

THE EFFECTIVENESS OF DIGITAL LITERATURE-BASED LEARNING VIDEO ON IMPROVING STUDENT'S DIGITAL LITERATURE SKILL

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ABSTRACT

This study aims to determine the effectiveness of learning videos on improving the digital literacy skills of Accounting Education students between control and experimental classes. This research is quasi-experimental research with a quantitative approach. The quasi-experimental type chosen was the design of the control group that was not treated with the same pre-treatment and post-treatment samples. The study was conducted for six months. The population of this study was 310 students of Accounting Education FE UNY (8 classes) with a sample of 81 students (2 classes). The sampling technique used is purposive sampling. Research data collection techniques use questionnaires and documentation. The validity of the instrument is proved by the analysis of exploratory factors, while its reliability is estimated by the Alpha formula. Data analysis techniques use independent sample t test hypothesis test. The results showed that there was a significant difference in video effectiveness in improving students' digital literacy skills between control and experimental classes with a calculation of 2,881 and a Sig. score of 0.005. The experimental class had a higher average score than the control class with a difference of 5,375. This means that the provision of learning video treatment can improve students' digital literacy skills in the experimental group.

Keywords: *Learning video, digital literacy*

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INTRODUCTION

The era of the industrial revolution 4.0 forces graduates to have various skills to adapt to the development of science and technology. In this case, students must prepare themselves to acquire different skills to be able to play a role and compete in the global world. The skills in question include critical and creative thinking skills, digital literacy, collaboration, metacognition, flexibility, adaptability, problem-solving, leadership, and digital citizenship (Kemristekdikti, 2018; Greenstein, 2012; Trilling & Fadel, 2009). Although all these skills are important for graduates who will compete in the global world, the main thing that must be possessed in general

is digital literacy skills. This is because digital literacy can support all other skills. In the world of education, digital literacy is needed, both by educators and students to support the learning process face-to-face and online.

The Accounting Education Study Program aims to produce graduates who are ready to work both in the educational and non-educational fields. However, the main goal is to produce prospective accounting teachers in vocational schools as well as economics teachers in high schools. Various courses both university, faculty, and professional form a curriculum structure to be able to produce targeted graduates. Lectures in the Accounting Education Study Program are conducted both face-to-face, online, and a combination of both (blended learning). Of course, in each course, assignments are always included so that learning outcomes can be achieved as planned. Therefore, to support the completion of course assignments, information technology is needed that is always up to date.

Information technology has an especially significant role in lectures, especially in the completion of student tasks. Information technology is used to obtain information, process, and redistribute information that has been processed, for example in paper form. In addition to students applying the use of information technology to complete their coursework, students are also provided with provisions to be able to facilitate their students in the future in accessing, processing, and disseminating the information they obtain. In other words, students use information technology to hone their digital literacy skills (Handayani, 2019).

Based on the results of observations made in the Accounting Education Study Program, it was found that students' digital literacy skills were not optimal. This is shown through the lack of student attention to the accuracy and validity of the reference source of information through coursework. In addition, students prefer to open social media to find information about other people rather than open information about courses. In line the results of the research conducted by Metz (2017) show that more than 80% of students are unable to distinguish ads from new stories, distinguish between genuine and fake sources, identify biases in writing, or determine trustworthy websites. The lack of optimal digital literacy skills is also shown by research conducted by Amelia & Ulumu (2019) on PGSD students of Muhammadiyah University Malang. The results of the study showed that 33.15% of respondents were in the basic category by critical understanding ability. This means that the ability to operate media is not too high, the ability to analyse media content is not very good, and the ability to communicate through media is limited. This is also shown by research conducted by Pratiwi et al., (2021) which states that the digital literacy level of students of the Department of Mathematics, Semarang State University is relatively moderate. This is shown through a high level of ownership of digital devices but not accompanied using appropriate and optimal digital devices for self-development.

The importance of digital literacy is conveyed by Phuapan et al., (2016) who explain that digital literacy is the ability to use digital technology, communication devices, and networks in a digital environment to live life efficiently. Kemendikbud,

(2017) adds the importance of digital literacy for the nation's generation, namely having life skills that not only involve the ability to use technology, information, and communication devices, but also sociability, the ability to learn, and have attitudes, think critically, creatively, and inspirationally as digital competencies. Cordell (2013) states that the concept of digital skills and literacy can provide a basic digital environment to learners who want to succeed in the study of information literacy. Digital literacy makes people wise in accessing, sorting, and understanding various types of information that can be used to improve their quality of life (Kemendikbud, 2017). Meanwhile, Rohmadi (2019) explained the importance of digital literacy, among others, it can create a community order with a critical-creative mindset and views, can make people who are not easily exposed to provocative issues, minimize victims of digital-based hoax and fraud information, and make people able to understand and communicate with others in various forms. Digital literacy can make a person or individual able to obtain information in a more efficient way. Suppose someone can read not only using books but can use e-books. In solving problems with digital literacy, it is also able to make a person or individual to get a lot of information and not just one source of information. So that the information obtained can be combined and conclusions are drawn.

Students' digital literacy skills can be measured through several indicators or characteristics. Phuapan et al., (2016) stated that a person's digital literacy skills consist of 8 elements, namely access, manage, integrate, evaluate, create, communicate, analyze, and synthesize. Furthermore, UNESCO (2018) stated that the characteristics of digital literacy competence include information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. Greenstein (2012) explained that a person's digital literacy characteristics can be seen from several aspects, including (1) selecting core information and identifying the main problems of a large amount of data; (2) effectively using keywords and search strategies; (3) manage the flow of information from various sources; (4) critically evaluate and verify online sources of information for accuracy and reliability of information; (5) evaluating, comparing, and synthesizing information from various sources; (6) respect the purpose and persuasion of media messages; (7) consider the effect of the message on beliefs, behaviors, and values; (8) use digital media strategies and visual displays to convey information and improve presentations; (9) collect relevant information from various sources and assess its credibility and accuracy; and (10) evaluate arguments and statements in the text for validity and relevance. Meanwhile, Bawden (2001) mentioned that digital literacy concerns several aspects, namely the assembly of knowledge, the ability to present information including critical thinking in understanding information by paying attention to the validity and completeness of internet sources, the ability to read and understand information, awareness of the importance of conventional media and connecting it with network media (internet), the use of the internet to future information, and feel comfortable and have access to communicate and publish information. Belshaw (2012) added that there are eight

essential elements to developing digital literacy, namely cultural, cognitive, constructive, communicative, confident, creative, critical, and responsible. Based on this description, it can be concluded that the characteristics of digital literacy consist of three dimensions, namely choosing information, evaluating information, and considering the sources, messages, effects of information. Selecting information consists of selecting and identifying key information, using keywords, and managing information from various sources. Evaluating information consists of comparing and synthesizing information from various sources, evaluating and verifying online sources, and evaluating arguments and statements. Considering the source, message, effect of information consists of using digital media and visual display, appreciating the purpose and persuasion of media messages, and considering the effects of messages.

One alternative that can be used to improve students' digital literacy skills is to use learning videos. This is supported by Kaeophanuek et al., (2018) who found that to develop digital literacy information, they must practice three skills namely information management skills, the use of digital equipment, as well as the creation of new content and information consolidation. Learning videos are one of the media that use digital equipment in the form of videos in which they also contain words or sentences to develop students' memory of the material (Anugerah et al., 2020). The use of image media in the form of learning videos can help students in recognizing the shape of objects through the form of images and train students to be able to analyze and conclude so that students can understand the material presented (Anugerah et al., 2020). Then, the capture of objects in the video can also be adjusted to the characteristics of students (Suryansah & Suwarjo, 2016). Then, the results of research by Winarni et al., (2021) stated that learning videos can improve the literacy skills of both numeracy and digital students. The results of research by Spires et al., (2019) add that digital literacy involves a number of digital reading and writing techniques in various forms of media which include words, text, visual display, (Suryansah & Suwarjo, 2016) motion graphics, audio, and video. (Shopova, 2014) also states that videos for learning can improve students' digital literacy skills.

Another benefit of video learning is shown through research conducted by Al-jabbar (2020) which states that video learning media is very effective in improving learning outcomes. In fact, the results of a study by Yu & Zadorozhnyy (2022) found that presentation media with video can not only replace learning with traditional methods in the classroom but also increase students' learning independence, and language, collaborative, and digital literacy skills. In line with the results of research by (Yuen et al., 2018) which found that digital literacy skills are needed in the use of online video for learning to be more effective and efficient. Thus, there are many benefits to using learning videos, one of which is to improve students' digital literacy skills.

Based on the description above, there has been no research that examines the effectiveness of learning videos on students' digital literacy skills. Considering the

importance of digital literacy for students and the advantages of video learning, this study aims to determine the effectiveness of learning videos on improving the digital literacy skills of Accounting Education students. The hypothesis proposed in this study is that there are differences in the effectiveness of learning videos on improving the digital literacy skills of Accounting Education students between the control class and the experimental class.

RESEARCH METHOD

This research is quasi-experimental research with a quantitative approach. The quasi-experimental type of research was chosen because the samples/respondents in the experimental group and control group have been formed and cannot be randomized. This happened because the research sample/respondent was a fourth-semester Accounting Education Study Program student. The quantitative approach was chosen because the research data to be produced is in the form of numbers and the data analysis technique uses statistics, so it is more suitable with the quantitative approach.

The quasi-experimental type chosen was the design of the control group that was not treated with the same pre-treatment and post-treatment samples (Untreated control group design with dependent pre-test and post-test samples) as presented in Figure 1. This type was chosen because it is suitable and relevant to the research design designed by the researcher because the use of pre-test measurements with a control group will make it easier for testing to guarantee the validity of conducted experimental research. This means that between the control group and the experimenter have the same or homogeneous initial score, so as not to cause measurement confusion.

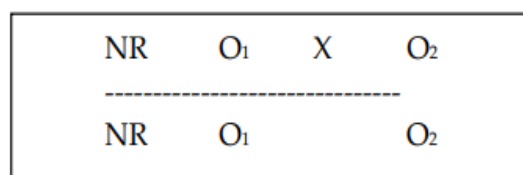


Figure 1.

Selected Quasi-Experimental Types (Hastjarjo, 2019)

Information:

- NR : sample groups (experimental and control)
- O₁ : skor pre-test
- O₂ : skor post-test
- X : *treatment*

The population of this study was 310 students of Accounting Education FE UNY (8 classes) with a sample of 81 students (2 classes). The sampling technique used is purposive sampling where two classes of Accounting Education Study Program students class of 2020 are taken. The reason for sampling in the class of 2020 is that in that batch learning is carried out online since they entered college in September

2020, so that digital literacy skills are more needed in learning. Based on the random results that have been carried out, class A becomes an experimental class and class B becomes a control class.

Research data collection techniques use questionnaires and documentation. Questionnaires are used to collect data on students' digital literacy skills into experimental groups and control groups. The reason for using the questionnaire instrument to measure students' digital literacy skills is because this research is a multi-year study where in the first year a questionnaire has been developed to measure students' digital literacy skills and has been tested for validity and reliability.

This is also in line with several studies published in international journals that use questionnaire instruments to measure digital literacy skills, such as Anthonysamy et al., (2020); Nelson et al., (2011); and Tahsin Üstündağ et al., (2017). The three studies used questionnaires to measure digital literacy skills. Furthermore, documentation techniques are used to collect research-supporting data which includes student rosters, NIMs, classes, and other relevant data. The research instrument is in the form of a questionnaire with a grid as presented in Table 1.

Table 1.
Research Instrument Grids

Variable	Dimension	Indicator	Item number	Sum	Data sources
Digital literacy	Selecting information	Select and identify key information	1,2,3	3	Student
		Using keywords	4,5,6	3	
		Manage information from multiple sources	7,8,9,10	4	
	Evaluating information	comparing and synthesizing information from different sources	11,12,13	3	
		evaluate and verify <i>online</i> sources	14,15,16	3	
		evaluate arguments and statements	17,18,19	3	
	Responding to information	Responding to the Use of Digital Media and Visual Display	20,21,22,23	4	
		respecting the purpose and persuasion of media messages	24,25,26	3	
		Consider the effect of the message	27,28,19,30,31	5	
	Sum				

A good research instrument needs to be proven for its validity and estimated reliability. Proving the validity of the questionnaire instrument was carried out by

exploratory factor analysis with SPSS 23. The steps of factor analysis are: (1) testing the feasibility of the analysis, (2) presenting a correlation matrix, (3) conducting extraction, (4) performing rotations, and (5) determining factors and items. The estimated reliability of the questionnaire instrument is carried out with the Cronbach Alpha formula with the following formula.

$$\alpha = \left(\frac{n}{(n - 1)} \right) \left(1 - \frac{\sum \sigma_i^2}{\sum \sigma_t^2} \right)$$

Information:

α : Wanted reliability

n : The number of items

$\sum \sigma_i^2$: number of score variances per item

$\sum \sigma_t^2$: varians total

Source : (Mardapi, 2017).

A recap of the validity proving results can be seen in Table 2.

Table 2.
Validity Proof Results

Variable	Dimension	Indicator	Item number	Deciduous Item Number	Valid Item Number
Digital literacy	Selecting information	Select and identify key information	1,2,3	3	1,2
		Using keywords	4,5,6	4,5	6
		Manage information from multiple sources	7,8,9,10	7,10	8,9
	Evaluating information	comparing and synthesizing information from different sources	11,12,13	11,12	13
		evaluate and verify <i>online</i> sources	14,15,16	15,16	14
		evaluate arguments and statements	17,18,19	-	17,18,19
	Responding to Information	Responding to the Use of Digital Media and Visual Display	20,21,22,23	20	21,22,23
		respecting the purpose and persuasion of media messages	24,25,26	26	24,25
		Consider the effect of the message	27,28,19,30,31	-	27,28,19,30,31
Sum				11	20

3. Meanwhile, a recap of the results of the reliability estimate can be seen in Table 3.

Table 3.
Reliability Estimation Results

Coefficient Reliabilities Cronbach's Alpha	Jumlah Item
0,795	20

Source: Data processed by researchers (2022)

The results of estimating the reliability of student digital literacy instruments show that the magnitude of the reliability coefficient is 0.795, which means that the level of reliability of research instruments is high.

Before conducting a hypothesis test, the first step is to conduct a prerequisite test analysis based on the normality test and the variance homogeneity test. The normality test was carried out with the Kolmogorov-Smirnov Test. Sample data obtained from the field must be eligible to bring the data from a normally distributed population. Furthermore, a homogeneity variance test was carried out with the Lavene Test. In comparative hypothesis testing requires that two samples (experimental class and control class) must have a homogeneous pre-test score variance. This is to ensure that when a post-test is carried out, then if there is a significant difference, it is really caused by the effectiveness of the treatment or treatment given.

Furthermore, the data analysis technique used to test the hypothesis in this study is the independent sample t-test. This test was chosen because it is aligned to answer the problem formulation and test the proposed research hypothesis, namely knowing the difference in the effectiveness of learning videos on improving the digital literacy skills of Accounting Education students between the experimental group and the control group. The independent sample t-test formula used is:

$$t = \frac{X_1 - X_2}{S_{X_1-X_2}}$$

Information:

- t : calculated t value
- \bar{X}_1 : mean Experimental group scores
- \bar{X}_2 : mean Control group score
- $S_{X_1-X_2}$: standard error of a difference
- Source : (Spatz, 2010)

If using manual calculations, the hypothesis test decision criterion is to reject Ho if t calculates > t table. Meanwhile, if you use SPSS, the hypothesis test decision criterion is to reject Ho if the Sig. < value is 0.05.

RESULTS AND DISCUSSION

The hypothesis test in this study was carried out with an independent sample t-test. A summary of the results of the normality test conducted with an independent sample t-test is presented in Table 4.

Table 4.

Summary of Hypothesis Test Results

Information	t	Sig.	Mean difference	Conclusion
Digital literacy score experimental class >< control class	2,881	0,005	5,375	Significant

Source: data processed by researchers (2022)

A summary of the hypothesis test results shows that the magnitude of the calculated t value = 2.881 with the Sig. value = 0.005. Since the value of Sig. = 0.005 < 0.05 then, Ho is rejected. So, it can be concluded that at a significance level of 0.05, there is a significant difference in the effectiveness of learning videos on improving the digital literacy skills of Accounting Education students between the experiment class and the control class.

The results of the descriptive statistical analysis showed that the mean value for the experimental class was 80.00 and the mean for the control class was 74.625. This can also be seen in the mean difference in digital literacy scores between the experimental class and the control class, which is 5,375. This means that the experimental class has a higher average score than the control class with a difference of 5,375. Thus, it can be interpreted that the provision of treatment or learning video treatment is able to provide increase in students' digital literacy skills in the experimental group.

The results of hypothesis testing showed that the magnitude of the calculated t value was 2.881 with a signification value of 0.005. This means that there is a significant difference in the effectiveness of learning videos in improving student digital literacy skills between the experimental class and the control class. This means that the learning videos that the research team has developed are able to provide a significant difference in effectiveness in improving students' digital literacy skills between the experiment class and the control class.

Based on the experiments that have been carried out, the experimental class has an increase in scores from pre-test to post-test. The experimental class had an average score increase from 71.28 to 80.00. Meanwhile, the score from the pre-test to post-test control class did not increase and tended to be stable where the average pre-test score of the control class was 75.25 and the average post-test score was 74.63.

The difference in the increase in the digital literacy skill score of the experimental class is higher than the control class, indicating that the learning video is effective in improving the digital iteration skills of students. This is also supported by the mean difference value where the experimental class has a higher average score than the control class with a difference of 5.375. The mean difference value

obtained the average score of the treatment group sample minus the average of the control group sample (Xu et al., 2017).

Learning videos have an incredibly significant contribution in improving the digital literacy skills of accounting students. This is shown by the low pre-test score of 71.28, but after using the learning video, the post-test score becomes 80.00. The surge in the increase in pre-test scores to post-tests indicates the effectiveness of using learning videos in improving students' digital literacy skills. In this case, learning videos that function as learning media can function properly. This is in accordance with the findings of Winarni et al., (2021) that learning videos can improve the literacy skills of both numeracy and digital students.

The learning media used is expected to improve the abilities that are expected to appear at the end of learning, in this case the digital literacy skills of Accounting Education students. Digital literacy video media can function well as a stimulus to improve digital literacy skills as expected. According to Gagne & M, (1984) that many aspects must be considered in learning to achieve the goals that have been set. Among the aspects that must be considered is learning media, one of which is learning videos. That is, learning videos can be used to achieve the learning objective in this case is to improve digital literacy skills. Furthermore, technology-based learning media, among which are learning videos are needed in the era of the industrial revolution 4.0 (Fitriana et al., 2021).

Based on the discussion above, it can be concluded that the development of learning videos is effective for improving the digital literacy skills of students of the Accounting Education Study Program. A similar conclusion was also explained by Winarni et al., (2021) that learning videos can improve literacy skills, including students' digital literacy. There are two digital literacy skills that must be mastered by students, namely the ability to read and write in digital media. In line with the results of research by Spires et al., (2019) which states that digital literacy involves a few digital reading and writing techniques in various forms of media which include words, text, visual display, motion graphics, audio, and video.

Furthermore, the use of technology is mainly video for learning to improve students' digital literacy skills (Shopova, 2014). It can be said that the use of technology, especially learning videos, can improve learning outcomes which include the realm of knowledge, attitudes, and various skills needed in the era of the industrial revolution 4.0, including digital literacy. This is also in line with the findings of Al-jabbar (2020) who explains that video learning media is highly effective for improving learning outcomes.

The results of this study also support the results of Yu & Zadorozhnyy (2022) research which found that presentation media with video can not only replace learning with traditional methods in the classroom but also increase students' learning independence, and language, collaborative, and digital literacy skills. Students need digital literacy skills to support success in following the process and achieving learning outcomes. In line with this, the results of research by Yuen et al., (2018) found that digital literacy skills are needed in the use of online video to make learning more effective and efficient.

The urgency of digital literacy skills in education also needs to be integrated into the curriculum. This is in line with the results of research by Chan (2017) which states that currently, the education sector around the world is starting to incorporate digital literacy into the curriculum. Innovation in the integration of digital literacy skills into the curriculum must be responded to by educators, both teachers and lecturers. The results of research by Yuen et al., (2018) found that today's learners have a dependence on online videos, especially for mastery of skills, ideas, and inspiration. Similarly, Chan (2017) also emphasized that digital literacy skills need to be developed so that students can communicate and express their ideas effectively using digital media.

CONCLUSION

Based on the results of data analysis and discussion, there is a significant difference in digital literacy scores between classes that use video and those that do not use learning videos, namely the post-test score of the experimental class of 80 and the post-test score of the control class of 74.63. The results of the hypothesis test showed a calculated value of 2.881 and a Sig. value of 0.005. The experimental class had a higher average score than the control class with a difference of 5,375. This means that the provision of learning video treatment can provide increase students' digital literacy skills in the experimental group. Thus, it can be concluded that there are differences in the effectiveness of learning videos in improving students' digital literacy skills between classes that use and do not use learning videos. Digital literacy skills are needed in the use of online video to make learning more effective and efficient. The urgency of digital literacy skills in education also needs to be integrated into the curriculum. Innovation in the integration of digital literacy skills into the curriculum must be immediately responded to by educators, especially by lecturers. Currently, students have a dependence on online videos, especially for the mastery of skills, ideas, and inspiration.

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