ONLINE LEARNING EFFECTIVENESS: THROUGH DIGITAL LITERACY AND TEACHER'S PROFESSIONAL COMPETENCE

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ABSTRACT

This study aims to measure and analyze the effect of digital literacy and teachers' professional competence on the effectiveness of online learning. This research is quantitative research with a quantitative explanatory approach using a questionnaire. The research sample was 190 students of 11th-grade Financial Accounting using the purposive sampling technique. The data analysis used is multiple linear regression. The results showed that (1) digital literacy had a positive effect on the effectiveness of online learning, and (2) teachers' professional competence had a positive effect on the effectiveness of online learning. Teachers can use the findings in this study to increase the effectiveness of online learning. Teachers must master the material of learning and utilize technology to provide interactive online learning. Interactive online learning will help students improve problem-solving skills, critical thinking abilities, and adaptability.

Keywords: Digital Literacy; Online Learning Effectiveness; Teacher's Professional Competence

ABSTRAK

Penelitian ini bertujuan untuk mengukur dan menganalisis pengaruh literasi digital dan kompetensi profesional guru terhadap efektivitas pembelajaran daring. Penelitian ini penelitian kuantitatif dengan pendekatan eksplanatif menggunakan kuesioner. Pengambilan sampel menggunakan teknik purposive sampling sejumlah 190 siswa kelas XI Akuntansi Keuangan dan Lembaga. Analisis data yang digunakan adalah regresi linier berganda. Hasil penelitian menunjukkan bahwa (1) literasi digital berpengaruh positif terhadap efektivitas pembelajaran daring, dan (2) kompetensi profesional guru berpengaruh positif terhadap efektivitas pembelajaran daring. Temuan dalam penelitian ini dapat digunakan oleh guru dalam upaya meningkatkan efektivitas pembelajaran daring dimana guru harus mampu menguasai materi secara menyeluruh dan memanfaatkan teknologi untuk menyediakan pembelajaran daring yang nyaman dan interaktif. Pembelajaran daring yang interaktif akan membantu siswa memiliki keterampilan pemecahan masalah, kemampuan berpikir kritis, dan kemampuan beradaptasi di kalangan siswa.

Kata Kunci :   Efektivitas Pembelajaran Daring; Literasi Digital; Kompetensi Profesional Guru
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INTRODUCTION

The Covid-19 pandemic has affected all aspects of life, including education. Learning that initially took place face-to-face has turned into online learning (Dhawan, 2020; Lie et al., 2020). Transfer learning mechanisms from face-to-face to online raises several problems (Sarwar et al., 2020). The issues that still hinder the implementation of online learning impact the effectiveness of learning, so learning success is not fully maximized (Sarwar et al., 2020; Swan, 2003). The effect of moving this learning mechanism will directly impact the readiness of teachers to carry out online learning (Lie et al., 2020). The role of the teacher in this condition is crucial because it will determine the extent to which the learning process can be carried out.

In learning activities, effectiveness depends not only on the teacher's learning strategies but also on the material, students, and the environment (Arnanto & Triyono, 2014; Rahmawati & Suryadi, 2019). The effectiveness of learning can be seen from the results of students' understanding of the material being taught, student responses to education, interactions between students and teachers, and interactions amongst the students (Rohmawati, 2015; Swan, 2003). Online learning during the pandemic will run effectively in developed countries because of the ease of internet access (Basilaia & Kvavadze, 2020). In developing countries such as Indonesia and Pakistan, the obstacles that occur in online learning are related to internet access and the readiness of teachers to face the transition from face-to-face learning to online education (Dhawan, 2020; König et al., 2020). Teachers face problems in online technical knowledge during the pandemic, especially in preparing effective learning materials and media for students (Adnan & Anwar, 2020; König et al., 2020; Sipayung et al., 2021). It shows that the effectiveness of online learning requires teacher competence in mastering the material and various technological devices that support the learning process (Caena & Redecker, 2019; Ludwikowska, 2019).

Although there have been many studies on the widespread use of online learning, research focusing on online education's effectiveness is still very limited (Adnan & Anwar, 2020; Basilaia & Kvavadze, 2020; Mailizar et al., 2020), especially in Indonesia. This research is different from previous research. This research was conducted on students who carried out online learning as a form of transferring learning due to the Covid-19 pandemic. The previous research was conducted on face-to-face learning, where teachers can interact freely with students (Arnanto & Triyono, 2014; Perdana et al., 2019; Pratama et al., 2019), but this interaction tends to be significantly reduced in online learning (König et al., 2020).

Through professional competence, teachers can support the student learning process, especially in utilizing information sources and building student participation to collaborate in maximizing learning success (Falloon, 2020). The efforts to overcome technological challenges in education, i.e., the ability of teachers to design learning according to teacher competency indicators, mastering the material thoroughly, integrating technology in teaching and learning, and providing space to explore digital innovations to utilize the technology provided by schools (Caena & Redecker, 2019; Dhawan, 2020; Quaicoe & Pata, 2020; Suhandani & Kartawinata, 2014).

In addition to teacher competence, student readiness to carry out online learning is also one of the prerequisites for an effective online learning process (Shrestha & Dangol, 2019). One of the students' learning readiness can be seen in students' digital literacy skills (Walia et al., 2019), which will affect student participation in class and the quality of online learning (Y. M. Tang et al., 2021). The success of online learning

depends on the competence of teachers and the active participation of students during the learning process (Dhawan, 2020; Y. M. Tang et al., 2021).

Students used to using technology will more easily adapt to the implementation of online learning (Mohammadyari & Singh, 2015). However, this ability is not necessarily matched by digital literacy skills (Nelson et al., 2011; I. D. T. Putri & Ambarwati, 2019; Rahmah, 2015; C. M. Tang & Chaw, 2016). Although students use technology in their daily activities, they are not necessarily used to using technology for learning (Waycott et al., 2010). Students primarily use technology for social or entertainment purposes, not for learning (Prior et al., 2016). Students need guidance on how to use technology effectively for learning, so students are expected to have a certain level of digital literacy to use technology to learn well (Eshet-Alkalai, 2004; Gurung & Rutledge, 2014; Ng, 2012).

Based on the description above, there is a need to determine the effectiveness of online learning in terms of students' digital literacy and teacher professional competence. This research is expected to be useful as input for schools to assist teachers in facing the challenges of online learning and provide facilities for students to improve their competence and understanding of digital literacy to achieve online learning effectiveness.

METHOD

This type of research includes explanatory research with a quantitative approach. This explanative survey research was conducted to test and explain causal relationships between variables (Sugeng, 2020). The data used in this study is primary data in the form of the results of filling out a questionnaire via a google form. Questionnaires are distributed by sending a google form link to respondents through the Whatsapp group with the teacher's help. Questionnaires were used to obtain data from respondents in the form of digital literacy, teacher professional competence, and the effectiveness of online learning.

This study adopted indicators of online learning effectiveness according to Bangert (2008), Reyes-Fournier et al. (2020), and Sarwar et al. (2020), which are the ability of teachers to manage online classes, student satisfaction during the learning process, and active online learning. Then, digital literacy indicators were developed according to Rodríguez-De-dios et al. (2016), Shopova (2014), and Tang & Chaw (2016). The indicators are the ability of students to find and sort information, students' abilities to evaluate the data obtained, and students' critical thinking skills in utilizing information. Indicators of teacher professional competence include mastering the materials, structures, and concepts that support the subjects taught, teaching materials that can be developed creatively, and teachers as facilitators during the learning process. This teacher's digital competency was developed by Safitri (2019) and Tigelaar et al. (2004).

The population in this study were students of class XI Accounting and Finance SMK Negeri 1 Turen and SMK Negeri 1 Malang, with 229 students. The sampling technique used in this research is purposive sampling. In this study, the sample is based on the following criteria. (1) class XI students of the Accounting and Finance program at SMK Negeri 1 Turen and SMK Negeri 1 Malang; and (2) students are willing to fill out the research questionnaire. Based on the established criteria, the samples are 190 students. The data analysis technique used in this study used multiple linear regression, which was processed with the SPSS.

Before the questionnaires were distributed to research respondents, a pilot test was first conducted to detect weaknesses in the instrument design developed and

ensure that the questionnaire items were valid and reliable (Cooper & Schindler, 2014). The pilot test was carried out by collecting preliminary data. In this case, the instrument was tested on 30 students of class XII Accounting and Finance 3 SMK Negeri 1 Malang. After obtaining data from the pilot test, the instrument test will be carried out in the form of validity and reliability tests.

The validity test in this study uses content validity and construct validity. Content validity is obtained through direct examination by material validators regarding grammar, writing, and the suitability of the questionnaire with each variable to be studied before the instrument is distributed to respondents. Then, construct validity measures the meanings contained in the construct to be measured (Ghozali, 2016). This research instrument test also uses a discriminant validity test seen from the cross-loading indicator value of a construct that is greater than the cross-loading value of other construct indicators (Hair et al., 2010). An item forms a valid and correct construct if the average variance extracted (AVE) value is > 0.6. Based on the validity test results, there are thirty statements in this study that are said to be feasible and meet the validity requirements. Reliability testing is done through Cronbach's Alpha technique. An item is reliable if it has criteria > 0.7 (Ghozali, 2016). The reliability test results in this study can be seen in Table 1 as follows.

Table 1. Reliability Test Results

No	Variable	Cronbach Alpha	Result
1	Digital Literacy (X1)	0,770	Reliable
2	Teacher Professional Competence (X2)	0,778	Reliable
3	Online Learning Effectiveness (Y)	0,875	Reliable

RESULT AND DISCUSSION

Table 2 shows that the number of samples obtained is 190 respondents. From 190 samples obtained, there were 172 female students and 18 male students. Respondents were dominated by students from SMK Negeri 1 Turen, with 105 respondents and a percentage rate of 55.3%.

Table 2. Demographic Data of Respondents

Description	Total	Percentage
School Origin		
SMK Negeri 1 Turen	105	55,3%
SMK Negeri 1 Malang	85	44,7%
Gender		
Female	172	90,5%
Male	18	9,5%

Tabel 3. Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Deviation
Digital Literacy (X1)	190	-2,566	1,281	0,00005	0,728
Teacher Professional Competence (X2)	190	-2,803	1,572	0,00002	1,000
Online Learning Effectiveness (Y)	190	-2,412	1,484	-0,00002	0,720

Based on the analysis in Table 3, it is known that the average value of digital literacy shows that students' digital literacy is in the medium category. It can be caused by students not using technology effectively for learning needs (Gurung & Rutledge, 2014), especially in sorting and evaluating the information they receive. Students tend to use technology just for social and entertainment purposes (Waycott et al., 2010),

which hinders the effectiveness of learning even though they used to utilize the devices (Joy & Garcia, 2000).

The average value of teacher professional competence shows that the average teacher has professional competence in the medium category. It indicates that teachers still find it challenging to adapt to online learning (Caena & Redecker, 2019; Dhawan, 2020). Teachers who do not understand the content and cannot use technology in preparing creative learning media will experience obstacles while delivering online learning (Arnanto & Triyono, 2014; Kim & Bonk, 2006).

The average value of the effectiveness of online learning indicates that the level of online learning at SMK Negeri 1 Turen and SMK Negeri 1 Malang is in the medium category. Students still have low levels of digital literacy, so students have not been able to properly utilize the use of technology for learning needs (Mohammadyari & Singh, 2015; Prior et al., 2016). In addition, teachers still have difficulties delivering learning materials, so they cannot maximize the active participation of students during the learning process (Reyes-Fournier et al., 2020; Sarwar et al., 2020; Shrestha & Dangol, 2019). It can be seen from 51.1% of respondents who consider that the effectiveness of online learning is still below average. Therefore, teachers need to improve professional competence and guide students to utilize digital literacy skills to maximize the effectiveness of online learning.

Table 4. t-test Results

Variable	Coefficients	Std. Error	t	Sig.
(constant)	1,710	0,033	0,000	1,000
Digital Literacy (X1)	0,251	0,054	4,644	0,000
Teacher Professional Competence (X2)	0,438	0,039	11,125	0,000

The Effect of Digital Literacy on the Effectiveness of Online Learning

The t-test results of this study indicate that digital literacy has a positive effect on the effectiveness of online learning. The higher the digital literacy of students, the higher the point of online learning. The results of this study are consistent with previous research conducted by Knutsson et al. (2012), Mohammadyari & Singh (2015), Tang & Chaw (2016), Montoya (2018), and Falloon (2020).

Although there is a positive influence of students' digital literacy on the effectiveness of online learning, the study results indicate that there are still many students who have not been able to use technology effectively for learning. 48.9% of respondents have a digital literacy level below the average value. It shows that there are still many Financial Accounting and Institutions students who have low levels of digital literacy.

This study supports the cognitive theory that students' digital literacy can increase student involvement in the learning process (Piaget, 1977; Zhang et al., 2006). The theory explains that students play an active role in integrating new knowledge into their experiences by utilizing digital literacy to explore various learning resources (Piaget, 1977; Schunk, 2012). Students learn to synthesize the information received to form new knowledge and try to share information with their peers through discussion. This process follows Shopova's concept of digital literacy (Shopova, 2014), where students gain experience and develop their competencies through their attitudes and perspectives to achieve effective learning. It shows that students' digital literacy skills play an essential role in supporting the smooth learning process, especially in achieving the effectiveness of online learning (Gilster, 1997; Nelson et al., 2011; Tang & Chaw, 2016).

Students with high levels of digital literacy tend to be more active in learning and exploring new things (Mohammadyari & Singh, 2015). With digital literacy, students can search for information effectively and share information through discussion so that students gain experience to learn new knowledge (Tang & Chaw, 2016). The ability of students to discover new knowledge can create a more effective learning environment and impact the effectiveness of online learning (Ng, 2012; Tang & Chaw, 2016).

When students can use technology to do assignments and set learning goals, learning success will be easy (Yustika & Iswati, 2020). Students with good digital literacy will be able to discuss and construct their knowledge so that meaningful learning is created (Knutsson et al., 2012). Students' digital literacy is needed technically to access technology and understand the content, process it carefully, and use it to solve problems related to academics (Riel & Hinson, 2012).

The Effect of Teacher Professional Competence on the Effectiveness of Online Learning

The results showed that the professional competence of teachers had a positive effect on the effectiveness of online learning. The higher the teacher's professional competence, the higher the point of online learning. The results of this study are consistent with previous research conducted by Caena & Redecker (2019), Ludwikowska (2019), Dhawan (2020), Kidd & Murray (2020), and Quaicoe & Pata (2020). Although the professional competence of teachers has a positive effect on the effectiveness of online learning, the results of the study indicate that the ability of teachers to face challenges during the online learning process is still not able to maximize the effectiveness of online learning. 45.8% of respondents assess the professional competence of teachers as still not optimal. It indicates that students' perceptions of the professional competence of teachers are still low. Students assume that the teacher still has not mastered the material thoroughly and has difficulty providing learning content that facilitates the student learning process, so students do not have a high willingness to learn during online learning.

Professional competence teachers must have extensive knowledge and master various learning materials, educational theory, practice, and curriculum and learning methodologies (Nurhamsah et al., 2016; Sulastri et al., 2020). Mastery of subject matter includes systematics in delivery, providing examples relevant to the material being taught, utilizing technology as a communication medium in the learning process, and quality in explaining (Utami, 2019). The teacher's ability to master the subject matter will create the quality of learning to increase student involvement in the learning process (Herlianto et al., 2018). It is proven that the more teachers do not master the subject matter, the effectiveness of learning will decrease (Sulastri et al., 2020).

The challenge faced by teachers is to develop content that includes the curriculum and involves student participation (Kebritchi et al., 2017). The ability of teachers to create meaningful online learning is not only able to maximize the effectiveness of online learning but also develop the potential of students to collaborate and play an active role in the classroom (Caena & Redecker, 2019). Effective learning will also make students feel happy to continue learning and create talent so that, in the end, they can improve student learning outcomes (Ali et al., 2020; Bangert, 2008; Sipayung et al., 2021).

Efforts made by teachers to achieve learning effectiveness are understanding the material in-depth and preparing interactive online learning to facilitate feedback from students (Firmansyah et al., 2021; Keeton, 2004; Kim & Bonk, 2006; Rahmawati &

Suryadi, 2019; Sipayung et al., 2021; Wardoyo et al., 2017). Challenges in online learning do not only arise from the problem of students who have difficulty adapting to online learning but also the problem of mastering learning content (Dhawan, 2020). Some students usually have difficulty understanding online learning content, which tends to be theoretical. That's why teachers must understand the material so that students have high curiosity and classes can take place dynamically, student-centered, and interactive (Caena & Redecker, 2019; Partlow & Gibbs, 2003; Song et al., 2004).

This study follows the cognitive theory, which states that the teacher's ability to create a supportive classroom environment can maximize the effectiveness of online learning (Yilmaz, 2011). The power of teachers to compile learning media and provide discussion space for students to explore can optimize the achievement of learning objectives (Arnanto & Triyono, 2014; Dhawan, 2020). Competent teachers also design learning activities to meet student needs and enable students to develop actively through a meaningful learning process. Teachers encourage student involvement in online learning, prepare learning content for discussion, and provide appropriate feedback to students (Caena & Redecker, 2019).

CONCLUSION

This study aims to determine the effect of digital literacy and teacher professional competence on the effectiveness of online learning at SMK Negeri 1 Turen and SMK Negeri 1 Malang. The results showed a positive relationship between the variables of digital literacy and teacher professional competence on the effectiveness of online learning.

Teachers are expected to be able to utilize technology and design various learning content for better student understanding to increase the effectiveness of online learning during the pandemic. So that online learning can improve students' problem-solving skills, critical thinking skills, and adaptability. In this pandemic situation, educational institutions must maintain their education system to ensure and prioritize student skills to increase the effectiveness of online learning.

The limitation in this study is the Adjusted R Square value of 59.8%, indicating that many other variables outside the study affect the effectiveness of online learning. This study only uses cognitive theory to measure the effectiveness of online learning with indicators that focus on the learning process. Suggestions for further research are that researchers can measure the effectiveness of online learning from the aspect of learning outcomes by using the Cognitive-Constructivism theory or Maslow's achievement needs approach. Further research also can be conducted to measure the effectiveness of online learning by adding new variables such as independent learning, learning outcomes, use of teaching media, or learning motivation.

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