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The Influence of Digital Literacy on Administration Efficacy for Supervisor Teachers in Cirebon City in the Post-Pandemic

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Abstract

The purpose of this study was to address the Effect of Digital Literacy Mastery on Post-Pandemic Supervision Teacher Education Administration: Empirical Evidence from High Schools in Cirebon City, West Java Province. In this study, we adopted a survey design and applied a quantitative approach when analyzing the data. The dependent variable in this study is the mastery of supervising teacher education administration; the interactive variable is the mastery of digital literacy. The population included supervisory teachers at the senior high school level under the auspices of the Education and Culture Office of Cirebon City, West Java Province, and involved 25 supervisory teachers. The research sample was taken from the entire study population, 25 supervisory teachers at Public and Private High Schools in Cirebon City who had been appointed for at least one year. They all had applied methods in mastering digital literacy and the administration of Education, supervising teachers in their duties. We used a survey questionnaire to collect data, divided into two parts: digital literacy mastery and supervising teacher education administration mastery. All instruments were developed by researchers concerning the theories, dimensions, and indicators previously suggested by experts and researchers.

Keywords: *Mastery of digital literacy, administrative mastery, supervising teacher*

Introduction

The use of information and communication technologies (ICT) in the workplace, school, and home is pervasive and comprises an integral part of people's daily lives. ICT has changed daily activities. Communities need to know how to use ICT, such as computers and the Internet, and develop their digital literacy in this digital era. Digital literacy represents a person's knowledge and skills in ICT and the ability to perform complex tasks effectively and efficiently in a digital environment (Jones-Kavalier & Flannigan, 2008).

Lack of skills and knowledge of operating and using ICT is an important barrier to increased digital literacy. The gap in using ICT for various activities has raised concerns about the digital literacy gap, which could widen the gap between the information-rich and the information-poor rich (Seale, 2009; Selwyn, 2006; van Dijk, 2006). Many people presume knowledge of computers and the

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Internet and perform basic tasks using them. However, individuals who are still digitally illiterate or lack digital literacy have been excluded from the digital world (Orrick, 2011; Seale, 2009; van Dijk, 2006).

Becoming digitally literate also includes developing cognitive, creative, critical, and social abilities beyond the basic functional skills for using ICTs, which are increasingly spreading into everyday contexts, such as in personal and social life and the workplace (Junge & Hadjivassiliou, 2007; Tshelane, 2022). Rene (2010) suggests that the digital literacy gap is one of the most critical social justice issues facing the digital society (Seale, 2009). Those living in marginalized circumstances display low levels of digital literacy, contributing to the digital literacy gap (Hadjerrouit, 2010; Junge & Hadjivassiliou, 2007).

The digital literacy gap is important because people with less digital literacy may be further marginalized, given that information, communication, business, and the prevailing social functions are increasingly structured on the Internet. Digital literacy education (DLE) is essential, especially for those who lack digital literacy (Hohlfeld et al., 2008; Seale, 2009), to reduce the digital literacy gap. Digital literacy education aims to support constructing students' knowledge and skills through education and practice to improve their digital literacy (Brownell & Rashid, 2020; Isidro & Teichert, 2021).

A significant aspect of developing digital literacy is that digital literacy has practical value in solving broader tasks, for example, accessing health, government, and public service information online and benefiting opportunities for online business, education, and learning. In addition, the development of digital literacy allows people to participate in community activities and perform social actions online (Renee, 2010). Thus, digital literacy is a social, political, economic, and cultural product and has vital implications for education, culture, society, and community development today in the digital era (Bruce, 2003; Nawaz & Ghulam, 2010). This perspective highlights the need to develop personal digital literacy and the importance of being a digital citizen to participate in a digital society (Junge & Hadjivassiliou, 2007; Marais, 2021; Shabalina & Bykov, 2021).

Becoming digitally literate also includes developing cognitive, creative, critical, and social abilities beyond the basic functional skills for using ICTs (Kilinc & Tarman, 2022). These skills are increasingly spreading into everyday contexts, such as personal and social life and the workplace (Evans-Amalu & Claravall, 2021; Junge & Hadjivassiliou, 2007). Rene (2010) suggests

five essential skills necessary for digital and media literacy: to be able to access, analyze and evaluate, create, reflect, and act.

Using ICT depends on the perceptions of developers and users about the nature of the technology and its role in different ways of life (Aviram & Eshet-Alkalai, 2006). Sasseville (2004) found that ICT-related changes "are not perceived as a collective experience or a social change, but rather a personal challenge." An analysis of the literature shows that two broader theories, according to which ICTs can play an "instrumental" or "substantive" role in the learning process, are discussed repeatedly (Macleod, 2005). Ezer (2006) classifies this issue into the "instrumental" and "liberal" concepts of e-Learning. The instrumental view argues that ICTs are just technologies, and their role depends on their use. In contrast, the substantive view argues that these technologies can transform society and their existence can make a difference (Mehra & Mital, 2007).

Courses are offered to gain knowledge and develop skills in various tools. Tinio (2003) suggested three roles for ICT and digital literacy. 1) Learn about ICT, where digital literacy is the end goal, 2) Learn with ICT, where technology facilitates learning; and 3) Learn through technology to integrate it into the curriculum. Sahay (2004) identified four dimensions of computer literacy. 1) ICT as an Object: Learning about the technology. It prepares students for using ICT in education, future work, and social life, 2) Tools: ICT is used for learning, for example, preparing lectures or assignments, collecting data and documentation, communicating, and conducting research. ICT is applied independently of the subject matter. 3) Media for teaching and learning: It refers to ICT as a tool for teaching and learning itself, a medium through which teachers can teach, and students can learn. Technology-based instructional delivery has many forms, including drills and drills, simulations, and educational networks. 4) ICT for education management: The most common and broader application of ICT is in the organizational and logistical functions of higher education institutions in transaction processing systems (TPS) and management information systems (MIS).

The school literacy movement (GLS) was launched by the Ministry of Education and Culture of the Republic of Indonesia in 2015. The School Literacy Movement (GLS) is a comprehensive and sustainable effort to make schools a learning organization whose citizens are literate for life through public involvement. GLS is the ability to access, understand, and use something intelligently through various activities, including reading, viewing, listening, writing, and/or speaking.

Education must provide provisions to students regarding what they will face in society and their environment (Ardiansyah & Saputri, 2020). Changing times lead to changes in educational demands. Therefore, a need exists for education reform along with the changing times in the 21st century. Based on the 2015 World Economic Forum, literacy skills are one of the pillars of 21st-century Education that should be emphasized in its development (Ibda & Rahmadi, 2018). The definition of literacy, in general, is often interpreted as the ability to read (Ariani & Sukarno, 2020), although various types of literacy are possible. Someone with literacy skills will interact, communicate, and actualize themselves, both orally and in writing, to support other competencies. Thus, literacy becomes a determining aspect of progress in a nation (Budiharso & Tarman, 2020; Irianto & Febrianti, 2017; Permatasari, 2015).

In particular, literacy skills deserving further attention for their development are digital literacy. Digital literacy refers to the ability to move and participate actively in a digital environment through operating digital devices involving complex cognitive, motoric, and socio-emotional skills (Eshet, 2004; Jin et al., 2020). Digital literacy is a 21st-century survival skill because mastery of digital literacy is a medium for implementing other competencies in the 21st century, now entering the digital age (Eshet, 2004). It is because digital literacy is beyond the ability to operate hardware and software and involves the ability to support activities in the digital world (Jin et al., 2020). Even though most people in the 21st century use digital technology daily, it does not guarantee that they are digitally literate (Murray & Pérez, 2014).

The urgency of mastering digital literacy is strengthened by online learning policies based on the Ministry of Education and Culture Circular Letter Number 15 of 2020. This transition is filled with various problems from education stakeholders and the media used (Ihwanah, 2020). Due to the Covid-19 Pandemic, this policy demands mastery of digital literacy by education stakeholders so that learning can run smoothly, especially teachers. Teachers must adapt to this situation and adjust to technology, ensuring they can handle the situations that occur (Mahfud et al., 2019). Moreover, regarding the integration of digital technology in learning, the teacher is a key factor in its success (Jannah et al., 2020). Teachers also play a role in developing students' digital literacy, especially those related to socio-emotional and cognitive aspects (Güneş & Bahçivan, 2018).

The teacher's mastery of digital literacy can influence other stakeholders, especially students and parents interact with teachers during the learning process. Despite the importance of the teacher's role, some teachers have difficulty implementing ICT in learning (Sumardi et al., 2020); or are less ready to participate in developing students' digital literacy (Sadaf & Gezer, 2020). Therefore, a need is present for the continuous development of teachers' digital literacy skills. Before taking further steps related to the development of teacher digital literacy, knowing the teacher's level of digital literacy is critical. The lack of linearity in previous research implies that in different regions with different access to technology, differences in teachers' digital literacy levels can occur (Al Khateeb, 2017; Kharisma, 2017).

This study focuses on the literacy of public and private high school teachers because high school is the last formal education level underlying higher education or university. Hence, the introduction and development of digital literacy in high school are crucial (Irwandi et al., 2016). This study also compares the digital literacy between public high school teachers and private high school teachers, where no research has compared the digital literacy of teachers of the two school types. The description above suggests that the purpose of this study is to observe the comparison of the digital literacy levels of public high school and private high school teachers and their implementation in competency areas based on the Digital Literacy Global Framework (DGLF) developed by UNESCO in 2018 (UNESCO, 2018). DGLF is an update of DigCom 2.0. The research has limitations because only four of the seven competency areas were considered research sub-variables: device and software operation, data and information literacy, communication and collaboration, and digital content creation.

Digital content in text, images, sound, animation, and video (multimedia) facilitates teaching and learning (Surjono, 2020). Teachers are required to master Digital Literacy competencies to lead students to face today's challenges through 21st-century learning. These Digital Literacy competencies include searching, evaluating, creating, and communicating Digital Content.

In the 4.0 era, marked by the rapid development of such sophisticated technology, teachers should be familiar with mastery of technology, especially information technology. Mastery of this technology will improve the quality of learning in the classroom because those who are already literate in technology will optimize all the latest learning media and tools at this time. However, many teachers are technology stutterers. Based on survey data from Gogot Suharwoto, Head of the Education and Culture Information and Communication Technology Center of the Ministry of Cultural Education (Kapustekkom), 40% of non-ICT teachers are technology ready. It means that 60% are not ready for technology (Maharani, 2018).

The world of Education is one line unavoidably touched by technology. Many teachers are still shackled to this change; they are in their comfort zone, only doing iteration. Facing the 4.0 revolution era is challenging, especially for the world of Education, including changing learning methods that were previously conducted conventionally, delivering material through lectures, and changing children's mindsets and nature. In the learning process, building more innovative learning is necessary to improve the quality of educators. Teachers are currently required to have competency standards aligned with educational development.

Every individual needs to understand the importance of digital literacy, including school supervisors, which is needed in this modern era. Digital literacy is as vital as reading, writing, and other disciplines. Literacy in modern times is beyond the context of how a nation frees itself from illiteracy and determines how a nation can compete with other nations. The digital era makes education easier and more efficient. The virus outbreak has paralyzed various aspects of life, one of which is education, requiring distance learning. During the Covid-19 pandemic, teachers had to utilize technology in the learning process (Tsakeni, 2021). Teaching and learning activities were performed remotely (Mbhiza, 2021; Williams et al, 2021).

The use of smartphones and computers is currently needed to support the learning process (Alzubi, 2019). Teachers must facilitate and begin to develop the ability to structure the demands of the 4.0 era in the learning process, including the assessment process. Educators need to improve their abilities and competencies to ensure that the information conveyed to students is correct. In addition, accessing information/learning resources and obtaining and utilizing learning media is critical. It is necessary to improve learning quality and face the modern era.

The regulation of the Minister of State for Empowerment of State Apparatuses and Bureaucratic Reform No. 21 of 2010 on the functional position of educational supervisors and their credit score

(Article 5) states that the main task of educational supervisors is to execute academic and managerial oversight tasks in education units. They include the preparation of supervisory programs, implementation, coaching, and monitoring the implementation of 8 (eight) national education standards for assessment, mentoring, and professional teacher training. Moreover, they cover the evaluation of supervision programs' implementation and supervisory duties in particular areas. The performance of an educational supervisor is related to the results achieved and can be seen from the quality and quantity possessed by an educational supervisor. According to Mangkunegara (2016), performance results from quality and quantity achieved by someone conducting their duties per the responsibilities given.

The rapid development of science and technology at this time requires that supervisors have an optimistic attitude in tackling all problems that will occur continuously and must find solutions to each. At this time of rapid development, educational supervisors must continually develop and improve their performance and have a solid optimistic attitude toward the work conducted. Thus, their performance will be improved. It is hoped that the presence of a supervisor with high optimism and literacy skills in finding solutions to various obstacles and problems in every activity will improve the quality of education. The regulation of the Minister of Administrative Reform and Bureaucratic Reform Number 21 of 2010 suggests that education supervisors are civil servants (PNS) with complete duties, responsibilities, and authority by authorized officials to perform academic and managerial supervision in educational units. Educational supervisors are only Civil Servants referring to this applicable regulation.

The supervision domain is divided into two categories: academic and managerial. Based on the guidelines for evaluating the performance of educational supervisors (2012), the aspects of evaluating the performance of educational supervisors include 1) preparation of the supervision program, 2) implementation of the supervision program, 3) evaluation of the results of the supervision program implementation, and 4) guidance and professional training of teachers and or school principals. The optimistic attitude of a supervisor will substantially assist in performance. An optimistic supervisor will always consider failures in their performance to be the outside factors spurring them to overcome and correct these failures.

According to Nurtjahjanti and Ratnaningsih (2011), high optimism will highly affect one's efforts to create a better future. The smooth running of the supervisor's performance cannot be done casually; strong self-confidence is needed to complete the task or the various problems faced in

the job or task. In the current digital era, supervisors unavoidably need high digital literacy skills. With digital literacy, acquiring all information will be comparatively easy. Permadi et al. (2018) reported that digital literacy is a person's ability to use information and communication technology to find, evaluate, utilize, create and communicate information with cognitive skills, ethics, social, emotional, and technological aspects. Accordingly, an educational supervisor should have competent digital literacy skills.

Digital literacy is imperative in the performance of an educational supervisor because, in the current era of development, information is presented and exchanged digitally, requiring the digital literacy ability of an educational supervisor. Unsatisfactory supervisory competence does not only occur in Indonesia and is a solemn issue in many other countries. The research conducted by Ünal (2010) revealed that education supervisors in Turkey stated that school supervisors could not provide the optimum service for school principals and teachers. The findings indicated that supervisors rated themselves as knowledgeable, helpful to principals and teachers in education, and people who could facilitate the work of teachers and principals. Some inspectors also opine that their work is based on authority and reporting.

The supervisor's positive self-perception is inversely proportional to the perception of the principal and teacher. Principal teachers regard supervisors as people who frequently find fault, are arrogant, try to use their competence instead of providing a positive influence, and do not help improve their abilities. Furthermore, they see supervisors as people who think their sole job is following the rules. Therefore, a difference exists between the supervisor's perception and that of the principal and teacher.

Research question

Based on the research background and the theoretical gaps identified in several previous studies, the research question for this research is as follows. After the pandemic, “does mastery of digital literacy significantly affect mastery of education administration for high school supervising teachers in Cirebon City?”

Hypothesis

The following hypotheses were developed based on the above research question.

Ha1: Mastery of Digital Literacy significantly affects Mastery of High School Supervisor Teacher Education Administration in post-pandemic Cirebon City.

Literature Review

Digital Literacy

The concept of digital literacy has emerged since 1990. According to Gilster (1997), digital literacy is understanding and using the information in various formats. Gilster explained that literacy covers the ability to read but involves reading with meaning and understanding. Digital literacy includes mastery of ideas, not keystrokes. Hence, Gilster accentuates critical thinking processes when dealing with digital media than technical competence as a core skill in digital literacy and emphasizes the critical evaluation of what is found through digital media rather than the technical skills required to access these digital media.

Gilster (1997) explained that in addition to the art of critical thinking, the competencies needed are learning how to organize knowledge and collecting reliable information from several different sources. Someone who is digitally literate needs to develop the ability to search and develop a strategy in using search engines to find existing information and how to find information suiting their information needs.

Gilster (1997) reported four core competencies that a person needs to have to be digitally literate, including 1) Internet Searching, 2) Guiding the Direction of Hypertext (Hypertextual Navigation), 3) Evaluation of Information Content (Content Evaluation), and 4) Knowledge Assembly. Daugles AJ Belshaw (in the Ministry of Education and Culture, 2017) lists eight essential elements for developing digital literacy because digital literacy skills are still low. 1) Cultural understanding of the various contexts of digital world users. 2) Cognitive thinking power in assessing content. 3) Constructive, the creativity of something expert and actual. 4) Communicative, understanding the performance of networking and communication in the digital world. 5) Responsible self-confidence. 6) Creative, creating ideas, and doing new things. 7) Critical in addressing various issues. 8) Socially responsible.

The School Literacy Movement is a social movement with collaborative support from various elements. Efforts are made to make it happen through students' reading habits. This habituation is conducted with a 15-minute reading activity (the teacher reads a book and the school members read silently, which is adjusted to the context or school's target). When the reading habit is formed,

it will then be directed to the development and learning stages (accompanied by a bill based on the 2013 Curriculum). Variations in activities can combine receptive and productive skills development.

Clay (2001) and Ferguson (2012) describe that information literacy comprises early, basic, library, media, technology, and visual literacy. In the Indonesian context, early literacy is needed as a basis for acquiring later stages of literacy. The Dimensions and Indicators According to Hague and Payton (2011)in Nationalita and Nugroho (2020) appear in table 1.

Table 1

Digital Literacy Dimensions and Indicators

Draft	Dimensions	Indicator
Digital literacy	1. Beyond functional skills	1. ICT skills
	2. Creativity	2. Product creation or output in various formats and models by utilizing digital technology
		3. Ability to think creatively and imaginatively in planning, content, and exploring ideas
	3. Collaboration	4. The ability to participate in the digital space
		5. Able to explain and negotiate the ideas of others
	4. Communications	6. Able to communicate through digital technology media
		7. Able to understand and understand the audience
	5. Ability to find and select the information	8. Ability to search and investigate information
	6. Critical thinking and evaluation	9. Able to contribute, analyze, and sharpen critical thinking skills when dealing with information
	7. Cultural and social understanding	10. In line with the context of socio-cultural understanding
	8. E-Safety	11. Ensure security when users explore, create, and collaborate with digital technology

Supervisor Teacher

Supervision is a medieval Roman concept, meaning deviation from the original text or scanning process and reviewing errors (Smyth, 2001 in Sullivan & Glanz, 2005). Historically, the first educational, supervisory function was inspection; this function has substantially changed over time. It includes periodic visits paid to teachers by figures of authority and control over teacher behavior regarding rules. These visits and control were once considered the primary goal of supervision. However, educational supervision was later aimed at leadership, interpersonal relations, program development, and instructional development (Glickman et al., 2001; Memduhoğlu et al., 2007; Sullivan & Glanz, 2005). As a consequence of these developments, supervision is currently identified as guiding and leading people in their studies to implement organizational goals (Daresh & Playko, 1995).

Nonetheless, the purpose of teaching supervision is to develop teaching and school success to provide student success, teacher development, and educational equity by working with educators (Glickman et al., 2001). This mentality sees supervision as a social process promoting teacher development, training, and evaluation. The starting point is the individual, who is able to change their behavior. The change in question depends on the supervision efforts by the teacher's level of vocational development (Markides, 2022; Matabane et al., 2022). Assessing the general competence of teachers is not crucial, but elevating them to a level they can reach by starting at whatever level they are at and encouraging them to improve their current performance are critical (Markides, 2022; Nolan & Hoover, 2008).

A supervisor can also work on changing the perceptions of the teacher and the manager. They can develop managers' views by providing them with more contemporary information about management and making them understand the positive consequences of a democratic work environment. Moreover, if necessary, a supervisor can communicate with them about the success stories of other schools and suggest the positive places they will get in the external environment and at school (Ünal, 2010). The main objectives of educational supervision include determining defects and inappropriate practices by controlling the work of education staff and taking steps to prevent them. They also include providing staff with coordination, motivating staff through professional guidance and assistance, increasing job satisfaction, and contributing to integrating all educational institutions with the environment (Memduhoğlu et al., 2007).

Sudjana (2012) states that the school or education unit supervisor conducts supervisory duties. School supervisors are Educators/Teachers with the status of civil servants appointed and assigned to the responsibility and authority to execute academic and managerial supervision in their educational units or schools. Supervision means professional or expert assistance from a supervisor to a person or a group of people being supervised. To that end, the school supervisor in this paper is hereinafter referred to as the Education Supervisor, responsible for coaching, not inspecting or controlling.

The scope includes academic and managerial supervision. Academic and managerial supervision comprises the following activities. (1) preparation of the supervisory program, (2) implementation of the supervision program, (3) evaluation of supervision program implementation, and (4) guiding and training professional teachers and/or school principals.

Academic supervision is a supervisory function concerning aspects of conducting the teachers' fostering, monitoring, evaluating, and professional training. These aspects include (1) planning learning, (2) implementing learning, (3) assessing learning outcomes, (4) guiding and training students, and (5) executing additional tasks attached to the implementation of the main activities per the teacher's workload (Government Regulation Number: 74 of 2008 concerning Teachers) Managerial supervision. Managerial supervision is a supervisory function regarding school management aspects. They directly relate to increasing the efficiency and effectiveness of schools with planning, coordination, implementation, assessment, development of teaching competence, and educational staff resources.

Fathurrohman and Suryana (2020) stated that the primary duties of school supervisors cover six dimensions: supervising, advising, monitoring, reporting, coordinating, and performing leadership. In this regard, an educational supervisor at school must be a professional, and this duty cannot be conducted randomly. The definition of a professional supervisor refers to supervisors with specific academic qualifications and competencies. They must meet the requirements of work experience and other experiences that can support the supervisory activities to be executed.

Decree of the State Minister for Administrative Reform No. 21 of 2010 specifies that school supervisors are civil servants whose authorized officials give full duties, responsibilities, and authority to conduct academic and managerial supervision in academic units (RI, 2011). Furthermore, the supervisor is the person who supervises. That person is an education supervisor or a school principal who, because of the leadership role, has responsibility for the quality of the teaching program in the school or a special officer who is appointed to lead the improvement of a particular field of teaching (Suhardan, 2010). Supervision is an academic activity conducted by people with more knowledge than the person being supervised. The primary purpose of academic supervision is to provide services to teachers to improve learning quality, foster teachers to be more creative in learning, facilitate teachers to teach more effectively and pleasantly, collaborate with teachers to develop curricula, and conduct coaching. Based on the above understanding, every supervisor is given the task, responsibility, and authority to conduct professional services, and assess and develop technical education and administration in each educational unit. Accordingly, supervision implements educative techniques in schools or madrasas by preparing learning programs, implementing learning activities, and evaluating them to improve learning quality. The

supervisors' duties, functions, and powers to gain a deeper understanding of supervision are presented in table 2.

Table 2
School Supervisor Dimensions and Indicators

Aspect	Dimensions	Indicator
Supervisory teacher education administration	Inspecting/ Surveillance	1. Implementation of the subject curriculum
		2. The process of learning/ practicum/field studies
		3. Extracurricular activities
		4. Use of media, tools, and learning resources
		5. Student learning progress
		6. Learning environment
	Advising/ Advise	7. Advise teachers in effective learning/guidance
		8. Teachers in improving professional competence
		9. Teachers in carrying out the assessment of the process and learning outcomes
		10. Teachers in carrying out classroom action research
		11. Teachers in improving personal, social, and pedagogic competence
	Monitoring/ Monitor	12. learning resilience
		13. Implementation of subject exams
		14. Quality standards of student learning outcomes
		15. Teacher professional development
		16. Procurement and utilization of learning resources
	Coordinating/ coordinate	17. Implementation of learning innovations
		18. Procurement of learning resources
		19. Teacher professional capacity-building activities
	Reporting/ report	20. Teacher performance in carrying out learning
		21. Student learning progress
		22. Implementation of academic supervisory duties

Methods

Research design

This research addresses whether the mastery of digital literacy impacts the mastery of the education administration of supervising teachers directly. In this study, phenomena was analyzed using survey methodology and quantitative techniques (Creswell, 2009). The dependent variable is mastery of supervisory teacher education administration, and the independent variable is mastery of digital literacy. This study used SPSS (version 26) to analyze the data. I used a simple regression

technique to show the direction of the independent variable's influence on the dependent variable. This research was conducted in Cirebon City, West Java Province, Indonesia.

Population and Sample

The population comprised all 25 school supervisors at public and private high schools under the auspices of the Cirebon City Education Office. The samples in this study were taken from the entire study population from 25 school supervisor teachers with at least one year of work. Therefore, the researcher recruited the 25 sample as the respondents of this study. See table 3 to see the distribution of sample.

Table 3

Supervisor teachers in High School in Cirebon City

No	Subdistrict	Public High School	Private High Schools	Amount
1	Kesambi	4	13	17
2	Harjamukti	2	0	2
3	Weak bow	1	2	3
4	Prosecutor	2	4	6
5	Pekalian	0	0	0
Total number		9	19	28

As table 3 suggests, we can see that there are 5 subdistricts in Cirebon City where the research was conducted. Of the 5 districts, one subdistrict has no supervisor teacher, so that the total number of the supervisor teachers was 28. However, the total sample that participated in this research were 25 as 3 of them were absent when the data collection was conducted.

Instrument

This study used a survey questionnaire to collect data. The questionnaire was divided into two sections related to mastery of digital literacy and mastery of the supervising teacher's education administration. Eleven items on digital literacy and twenty-two items for supervisory teacher education administration provided a total of 33 items. The items were developed by researchers based on the theories, dimensions, and indicators previously suggested by experts and researchers. The product-moment correlation test was used to correlate the item scores with the total score to determine the validity of the instrument items. All items had correlation coefficients above 0.6 and a significance level below 0.05. Therefore, the 33 items were feasible to use in research. Instrument reliability was tested using Cronbach's alpha value. The results for all variables showed a good

level of reliability above 0.7, making the instrument suitable for our study. Descriptions of item dimensions and its validity and reliability appear in table 4 and table 5.

Table 4
Research Instruments

Variable	Dimensions	Indicator	Total
Digital literacy	Beyond functional skills	1	11
	Creativity	2	
	Collaboration	2	
	Communications	2	
	Ability to find and select Information	1	
	Critical thinking and evaluation	1	
	Cultural and social understanding	1	
	E-Safety	1	
Supervisory teacher Education Administration	Inspecting/ Surveillance	6	22
	Advising/ advise	5	
	Monitoring/ monitor	5	
	Coordinating/ coordinate	3	
	Reporting/ report	3	

Table 5
Reliability Test Results

Variable	Cronbach's Alpha	N of Items
Digital literacy	.793	11
Supervision Teacher Education Administration	.879	22

Table 6 shows that for the Digital Literacy variable, Cronbach's alpha value is 0.793, which is greater than 0.60. Therefore, this 11-item instrument is reliable. For the Supervisory Teacher Education Administration variable, Cronbach's alpha value is 0.879, which is also greater than 0.60. Hence, the 33-item instrument is reliable, implying that both variables meet the reliability test criteria.

Data Collection

Data collection from the respondents was conducted using a designed and structured questionnaire to reveal the digital literacy and education administration of 25 supervisor teachers. The questionnaire was distributed in one day to achieve 5 sub-districts where the supervisor teachers worked. The researcher gave a three-day time for supervisor teachers to answer the questionnaire. The three-day time was given to anticipate that some teachers were not present at the time the questionnaire was distributed. After three days, the researchers collected the answer of the questionnaire from across each sub-district in Cirebon City, West Java Province. Of 28 supervisor teachers available in the 5 sub-district, the complete answer of the questionnaire was 25. The

complete answers of the questionnaire were identified and the results tallied to proceed for data analysis.

Data analysis

Data analysis was executed in three steps. First, the normality test was conducted to ensure that the sample followed a normal distribution. Then, descriptive statistics were retrieved to show the central tendency of the results. Finally, hypothesis testing was conducted to explore whether the independent variable affects the dependent variable. Table 8 depicts Kolmogorov-Smirnov test results for normality and shows that the sample is normally distributed ($p > .05$). All analyses were performed using SPSS Version 26.

Quantitative descriptive analysis is intended to present data in the form of a central measure and a measure of the spread of each indicator, namely through the average, median, mode, minimum, maximum, range, and sum. Spread is represented by variance and standard deviation. Our research hypothesis was tested using a linear regression approach, allowing a two-tailed t-test to show the direction of influence of the independent variable on the dependent variable. The two-tailed test was used because the independent variables, either positively or negatively, affect the dependent variable (Helm et al., 2010).

Descriptive Statistics Data

The data sourced from samples in the field of digital literacy and education administration for supervising teachers were used. They were analyzed using simple linear regression modeling with SPSS 26 software because the analysis involved both native and exogenous variables. The correlation test looks at the coefficient of r between variables and the t-test results to test the hypothesis. If the t-test results have p-values below 0.05, the correlation results become significant. Therefore, the null hypothesis can be rejected, favoring the research hypothesis.

Results

Demographic Analysis

Table 6
High School Data in Cirebon City

No	Subdistrict	Number of Public High Schools	Number of Private High Schools	Amount
1	Kesambi	4	13	17
2	Harjamukti	2	0	2
3	Weak bow	1	2	3
4	Prosecutor	2	4	6
5	Pekalian	0	0	0
Total number		9	19	28

Source: Cirebon City Senior High School Education Data (2022 data)

Table 6 above illustrates 28 public and private high schools across five sub-districts in Cirebon City. Of these, more than half are private (9 or 32%), while the rest are public (19 or 68%)

Normality Test

Kolmogorov-Smirnov test (Z-distribution) was used to test the normality of the three research variables. Table 7 depicts the results.

Table 7
Normality Data Test Results **(***One-Sample Kolmogorov-Smirnov Test***)**

		Unstandardized Residuals
N		25
Normal parameters, b	Means	0E-7
	Std. Deviation	1.97100856
Most extreme differences	absolute	.068
	positive	.053
	negative	-.068
Kolmogorov-Smirnov Z		.823
Asymp. Sig. (2-tailed)		.793

a. Test distribution is Normal.
b. Calculated from data.

Based on the normality test table above, the Kolmogorov Smirnov Test values include 1) in equation 1 is 0.823 with a probability of 0.793. The p-value above the constant value $\alpha = 0.05$ indicates that the data is normally distributed.

Hypothesis Testing

Ha_1: Mastery of digital literacy significantly affects mastery of education administration for high school supervising teachers in Cirebon City after the pandemic.

Table 8
Partial Test of Digital Literacy → Education Administration for Supervising Teachers

Variable	Betas	Q	Sig t	Information
Digital Literacy → Education administration teacher supervisor	0.673	5.434	0.000	Significant
t-table	= 1.70814			
Adjusted R Square	= 0.781			
R Square	= 0.702			

Table 8 shows the significant (p<.05) effect of digital literacy individually/partially on the supervisory teacher education administration. The relationship is stated to have a positive and significant effect if the t-count value is greater than the t-table, and the significant t-value is less than 0.05. Based on the table above, the t-count for digital literacy was as big as 5.434 on the administration of supervising teacher education, meaning that it is greater than the t-table value (t-count=5.434 > t-table =1.70814 with a sig value of 0.000 <0.05). Thus, a positive and significant effect of digital literacy exists on the administration of supervisory teacher education.

The results of the regression calculation revealed that the coefficient of determination (adjusted R square) was 0.781, meaning that the dependent variable explained 78.1% of the variation in the independent variable. Accordingly, the digital literacy variable explained 78.1% variation in the administration of education teacher supervisors. However, the remaining 21.9% could be attributed to other variables not included in this research model.

Discussion

This study addresses the Effect of Mastering Digital Literacy on the Mastery of Educational Administration for High School Supervisors in Cirebon City Post-Pandemic. The following are the results of the analysis and discussion to interpret the research results. Data analysis shows that mastery of literacy positively and significantly affects mastery of education administration for supervising teachers at high schools in Cirebon City, West Java Province. It means that the higher the implementation of digital literacy in schools, the higher the administrative mastery of supervisory teacher education is at senior high schools in Cirebon City, West Java Province. Digital literacy is a critical aspect, and its application in educational institutions/schools is crucial, considering the current era of globalization requires everything to be digital in implementing learning and administration in schools. It should also be used to adapt to current developments,

especially after the Covid-19 pandemic, where almost all learning or school administration is conducted online.

Digital literacy must be implemented for the challenges of today's era demanding every aspect towards digitization, making it possible that if one still uses conventional methods of doing work will be hampered. Hence, both schools and supervisors can contribute to today's challenges. Becoming digitally literate also includes cognitive, creative, critical, and social abilities beyond the basic functional skills for using ICTs, which are increasingly spreading into everyday contexts, such as in personal and social life, and the workplace (Junge & Hadjivassiliou, 2007). Rene (2010) suggests that the digital literacy gap is one of the most important social justice issues facing the digital society (Seale, 2009). Those living in marginalized circumstances continue to display low levels of digital literacy, adversely contributing to the digital literacy gap (Hadjerrouit, 2010; Junge & Hadjivassiliou, 2007).

Developing digital literacy is crucial because digital literacy has practical value in solving various tasks, including accessing health, government, and public service information online and utilizing opportunities for online business, education, and learning. In addition, developing digital literacy allows people to participate in community activities and conduct social actions online (Renee, 2010). Thus, digital literacy is a social, political, economic, and cultural product and has significant implications for education, culture, society, and community development today in the digital era (Bruce, 2003; Nawaz & Ghulam, 2010). This perspective highlights the need to develop personal digital literacy and the importance of being a digital citizen to participate in a digital society (Junge & Hadjivassiliou, 2007).

The GLS is a comprehensive and sustainable effort to make schools a learning organization whose citizens are literate for life through public involvement. Changing times lead to changes in educational demands. It aligns with the school literacy movement (GLS) launched by the Ministry of Education and Culture of the Republic of Indonesia in 2015. In the context of GLS, the ability to access, understand, and use something intelligently through various activities, including reading, viewing, listening, writing, and/or speaking, are critical. Education must provide provisions to students regarding what they will confront in society and their environment (Roy Ardiansyah & Saputri, 2020). Thus, a need exists for educational reform along with the changing times in the 21st century.

Based on the 2015 World Economic Forum, literacy skills are one of the pillars of 21-st century education that should be emphasized in its development (Ibda & Rahmadi, 2018). The definition of literacy, in general, is often interpreted as the ability to read (Ariani & Sukarno, 2020), although various types of literacy exist. Someone with literacy skills can interact, communicate, and actualize themselves, orally and in writing. Therefore, this situation will support other competencies that a person has so that literacy becomes a determining aspect of progress in a nation (Irianto & Febrianti, 2017; Permatasari, 2015). In particular, literacy skills deserving further attention for their development are digital literacy. Digital literacy is a 21st century survival skill because mastery of digital literacy is a medium for implementing other competencies in the 21st century, now entering the digital age (Eshet, 2004). Even though most people in the 21st century use digital technology daily, it does not guarantee that they are digitally literate (Murray & Pérez, 2014).

It is because digital literacy is more than the ability to operate hardware and software and extends to support activities in the digital world (Jin et al., 2020). Digital literacy is the ability to move and participate actively in a digital environment through digital devices involving complex cognitive, motoric, and socio-emotional skills (Eshet, 2004; Jin et al., 2020). The urgency of mastering digital literacy is strengthened by online learning policies based on the Ministry of Education and Culture Circular Letter Number 15 of 2020. This transition is filled with various problems from education stakeholders and the media used (Ihwanah, 2020).

Due to the Covid-19 Pandemic, this policy requires mastery of digital literacy by education stakeholders so that learning can run smoothly, especially for teachers. Teachers must adapt to this situation and adjust to the technology, ensuring that they are not isolated or cannot handle the situations that occur (Mahfud et al., 2019). Furthermore, per the integration of digital technology in learning, the teacher is a critical factor in its success (Jannah et al., 2020). Teachers also play a role in developing students' digital literacy, especially those related to socio-emotional and cognitive aspects (Güneş & Bahçivan, 2018).

Hopefully, the teacher's mastery of digital literacy can influence other stakeholders, especially students and parents, who interact with teachers during the learning process. Despite the importance of the teacher's role, some teachers still have difficulty implementing ICT in learning (Sumardi et al., 2020); or are not ready to participate in developing students' digital literacy (Sadaf & Gezer, 2020). Therefore, a need is present for the continuous development of teachers' digital literacy skills. Before taking further steps on the development of teacher digital literacy, knowing the teachers' digital literacy level is critical. The lack of linearity in previous research suggests that various regions with different access levels to technology may be responsible for the differences in teachers' digital literacy levels (Al Khateeb, 2017; Kharisma, 2017).

This study implies that the world of education is unavoidably affected by technology. Many teachers are struggling with this change because they do not move out of their comfort zone. Facing the 4.0 revolution era is challenging, especially for the world of education. It is manifested in modified learning methods previously conducted conventionally, delivering material through lectures. It also changes the mindset and nature of children. In the learning process, establishing more innovative learning upgrades the quality of educators. Teachers must meet competency standards aligned with educational development. Every individual must comprehend the vitality of digital literacy, including school supervisors, because it is indispensable in this modern era. Digital literacy is crucial and more notable than reading, writing, and other disciplines. Literacy in modern times cannot be confined to its traditional definition. It should be a measurement defining how a nation can compete with others. The digital era renders education readier and more practical. To that end, it is necessary to optimize its role and accessibility worldwide from varied aspects.

Conclusion

The results showed that mastery of literacy positively and significantly impacted mastery of education administration for supervising teachers at senior high schools in Cirebon City, West Java Province. As the implementation of digital literacy in schools increases, the administrative mastery of supervisory teacher education at senior high schools in Cirebon City, West Java Province, becomes better. This study emphasizes its novelty in that supervisor teachers should be literate in digital technology for optimum role to supervise teachers. This study, however, has limitation in the data coverage that was collected through questionnaire so that quantitative

analysis is emphasized. Future research is suggested to implement qualitative approach where in-depth data collection and data analysis through ethnography approach is elaborated.

References

Al Khateeb, A. A. M. (2017). Measuring Digital Competence and ICT Literacy: An exploratory study of in-service english language teachers in the context of Saudi Arabia. *International Education Studies*, *10*(12), 38–51. https://doi.org/https://doi.org/10.5539/ies.v10n12p38

Alzubi, A. (2019). Teachers' Perceptions on Using Smartphones in English as a Foreign Language Context. *Research in Social Sciences and Technology*, *4*(1), 92-104. https://doi.org/10.46303/ressat.04.01.5

Ariani, S. E. M., & Sukarno, S. (2020). Implementasi gerakan literasi sekolah (GLS) di SD Negeri Bumi 1 Kota Surakarta. *Didaktika Dwija Indria*, *8*(4), 1–6. https://doi.org/https://doi.org/10.20961/ddi.v8i04.43674

Aviram, A., & Eshet-Alkalai, Y. (2006). Towards a theory of digital literacy: three scenarios for the next steps. *European Journal of Open, Distance and E-Learning*, *9*(1). https://old.eurodl.org/?p=archives&year=2006&halfyear=1&article=223

Brownell, C., & Rashid, A. (2020). Building Bridges Instead of Walls: Engaging Young Children in Critical Literacy Read Alouds. *Journal Of Curriculum Studies Research*, *2*(1), 76-94. https://doi.org/10.46303/jcsr.02.01.5

Bruce, B. C. (2003). *Literacy in the Information Age: Inquiries Into Meaning Making With New Technologies.* ERIC.

Budiharso, T. & Tarman, B. (2020). Improving Quality Education through Better Working Conditions of Academic Institutes, *Journal of Ethnic and Cultural Studies*, *7*(1), 99-115. http://dx.doi.org/10.29333/ejecs/306

Clay, M. M. (2001). *Change over time in children's literacy development*. Heinemann.

Creswell, J. W. (2009). Research design: Qualitative, quantitative, and mixed methods. In *Sage Publications* (Vol. 8). Sage Publication, Inc.

Daresh, J. C., & Playko, M. A. (1995). *Supervision as a proactive process: Concepts and cases*. ERIC.

Eshet, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia*, *13*(1), 93–106. https://www.learntechlib.org/p/4793/

Evans-Amalu, K., & Claravall, E. (2021). Inclusive Online Teaching and Digital Learning: Lessons Learned in the Time of Pandemic and Beyond. *Journal Of Curriculum Studies Research*, *3*(1), i-iii. https://doi.org/10.46303/jcsr.2021.4

Ezer, J. (2006). India and the USA: A Comparison through the lens of model IT Curricula. *Journal of Information Technology Education: Research*, *5*(1), 429–440. https://www.learntechlib.org/p/111555/

Fathurrohman, F., & Suryana, A. A. (2020). *Supervisi pendidikan dalam pengembangan proses pengajaran*. *u*BRefiko Aditama.

Ferguson, L. A. (2012). Implementing a video education program to improve health literacy. *The Journal for Nurse Practitioners*, *8*(8), e17–e22. https://doi.org/https://doi.org/10.1016/j.nurpra.2012.07.025

Gilster, P. (1997). *Digital literacy*. Wiley Computer Pub.

Glickman, C. D., Gordon, S. P., & Ross-Gordon, J. M. (2001). *Supervision and instructional leadership: A developmental approach*. ERIC.

Güneş, E., & Bahçivan, E. (2018). A mixed research-based model for pre-service science teachers' digital literacy: Responses to "which beliefs" and "how and why they interact" questions. *Computers & Education*, *118*, 96–106. https://doi.org/https://doi.org/10.1016/j.compedu.2017.11.012

Hadjerrouit, S. (2010). *A theoretical framework to foster digital literacy: The case of digital learning resources BT - Key competencies in the knowledge society* (N. Reynolds & M. Turcsányi-Szabó (eds.); pp. 144–154). Springer Berlin Heidelberg.

Hague, C., & Payton, S. (2011). Digital literacy across the curriculum. *Curriculum Leadership*, *9*(10). http://www.curriculum.edu.au/leader/default.asp?id=33211&issueID=12380

Helm, S., Eggert, A., & Garnefeld, I. (2010). Modeling the impact of corporate reputation on customer satisfaction and loyalty using partial least squares. In *Handbook of partial least squares* (pp. 515–534). Springer. https://doi.org/https://doi.org/10.1007/978-3-540-32827-8_23

Hohlfeld, T. N., Ritzhaupt, A. D., Barron, A. E., & Kemker, K. (2008). Examining the digital divide in K-12 public schools: Four-year trends for supporting ICT literacy in Florida. *Computers & Education*, *51*(4), 1648–1663. https://doi.org/https://doi.org/10.1016/j.compedu.2008.04.002

Ibda, H., & Rahmadi, E. (2018). Penguatan literasi baru pada guru madrasah ibtidaiyah dalam menjawab tantangan era revolusi industri 4.0. *JRTIE: Journal of Research and Thought of Islamic Education*, *1*(1), 1–21. http://jurnaliainpontianak.or.id/index.php/jrtie/article/view/1064

Ihwanah, A. (2020). Problematika pembelajaran daring di sekolah dasar pada era pandemi COVID-19. *JIEES: Journal of Islamic Education at Elementary School*, *1*(2), 44–51. http://jiees.alkhoziny.ac.id/index.php/jiees/article/view/15

Irianto, P. O., & Febrianti, L. Y. (2017). Pentingnya penguasaan literasi bagi generasi muda dalam menghadapi MEA. *Proceedings Education and Language International Conference*, *1*(1). http://lppm-unissula.com/jurnal.unissula.ac.id/index.php/ELIC/article/view/1282

Irwandi, S., Ufatin, N., & Sultoni, S. (2016). Peran sekolah dalam menumbuhkembangkan perilaku hidup sehat pada siswa sekolah dasar (studi multi situs di SD negeri 6 Mataram dan SD negeri 41 Mataram kota Mataram Nusa Tenggara Barat). *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *1*(3), 492–498. http://journal.um.ac.id/index.php/jptpp/article/view/6178

Isidro, E., & Teichert, L. (2021). Towards Socially Just Literacy Teaching in Virtual Spaces. *Journal Of Curriculum Studies Research*, *3*(1), 21-41. https://doi.org/10.46303/jcsr.2021.6

Jannah, M., Prasojo, L. D., & Jerusalem, M. A. (2020). Elementary school teachers' perceptions of digital technology based learning in the 21st century: promoting digital technology as the proponent learning tools. *Al Ibtida: Jurnal Pendidikan Guru MI*, *7*(1), 1–18. https://doi.org/http://dx.doi.org/10.24235/al.ibtida.snj.v7i1.6088

Jin, K.-Y., Reichert, F., Cagasan, L. P., de la Torre, J., & Law, N. (2020). Measuring digital literacy across three age cohorts: Exploring test dimensionality and performance differences. *Computers & Education*, *157*, 103968. https://doi.org/https://doi.org/10.1016/j.compedu.2020.103968

Jones-Kavalier, B. R., & Flannigan, S. L. (2008). Connecting the digital dots: Literacy of the 21st century. *TEACHER LIBRARIAN-SEATTLE-*, *35*(3), 13. https://www.researchgate.net/publication/252911513_Connecting_the_Digital_Dots_Literacy_of_the_21_Century

Junge, K., & Hadjivassiliou, K. (2007). What are the EU and member states doing to address digital literacy? *ELearning Papers*, *6*, 1. http://agora.edu.es/servlet/articulo?codigo=2480740

Kharisma, H. V. (2017). Literasi Digital di kalangan Guru SMA di Kota Surabaya. *Libri-Net*, *6*(4), 31–32. http://journal.unair.ac.id/LN@literasi-digital-di-kalangan-guru-sma-di-kota-surabaya-article-11748-media-136-category-.html

Kilinc, E. & Tarman, B. (2022). Citizenship types, social media use, and speaking foreign language as predictors of global competence, *Citizenship Teaching & Learning, 17*:1, pp. 49–62, https://doi.org/10.1386/ctl_00081_1

Macleod, H. (2005). What role can educational multimedia play in narrowing the digital divide? *International Journal of Education and Development Using ICT*, *1*(4), 42–53. https://www.learntechlib.org/p/42316/

Maharani, E. (2018). Kemendikbud: Hanya 40 Persen Guru Siap dengan Teknologi. *REPUBLIKA.Co.Id*. https://www.republika.co.id/berita/pendidikan/eduaction/18/12/03/pj60ej335-kemendikbud-hanya-40-persen-guru-siap-dengan-teknologi

Mahfud, H., Adi, F. P., Atmojo, I. R. W., & Ardiansyah, R. (2019). Peningkatan Kompetensi Evaluasi Pembelajaran Berbasis Teknologi Pada Guru Sd Di Kota Surakarta. *Jurnal Pendidikan Dasar*, *7*(2), 1–5. https://doi.org/https://doi.org/10.20961/jpd.v7i2.35104

Mangkunegara, A. A. A. P. (2016). *Manajemen Sumber Daya Manusia Perusahaan*. PT. Remaja Rosdakarya.

Marais, E. (2021). A journey through digital storytelling during COVID-19 Students preparedness to use technology for learning in the language classroom. *Research in Social Sciences and Technology*, *6*(2), 169-182. https://doi.org/10.46303/ressat.2021.17

Markides, D. (2022). Revisioning Educational Leadership Through Love and the Ancillary: A Critical Self-Study. *Research in Educational Policy and Management*, *4*(2), 18-36. https://doi.org/10.46303/repam.2022.5

Matabane, M., Matabane, R., Moloi, T., & Sibaya, K. (2022). The Exploring Factors that Teachers View as Hindering Quality in Teaching and Learning at a TVET College. *Research in Educational Policy and Management*, *4*(1), 51-64. https://doi.org/10.46303/repam.2022.9

Mbhiza, H. (2021). Shifting Paradigms: Rethinking Education During and Post-COVID-19 Pandemic. *Research in Social Sciences and Technology*, *6*(2), 279-289. https://doi.org/10.46303/ressat.2021.31

Mehra, P., & Mital, M. (2007). Integrating technology into the teaching-learning transaction: Pedagogical and technological perceptions of management faculty. *International Journal of Education and Development Using ICT*, *3*(1). https://www.learntechlib.org/p/188072/

Memduhoğlu, H. B., Aydin, I., Yilmaz, K., Güngör, S., & Oğuz, E. (2007). The process of supervision in the turkish educational system: purpose, structure, operation. *Asia Pacific Education Review*, *8*(1), 56–70. https://doi.org/10.1007/BF03025833

Murray, M. C., & Pérez, J. (2014). Unraveling the digital literacy paradox: How higher education fails at the fourth literacy. *Issues in Informing Science and Information Technology*, *11*, 85. https://digitalcommons.kennesaw.edu/facpubs/3438/

Nasionalita, K., & Nugroho, C. (2020). Indeks literasi digital generasi milenial di Kabupaten Bandung. *Jurnal Ilmu Komunikasi*, *18*(1), 32–47.

http://jurnal.upnyk.ac.id/index.php/komunikasi/article/viewFile/3075/2834

Nawaz, A., & Ghulam, M. K. (2010). Digital literacy: An analysis of the contemporary paradigms. *International Journal of Science and Technology Education Research*, *1*(2), 19–29. https://academicjournals.org/journal/IJSTER/article-full-text-pdf/68579321822

Nolan, J., & Hoover, L. (2008). *Teacher supervision evaluation: theory into practice, 2nd, Translation Bijan Abdollahi., 2010. Tehran, contemporary works*.

Nurtjahjanti, H., & Ratnaningsih, I. Z. (2011). Hubungan kepribadian hardiness dengan optimisme pada calon tenaga kerja Indonesia (CTKI) wanita di BLKLN DISNAKERTRANS Jawa Tengah. *Jurnal Psikologi Undip*, *10*(2), 126–132. https://doi.org/https://doi.org/10.14710/jpu.10.2.126-132

Orrick, R. (2011). *Envisioning an Internet Center for Homeless Individuals: One Group's Quest to Reduce the Digital Divide*.

Permadi, D., Shabrina, F., & Rahyaputra, V. (2018). *Menyongsong Kewirausahaan Digital Indonesia*. UGM PRESS.

Permatasari, A. (2015). Membangun kualitas bangsa dengan budaya literasi. *PROSIDING SEMINAR NASIONAL BULAN BAHASA 2015*. http://repository.unib.ac.id/11120/1/15-Ane Permatasari.pdf

Renee, H. (2010). Digital and media literacy: A plan of action. *New York: The Aspen Institute*.

RI, P. N. (2011). *Buku Kerja Pengawas Sekolah*. Jakarta: Dirjen Pusat Pengembangan Kependidikan Badan Pengembangan Sumber Daya Manusia, Pendidikan dan Penjaminan Mutu Pendidikan.

Roy Ardiansyah, I. R. W. A., & Saputri, D. Y. (2020). Peningkatan kompetensi profesional guru dalam melaksanakan pembelajaran digital melalui workshop terintegrasi. *Jurnal Pendidikan Dasar*, *8*(2), 1–6. https://doi.org/https://doi.org/10.20961/jpd.v8i2.44346

Sadaf, A., & Gezer, T. (2020). Exploring factors that influence teachers' intentions to integrate digital literacy using the decomposed theory of planned behavior. *Journal of Digital Learning in Teacher Education*, *36*(2), 124–145. https://doi.org/10.1080/21532974.2020.1719244

Sahay, S. (2004). Beyond utopian and nostalgic views of information technology and education: Implications for research and practice. *Journal of the Association for Information Systems*, *5*(7), 1. https://aisel.aisnet.org/jais/vol5/iss7/1/

Sasseville, B. (2004). Integrating information and communication technology in the classroom. *Canadian Journal of Learning and Technology/La Revue Canadienne de l'apprentissage et de La Technologie*, *30*(2). https://www.learntechlib.org/p/43067/

Seale, J. (2009). Digital inclusion BETA: A research briefing. *The Teaching and Learning Research Programme (TLRP)*, 1–52.

Selwyn, N. (2006). Digital division or digital decision? A study of non-users and low-users of computers. *Poetics*, *34*(4), 273–292. https://doi.org/https://doi.org/10.1016/j.poetic.2006.05.003

Shabalina, N., & Bykov, A. (2021). Problem of forming a literate reader in the digital age based on the material of modern children's and youth prose. *Journal of Social Studies Education Research, 12*(3), 175-203. https://jsser.org/index.php/jsser/article/view/3356/518

Sudjana, N. (2012). *Pengawas dan kepengawasan*. Binamitra Publishing.

Suhardan, D. (2010). *Supervisi profesional layanan dalam meningkatkan mutu pembelajaran di era otonomi daerah*. Alfabeta.

Sullivan, S., & Glanz, J. (2005). *Supervision that improves teaching: Strategies and techniques*. Corwin Press.

Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning?*International Journal of Instruction*, *13*(3), 357–370. https://doi.org/https://doi.org/10.29333/iji.2020.13325a

Surjono, H. D. (2020). Kemampuan Literasi Digital bagi Guru SMA. *Workshop Literasi Digital Yang Diselenggarakan Oleh Direktorat SMA*. http://blog.uny.ac.id/hermansurjono/kemampuan-literasi-digital-bagi-guru-sma/

Tinio, V. L. (2003). *ICT in education* . e-ASEAN task force. https://e-learning.tsu.ge/pluginfile.php/183/mod_resource/content/0/ict_docs/ICT_in_education.pdf

Tsakeni, M. (2021). Transition to online learning by a teacher education program with limited 4IR affordances. *Research in Social Sciences and Technology*, *6*(2), 129-147. https://doi.org/10.46303/ressat.2021.15

Tshelane, M. (2022). Reimagining Responsible Research Innovations Regarding Professional Teaching Standards for Curriculum Practice. *Journal of Culture and Values in Education*, *5*(1), 92-105. https://doi.org/10.46303/jcve.2022.8

Ünal, A. (2010). Analysis of perception on supervisors in primary education. *Procedia - Social and Behavioral Sciences*, *2*(2), 5028–5033. https://doi.org/https://doi.org/10.1016/j.sbspro.2010.03.815

UNESCO. (2018). *A global framework of reference on digital literacy*. The United Nations Educational Scientific and Cultural Organization (UNESCO).

van Dijk, J. A. G. M. (2006). Digital divide research, achievements and shortcomings. *Poetics*, *34*(4), 221–235. https://doi.org/https://doi.org/10.1016/j.poetic.2006.05.004

Williams, T., McIntosh, R., & Russell, W. (2021). Equity in Distance Education During COVID-19. *Research in Social Sciences and Technology*, *6*(1), 1-24. https://doi.org/10.46303/ressat.2021.1