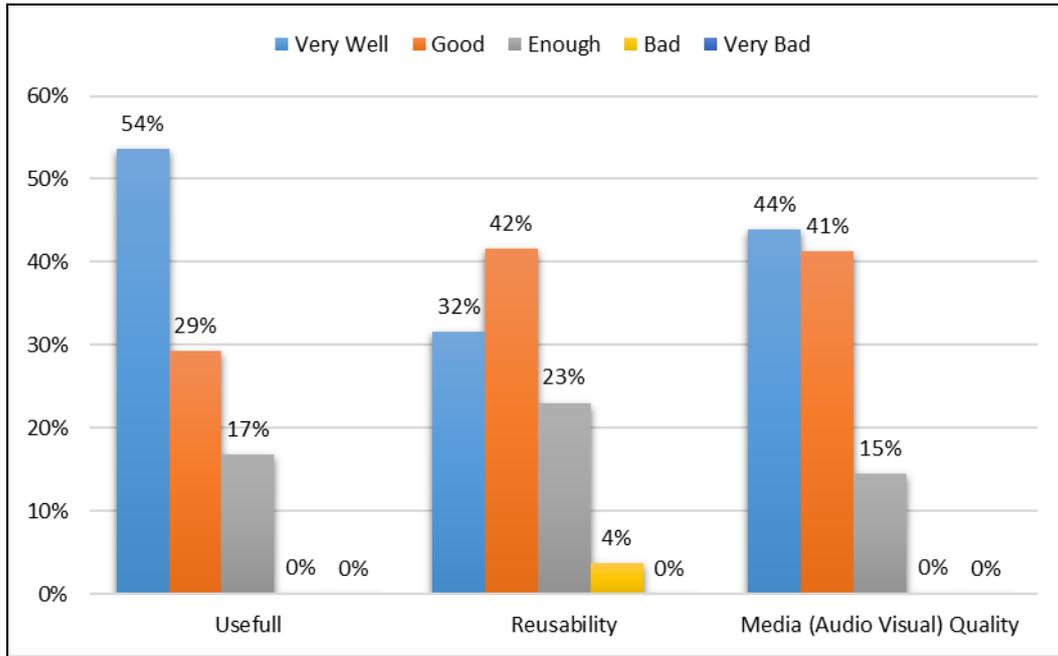


Figure 4. Media Evaluation Results by Students

Fourth, evaluation of the actual system usage. The real condition of the use of the system can be seen from the number of viewers of each learning video. In general, the statistical test tutorial material using Minitab is watched more than the statistical test tutorial using SPSS. The two way ANOVA test tutorial video using Minitab was the most viewed video, with more than 1000 visitors watching the video within two months. While the video tutorial for multiple linear regression testing using SPSS is a video with the least number of visitors watching, with 69 viewers. Data of visitors who watched each video developed is presented in Figure 5.

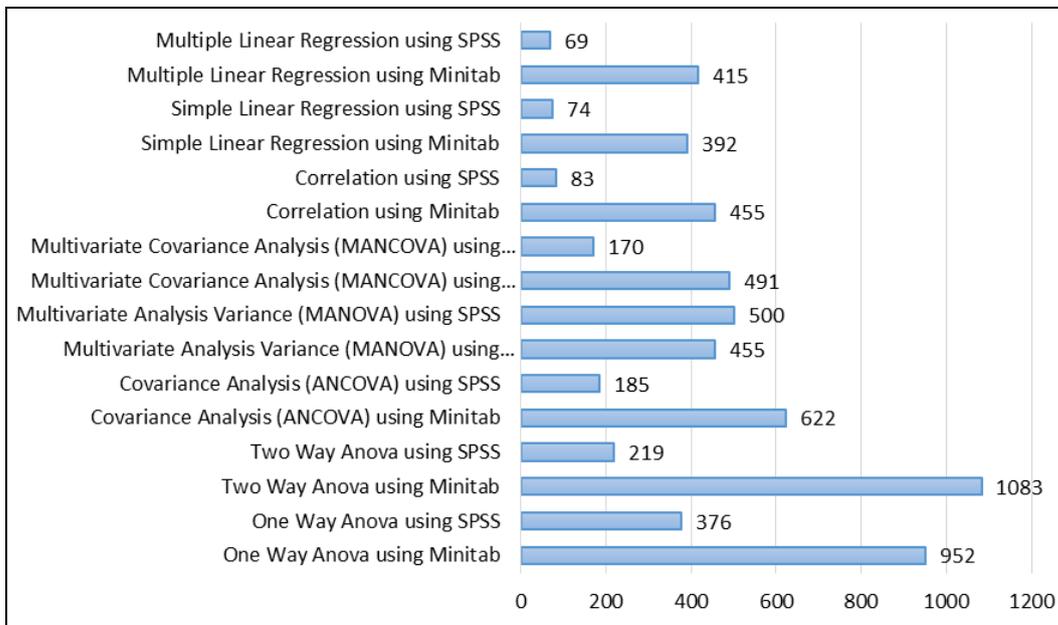


Figure 5. The Number of Viewers of Each Video Tutorial

3.2. Discussion

The plague of Covid-19 demands various innovations in the world of education. The implementation of online learning needs to be adjusted to the learning objectives, learning materials, and conditions of the students. Therefore, it is necessary to do a variety of innovative breakthroughs to provide the best alternative solutions. Learning uses effective social media for teaching that functions practically theoretically [2]. However, the main weakness and challenge of using e-learning is the commitment to use supported applications [37].

The existence of YouTube can be used more than just as social media [38]. In addition to entertainment and news purposes, YouTube can also be used for education [20], [38], [39]. One innovation that can be done is to develop a YouTube Channel for learning [20], [30]. Some other studies that utilize YouTube in learning include nursing education [40], [41], anatomy education [42], health education [43], and dental education [44].

The development of instructional media through the YouTube Channel using the ADDIE model is very practical. The five stages of product development are very practical and systematic [45], [46]. The effectiveness of ADDIE was also felt by other researchers [47], [48]. ADDIE is very relevant to be used for development research in the field of education [49].

The development of learning videos in this study using Camtasia. This software is very practical and quite easy to use including by people who have no background in information technology and computer education. Proven several previous studies have used Camtasia in making video tutorials [50]–[52]. Camtasia is very relevant to supporting the implementation of online learning [53], [54].

Evaluation of learning media can be carried out on four aspects, namely perceived usefulness, perceived ease of use, attitude toward using, and actual system usage conditions [36]. This aspect is also known as the acceptance TAM (technology evaluation model) [36]. Several other studies have used TAM to approve the use of technology, which is expected to evaluate e-banking [55], e-transportation [56], digital marketing [57], and e-learning [58].

4. Conclusion

Online learning media that utilize social media in the form of YouTube are very relevant to be developed in the midst of the Covid-19 outbreak. The nature of flexibility, usefulness and ease of use of integrated media YouTube is able to provide online learning solutions. The development of learning media can be done using the ADDIE model, with the stages of Analysis, Design, Development, Implementation, and Evaluation. This method is very practical and effective for developing learning media. Based on the results of evaluations by students it is known that the learning media through the YouTube Channel that was developed are very useful, easy to use, and have relatively very good quality. Clear evidence of the use of media can be seen from the results of YouTube analysis that shows the development of visitors and viewers of the developed YouTube Channel.

Acknowledgments

Thank you to the Chancellor of IAIN Ponorogo, Dean of the Faculty of Tarbiyah and Teacher Training, and Students of Islamic Religious Education and Natural Sciences Education Program IAIN Ponorogo who have supported the implementation of this research. We would also like to thank TechSmith Corporation as a Camtasia software provider, IBM Corporation as a SPSS software provider, and Minitab Inc. as a Minitab software provider, and Google as a YouTube and Google Classroom service provider.

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