

Article

# Investigating the correlation digital literacy, instructional leadership, and intelligence on work performance

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Copyright © 2024 by author(s). Journal of Infrastructure, Policy and Development is published by EnPress Publisher, LLC. This work is licensed under the Creative Commons Attribution (CC BY) license. https://creativecommons.org/licenses/ by/4.0/ Abstract: This research aims to examine the role of learning leadership on teacher performance in elementary schools, analyze the influence of digital literacy on teacher performance, analyze the role of emotional intelligence on teacher performance and analyze the role of intellectual intelligence on teacher performance. In this digital era, digital literacy plays an important role in education. The application of digital literacy in education is still not optimal and there is no previous research that discusses the variables of instructional leadership, teacher performance, digital literacy, emotional intelligence and intellectual intelligence. The research method used is quantitative, the population of this research is all teachers who have used e-learning methods, and the analysis of this research uses structural equation modelling (SEM), the respondents for this research are 675 Indonesian teachers. The sampling method is simple random sampling. Research data was obtained from distributing online questionnaires designed using a 5-point Likert scale, namely scale 1 is strongly disagree, scale 2 is disagree, scale 3 is neutral, scale 4 is agree and scale 5 is strongly agree. Data processing uses SmartPLS 3.0 software tools. The SEM test stages in this research are the outer model test, namely convergent validity, discriminant validity and composite reliability, and then the inner model test, namely hypothesis testing. The results of the analysis using SEM are that the Instructional leadership variable has a positive and significant relationship to teacher performance, the Digital literacy variable has a positive and significant relationship to teacher performance, the Emotional intelligence variable has a positive and significant relationship to teacher performance and Intellectual intelligence has a positive and significant relationship to teacher performance. The novelty of this research is the discovery of a model of the relationship between instructional leadership variables, digital literacy variables, emotional intelligence variables, and intellectual intelligence variables on teacher performance which did not exist in previous research studies. This research has a novelty, namely a model analyzed using SEM-PLS in the digital era. The principal must be able to determine and set learning objectives in his school, in his implementation the principal always involves teachers in developing and implementing learning goals and objectives and the principal also refers to the curriculum set by the government in developing learning. The dimensions of instructional leadership are defining school goals, managing learning programs, and creating a positive learning climate. In other words, the principal has implemented Instructional Leadership with indicators of setting learning goals, indicators of being a resource for staff, indicators of creating a school culture and climate that is conducive to learning, indicators of communicating the school's vision and mission to staff, indicators of conditioning staff to achieve their goals.

**Keywords:** instructional leadership; teacher performance; digital literacy; emotional intelligence; intellectual intelligence; PLS-SEM; elementary school

### **1.Introduction**

The success of providing education will be seen from the institution's ability to optimize organizational performance, namely, the school organization carries out planning, implementation, supervision and evaluation of organizational activities, learning process activities, namely the availability of learning tools, appropriate methods and learning support infrastructure, human resource management, namely development and placement of human resources consisting of teaching staff and educational staff, and management of other administrative resources, namely the availability of administrative facilities, structuring school administration, learning administration and academic service administration (Achmadi et al., 2020). In the learning process, teachers have an important role in managing the learning activities that will be carried out. Thus, one of the determinants of the performance of educational institutions (schools) is the performance of their teaching staff, namely teachers. However, in the era of information technology, teachers are not the only source of information and knowledge. Various information and technology facilities make it easier for students to access the information they need. This condition causes the role of teachers to experience development. The teacher's role is to provide ethical and moral guidance in selecting the necessary information. Therefore, the role of the teacher develops to become a facilitator, motivator and dynamist for students. This shows that the information technology era cannot replace the role of teachers. However, the era of information technology is a challenge for teachers and schools to improve their performance and service quality by providing adequate infrastructure and facilities (Arifiati et al., 2020).

The teacher's performance shows that he is successful in completing the assignment. Teacher performance refers to the real behaviour and work achievements demonstrated to carry out the educational process in educational institutions or schools. This shows that high performance shows the professionalism of a teacher, while low performance shows that the teacher is unable to implement appropriate work behaviour (Syafnan, 2022). The organization's commitment to the educational model, which is considered important for providing high-quality education, is visible in the orientation and growth of the teaching profession. Therefore, the quality of education will be determined by the quality of teachers and their performance (Siswanto et al., 2024). Teacher performance is the way a teacher acts or reacts to get results from how he does a task. All actual actions taken as part of a teacher's responsibility and accountability are considered part of the teacher's performance. Competency specifications or criteria that every teacher must have can be used to observe and evaluate teacher performance (Kamarudin et al., 2024). The teacher's main duties are realized in teaching and learning activities in the form of performance (Desmaryani et al., 2024). Performance is the result achieved by a person, which refers to the measures or standards that apply in the field of work. A person who can achieve work results by standardized standards or criteria is said to have good performance, and if the opposite is true then he is said to have poor performance. Teacher performance is

not only demonstrated by work results but is also demonstrated through behaviour at work. The teacher's performance can be seen in the learning he manages from the learning outcomes achieved by his students (Jimenez and Galicia, 2023).

According to Neumerski (2012), the learning process can be carried out effectively and efficiently, teachers have an important task and role in helping their students achieve the expected goals. This can run optimally if teachers always try to improve their performance. In carrying out his role, the principal needs to have the ability to carry out his leadership duties well, which is manifested in the ability to prepare school programs, organize personnel, utilize educational infrastructure, and empower teaching and educational staff to support teachers to improve their performance. According to Purwanto et al. (2023), the progress and decline of a school depends on the extent to which the leadership can imagine advancing the school they lead. Likewise, in the context of elementary schools as organizations, the position of the principal is also very decisive in advancing the institution he leads.

According to Southworth, (2002), digital activities are experiencing a significant increase in prevalence and intensity, driven by the widespread adoption of online solutions by many individuals. For example, the number of new digital consumers engaging in e-commerce in Indonesia surges by 39% during 2023. As a result of prolonged school closures, educational efforts are also shifting to online platforms, especially in urban areas (Udayana et al., 2024). Nevertheless, a substantial increase in the usage internet throughout Indonesia is not always in line with increasing digital literacy. This not only includes proficiency in using technology, which includes skills related to operating devices, software and basic internet use but also includes digital literacy skills. These skills include the ability to understand, assess, and responsibly utilize information originating from digital sources. When changes occur in the dynamics of society, this will have an impact on the effectiveness of educators who are at the forefront in guiding, teaching and nurturing the nation's young generation. It should be noted that not everyone, including teachers, can easily accept change. According to Shafait et al. (2021) change often requires practice and, in certain cases, even personal counselling support. A teacher must have self-awareness-an intrinsic understanding of themselves, which includes recognition of their weaknesses and strengths. According to Shafait et al. (2021), another important thing is the ability to manage their emotions well. Poor emotional management by teachers can hurt the learning process. According to Hensellek (2022) many examples of negative incidents or biased reports in the media regarding interactions between teachers and students, upon further examination, can be attributed to educators struggling to manage their emotions appropriately. This is included in the realm of emotional intelligence. The second level of human intelligence is not an absolute thing so it can be improved through various ways such as.

### **2.Literature review**

### 2.1. Instructional leadership

According to Bach and Sulíková (2021), instructional leadership is leadership that focuses on student learning processes and outcomes through professional teacher empowerment. According to Aldhaheri (2017), instructional leadership, school

principals who apply this leadership style can improve the quality of learning for teachers and students in various ways such as by holding workshops, providing supervision, increasing study hours, and providing personal study guidance. According to Baroudi (2022) proposed support from stakeholders is also very important in improving the quality of learning. Several factors that support the implementation of learning leadership include the availability of facilities, good performance of teaching staff, and support from students' parents. However, ineffective management of learning facilities and facilities can be an inhibiting factor in its implementation. According to Vivian et al. (2010) strategy school principals who implement instructional leadership can carry out various efforts such as formulating the vision, mission and goals of the school with teachers, school committees and stakeholders to increase the effectiveness of learning, as well as Active involvement of all stakeholders is one of the keys to realizing the school's vision and mission. According to Marks and Printy (2003) explainschool principals also encourage teachers' creative efforts in learning and try to overcome obstacles such as lack of interaction between teachers and students, unfulfilled student character, counselling guidance that is not optimal, and extracurricular activities that are not yet optimal. According to Nagoya et al. (2021), efforts to develop teacher quality and transparent and objective evaluation are also needed to increase learning effectiveness. Dimensions or indicators of instructional leadership that can influence teacher teaching performance are developing the mission and goals of improving the school curriculum, developing professional learning communities, developing the work environment and promoting an academic learning climate.

### 2.2. Digital literacy

According to Nugroho et al. (2020) explaindigital literacy, teachers can be more effective in adapting learning to meet students' individual needs. They can use online learning platforms to provide different assignments according to the level of ability and interest of students. Digital literacy in the world of education and school helps increase a person's level of understanding in concluding the information they read. According to Cohen (2006), define digital literacy is an important element in improving and developing digital literacy, this element includes culture and this element requires an understanding of various digital uses. The second element is cognitive ability, which requires thinking power to have content. The third element is constructive, communicative, trusting, creative, critical, and others etc. Digital literacy is the knowledge and skills of a person or individual in utilizing and using digital media starting from the use of networks, communication facilities, and how to find evaluations. Digital literacy is a technical skill to access, understand, assemble and disseminate information in this millennial era where information has become a necessity in everyday life. According to Rahayu et al. (2022) proposed digital literacy can be summed up as the knowledge and practical abilities of teachers to use and utilize technology in processing, obtaining, evaluating information, producing and communicating information through existing technology and digital media. Digital literacy measured consists of 4 indicators, namely: 1) Aspects of ability to use digital

media; 2) Aspects of digital learning platform management; 3) Aspects of advanced digital media use; and 4) Ethical and security aspects in the use of digital media.

### 2.3. Emotional intelligence

According to Robinson (2010) define intelligence in understanding, feeling, recognizing, managing and leading, and self-motivation yourself and others are useful for optimizing energy, information, and relationships and influencing on achievement of desired and set goals. Emotional intelligence is the ability to recognize feelings, achieve and generate feelings to help the mind, understand feelings and their meaning, and control feelings effectively. According to Mayastinasari (2022) explain deep it helps emotional development and intellectual. Many people are intelligent, in the sense of being educated, but have lower emotional intelligence, and work under pressure as employees/subordinates of people whose IQ is higher. According to Suyudi et al. (2020), Emotional intelligence is a person's ability to use and understand emotions (both other people's emotions and one's own emotions) to improve physical and mental health. A person with good emotional intelligence can control emotions when angry and is sensitive to other people's feelings. According to Robinson (2010) argue employees must also have emotional intelligence. Emotional intelligence is a person's greater ability to motivate themselves, be resilient in the face of failure, control emotions, and regulate mental states. According to Fahmi et al. (2022), Emotional intelligence helps someone to be able to regulate their mental state and deal with work pressure. Every company wants its employees. Emotional intelligence indicators consist of five important components, namely: Recognizing one's emotions, managing emotions, motivating oneself, recognizing other people's emotions and building relationships. to be able to provide good performance, and have high self-motivation, empathy and initiative.

### 2.4. Intellectual intelligence

According to Elias et al. (2000) define intellectual intelligence can be measured with the following indicators: 1. Ability to solve problems, namely being able to show knowledge about the problems faced, making the right decisions, being able to solve problems optimally, and being able to show a clear mind. 2. Verbal intelligence, namely good vocabulary, reading with full understanding, being curious intellectual, and can show curiosity. 3. Practical intelligence, namely knowing situations and conditions, knowing how to achieve goals, being aware of the world around you, and showing interest in the outside world. According to Boyatzis et al. (2002), there are several assessment activities by teachers on student achievements and activities to develop the school curriculum, which includes planning, implementing, and evaluating, all the tools. According to Stiggins and Duke (2008) explain teachers who have a good average performance, obtain optimal quality or quality of learning and quality for students. According to Stiggins and Duke (2008), proposed teachers must have performance optimal and high quality so that they can make a positive and significant contribution to improving the quality of learning and increasing student learning achievement. Indicators of intellectual intelligence are figurative abilities,

verbal abilities and numerical abilities. Emotional Intelligence is a person's ability to self-awareness, self-control, empathy, motivation and social skills

### 2.5. Teacher performance

According to Schlaerth et al. (2013) explain teacher performance is related to the quality, quantity of output and reliability that teachers have in carrying out their duties. Teachers who have high performance can improve the quality of education. Teacher performance is one of the main factors that determines the success of the educational process in schools. According to Boyatzis et al. (2002) proposed there are several assessment activities by teachers on student achievements and activities to develop the school curriculum, which includes planning, implementing, and evaluating, all the tools. According to Schlaerth et al. (2013) teachers who have a good average performance, obtain optimal quality or quality of learning and quality for students. According to Dabke (2016), explain teachers must have performance optimal and high quality so that they can make a positive and significant contribution to improving the quality of learning and increasing student learning achievement. According to Schlaerth et al. (2013) and Boyatzis et al. (2002) argue teacher performance is the result of work that can be achieved by teachers in schools, by the authority and responsibilities given by the school. to achieve the vision, mission and goals of the school concerned legally, without violating the law by morals and ethics. Teacher performance indicators may include: observations of classroom interactions, student participation in discussions, student engagement behaviors, and work samples

#### 2.6. Hypothesis development

The relationship between instructional leadership and teacher performance

Several previous research According to Bach and Sulíková (2021) state show that Instructional Leadership has an important role in improving Teacher Performance. The results of other research According to Marks and Printy (2003), and Nagoya et al. (2021) explain show that instructional leadership has a positive and significant relationship with teacher performance. This is supported by research According to Baroudi (2022), and Vivian et al. (2010) argue instructional Leadership makes a positive contribution to improving teacher performance. Based on the results of previous research, the following hypothesis was formulated:

H1: Instructional leadership (IL) has a positive and significant relationship to teacher performance (TP).

### 2.7. The relationship between digital literacy and teacher performance

Several previous studies According to Nugroho et al. (2020) have shown that digital literacy makes an important contribution to improving teacher performance. The results of other research According to Rahayu et al. (2022) explainthat digital literacy has a positive and significant relationship to teacher performance. This is supported by research According to Cohen (2006) proposed digital literacy makes a significant positive contribution to improving teacher performance. Based on the results of previous research, the following hypothesis was formulated:

H2: Digital literacy (DL) has a positive and significant relationship to teacher performance (TP).

# **2.8.** The relationship between emotional intelligence and teacher performance

Previous research According to Robinson (2010) state shows that Emotional intelligence makes an important contribution to improving teacher performance. The results of other research According to Fahmi et al. (2022) explain show that Emotional intelligence has a positive and significant relationship to teacher performance. This is supported by research According to Mayastinasari (2022) argue emotional intelligence makes a significant positive contribution to improving teacher performance. Based on the results of previous research, the following hypothesis was formulated:

H3: Emotional intelligence (EI) has a positive and significant relationship to teacher performance (TP).

# **2.9.** The relationship between intellectual intelligence and teacher performance

Many previous studies According to Elias et al. (2000) define have concluded that Intellectual intelligence makes an important contribution to improving teacher performance. The results of other research According to Stiggins and Duke (2008) arguethat Intellectual intelligence has a positive and significant relationship to teacher performance. This is supported by research by Stiggins and Duke (2008) propose that Intellectual intelligence makes a significant positive contribution to improving teacher performance. Based on the results of previous research, the following hypothesis was formulated **Figure 1**:

H4: Intellectual intelligence has a positive and significant relationship to teacher performance.



Figure 1. Research model.

### 3. Method

The research method used is quantitative, the population of this research is all teachers who have used e-learning methods, the analysis of this research uses structural equation modelling (SEM), and the respondents for this research are 675 Indonesian teachers. The sampling method is simple random sampling. Research data was obtained from distributing online questionnaires which were designed using a 5-point Likert scale, namely scale 1 is strongly disagree, scale 2 is disagree, scale 3 is neutral, scale 4 is agree and scale 5 is strongly agree. Data processing uses SmartPLS 3.0 software tools. The SEM test stages in this research are the outer model test, namely convergent validity, discriminant validity and composite reliability, and then the inner model test, namely hypothesis testing.

The hypothesis of this research is

H1: Instructional leadership (IL) has a positive and significant relationship to teacher performance (TP).

H2: Digital literacy (DL) has a positive and significant relationship to teacher performance (TP).

H3: Emotional intelligence (EI)has a positive and significant relationship to teacher performance (TP).

H4: Intellectual intelligence has a positive and significant relationship to teacher performance.

### 4. Results and discussion

### 4.1. Outer model testing

Outer model testing is carried out to test the validity and reliability of the construct. To find out, it can be seen in convergent validity and discriminant validity. Convergent validity is used to determine the validity of each indicator against the latent variable. In the SmartPLS software, the results of the validity can be seen in the outer loading in **Table 1**.

Variable	Item	Loading	CR	AVE
Instructional leadership (IL)	IL1	0.713	0.843	0.732
	IL2	0.842		
	IL 3	0.819		
Digital literacy (DL)	DL1	0.887	0.817	0.714
	DL2	0.843		
	DL3	0.866		
Digital transformation (DT)	DT1	0.818	0.828	0.718
	DT2	0.881		
	DT3	0.873		
Emotional intelligence (EI)	EI1	0.826	0.808	0.717
	EI2	0.817		
	EI3	0.837		

Table 1. Convergent validity and composite reliability testing.

Variable	Item	Loading	CR	AVE
Teacher performance (TP)	TP1	0.839	0.834	0.754
	TP2	0.894		
	TP3	0.853		

Table 1. (Continued).

Some numbers or values indicate the indicator shows similarity to the construct variable. The value for the indicator is said to be valid if the indicator explains the construct variable with a value of >0.7. This value proves that each variable has met Composite Reliability and it can be concluded that all variables have a good level of reliability. This research analyzes the HTMT (Heterotrait-Monotrait) ratio with the Fornell-Larcker approach to test discriminant validity between constructs. The results show that the external model meets the conditions for discriminant validity with an HTMT value of no more than 0.90 can see in **Table 2**.

Table 2. Discriminant validity HTMT ratio.

	IL	DL	DT	EI	ТО
IL					
DL	0.814				
DT	0.732	0.801			
EI	0,734	0.782	0.817		
ТО	0.625	0.776	0.719	0.834	

### 4.2. Hypothesis testing

The hypothesis for the statistical value for alpha is 5% and the *t*-statistic value used is 1.96. So, the criteria for declaring a hypothesis accepted or rejected is if the *t*-statistic is >1.96. And *p*-Values have a value <0.05. The following are the results of hypothesis testing in this research as **Table 3**:

		1 1 5			
Hs	Path	β	<i>p</i> -value	<i>t</i> -value	supported
H1	$IL \rightarrow TP$	0.235	0.000	3.412	Yes
H2	$DL \rightarrow TP$	0.230	0.000	4.321	Yes
H3	$EI \rightarrow TP$	0.234	0.000	5.678	Yes
H4	$II \rightarrow TP$	0.521	0.000	6.716	Yes

Table 3. Outputs of path analysis.

Hypothesis testing is carried out by looking at the path coefficient output from the bootstrap resampling results in **Figure 2**:



Figure 2. Hypothesis testing.

#### 4.3. The influence of instructional leadership on teacher performance

Based on the results of the PLS-SEM analysis, the *p*-value of 0.000 was smaller than 0.050, so it was concluded that there was a significant relationship. The principal as a learning leader in improving learning in his school will devote most of his time to teacher development, and if a teacher has received more attention in the learning activities he carries out, then this will improve teacher performance. According to Prayuda (2024) state Learning leadership or instructional leadership is an effort to lead teachers to teach better, which in turn can improve student learning achievement. Instructional leadership is the most important leadership because it changes the role of the principal by shifting from administrative implementation to instructional leadership.

According to Praditya (2024) argue everything that a school principal who has an instructional leadership style does is: First, develop a more operational concept of learning leadership with seven steps of learning leadership complete with indicators. First, learning leadership must be able to set clear learning goals. Second, learning leadership must be able to be a resource for its staff. Third, learning leadership must be able to create a school culture and climate that is conducive to learning. Fourth, learning leadership must be able to communicate the school's vision and mission to staff. Fifth, learning leadership must be able to condition staff to achieve high professional aspirations. Sixth, learning leadership must be able to develop teachers' professional abilities. Seventh, learning leaders must be able to have a positive attitude towards students, staff and parents.

According to Salami (2010) explain Instructional leadership influences student learning more than transformational leadership. Instructional leadership is an important predictor of teacher collective efficacy and is central to the success of an effective leader. School principals should be able to pay attention to the needs and feelings of staff so that they can improve teachers' teaching performance on an ongoing basis. Instructional leadership is a leadership characteristic that focuses on teaching and learning, as well as teacher behaviour in working with students. The influence of instructional leadership is aimed at student learning through teachers. According to Zeike et al. (2019), the instructional leadership model influences self-

efficacy in teaching, improves learning in the classroom through teachers, and has a positive influence on knowledge, teaching implementation, competence, and teacher efficacy individually and collectively. Effective instructional leadership can be defined as the meaning of a living school vision, involving stakeholders in educational management, providing support for learning, monitoring the teaching and learning process, and being a facilitator who helps teachers overcome learning difficulties. Instructional leadership can have a positive impact on subordinate performance and is an important factor in determining school effectiveness. According to Yokuş (2022) propose the concept of instructional leadership is very complex and has multiple interpretations in terms of the actions that must be taken by the school principal. According to the research results of Hallinger (2005) explain there is a significant relationship between teacher teaching performance the principal's instructional leadership variables and teacher self-efficacy. Therefore, organizations need to pay attention to these two variables to improve the performance of all stakeholders in the organization. Multiple correlation analysis shows that the principal's instructional leadership and teacher self-efficacy together are significantly related to teacher teaching performance. According to Zeike et al. (2019) to improve teachers' teaching performance, it is recommended to implement good instructional leadership strategies that can strengthen subordinates' self-efficacy, so that teachers can carry out their main tasks better.

### 4.4. The influence of digital literacy on teacher performance

Based on the results of the PLS-SEM analysis, the *p*-value of 0.000 is smaller than 0.050, so it is concluded that there is a significant relationship. Teachers, as an important factor in education and have a position as professionals, must be able to always improve the professionalism of their performance to be able to face existing problems. This must of course be accompanied by digital literacy skills because teachers must be able to keep up with or even exceed developments in science and technology. According to Robinson (2010) state educators try to improve the planning and implementation of learning to produce better quality technology and information communication-based learning. With current developments, the role of teachers in advancing education is greatly helped by digital technology, and the availability of internet access which makes information sources easier and closer, so that access to information and the implementation of learning are greatly helped. This convenience is an opportunity and a challenge for teachers. Teachers as the spearhead are required to be able to organize a quality learning process. According to Suyudi et al. (2020) opportunities to advance education, improve the quality of learning and challenges for teachers to continue to actualize themselves to master technology and increase competence.

According to Mayastinasari (2022) explain digital-based learning implemented by teachers is related to teacher performance and integrating digital devices in carrying out a teacher's duties will make it easier for teachers to carry out planning and implementation tasks. teaching and other research. According to Neumerski (2012) argue good digital technology skills possessed by a teacher will be able to design teaching and learning activities that are more meaningful, productive and creative. Not

only that, teachers as a component are directly involved in translating educational policies, if teachers integrate information technology which is characterized by having digital literacy skills in carrying out their professional duties when carrying out teaching and learning activities, it will increase students' interest in learning. According to Aldhaheri (2017) define teachers who have technological skills will have a positive influence towards their performance, where this can be demonstrated through the performance and work achievements carried out by the teachers where the teachers integrate various technological and digital devices to support their performance. Teacher performance It will be more effective in the teaching and learning process if a teacher has digital technology skills, meaning that the better the technology skills a teacher has, the more a teacher's performance will improve, and technological competence influences teacher performance. According to Aldhaheri (2017) explain every teacher needs to understand that digital literacy skills are important and needed in the learning process in today's modern world and being proficient in digital literacy will create teachers with a critical, creative and innovative mindset. Success in developing digital literacy skills is an indicator of achievement in the fields of education and culture.

### 4.5. The influence of emotional intelligence (EQ) on teacher performance in elementary schools

Based on the results of the PLS-SEM analysis, the *p*-value of 0.000 is smaller than 0.050, so it is concluded that there is a significant relationship. They have the competence to educate students Therefore, teachers must have self-efficacy, emotional intelligence, and motivation in their performance. According to Rahayu et al. (2022) explain high teacher effectiveness in helping students, increase their empathy. Therefore, by gaining more experience, a greater feeling of self-efficacy in helping others can be achieved. Emotional intelligence is a set of non-cognitive abilities that enhance a person's ability to cope with environmental demands and the resulting stress, emotions are the urge to act and instant plans to overcome a problem (Asbari et al., 2020). The results of this research strengthen the theory that emotional intelligence (self-awareness, self-management, motivation, understanding, and social skills) significantly influences work efficiency and operational success. Nagoya et al. (2021) further explain that increasing the performance of mathematics teachers is positively influenced by increasing emotional intelligence. Thus, emotional intelligence to become a high teacher will lead to the realization of high teacher performance. Emotional intelligence significantly influences job satisfaction and performance.

According to Rahayu et al. (2022) proposed teachers have a role as models of good behaviour for students. Emotional intelligence helps teachers manage their own emotions well so that they can show the right way to deal with various challenging situations. One thing that is very necessary for someone to improve the quality of their work is emotional intelligence because the symptoms of feelings greatly influence the fluctuations in thinking. Even if someone has high intellectual intelligence, but it is not accompanied by emotional intelligence, that person tends not to be successful in their work, because they experience obstacles in social interaction. To get the best teacher performance is not only seen from intellectual ability but also seen from the

teacher's ability to control emotions in carrying out responsibilities in the organization. According to Cohen (2006) argues teacher who has high emotional intelligence is a teacher who can show empathy both towards fellow teachers and other students, has self-awareness, has a good self-regulation process, has high motivation, has skills in socializing with the surrounding environment, can control stress, can being independent and showing self-actualization and having a good level of flexibility in solving problems is thought to show maximum performance. An empathetic attitude towards other teachers and students, as well as good socialization skills, will make the teacher able to adapt to the work environment quickly. According to Vivian et al. (2010) state good self-regulation process, high motivation, and a good level of stress control will make the teacher show optimal quality and accuracy of work. Apart from that, the ability to be independent and self-actualize as well as a good level of flexibility in problem-solving is very important.

### 4.6. The influence of intellectual intelligence (IQ) on teacher performance in elementary schools

Based on the results of the PLS-SEM analysis, the *p*-value of 0.000 is smaller than 0.050, so it is concluded that there is a significant relationship. Improving the quality of superior human resources can be done through the world of education. According to Boyatzis et al. (2002) state Schools are formal educational institutions established based on law. Schools are places for human resource development. The performance of a person or individual is determined by the intelligence factor they possess. There are several intelligences in humans, including intellectual intelligence, emotional intelligence, creative intelligence, and spiritual intelligence. According to Schlaerth et al. (2013) explain performance can be influenced by factors such as intellectual intelligence, emotional intelligence can be internal or external. From internal factors, especially from psychology and behaviour, including intellectual intelligence and emotional intelligence.

According to Schlaerth et al. (2013) argue several elementary school teachers have a phenomenon regarding intellectual intelligence, namely seen from the indicators of numerical intelligence, it can be seen that some teachers still use calculators when calculating and some teachers can calculate quickly and accurately, especially mathematics teachers. From the indicators of verbal intelligence, teachers can easily understand the material they read or hear and then convey it to their students. From the indicator of speed of perception, where the teacher can provide a view of an object seen from several aspects which can then be understood. From the indicators of inductive reasoning, in the classroom, many students feel bored during learning because there are still teachers who use monotonous learning methods, so students feel bored. According to Schlaerth et al. (2013) define teachers should develop or find learning ideas so that no more students get bored during teaching and learning activities. From the indicators of deductive reasoning, where the teacher can assess a consequence that arises or occurs because of something and can provide conclusions from something of a general nature. From the spatial visualization indicators, teachers can imagine, understand, remember and think in visual form, such as being able to

translate various visual media such as paintings, diagrams, maps and many others. From memory indicators, some teachers still have difficulty remembering lesson material that has previously been taught, thus prolonging the learning process because teachers have to open their books first to find out the latest material that has been taught. This is supported by research showing that there is a positive and significant effect between intellectual intelligence and a person's learning outcomes. Likewise, research shows that the higher a person's intellectual intelligence, the better his performance will be, he will more easily absorb the knowledge provided so that his ability to complete work will be easier too. Based on the results of data analysis, the path coefficient value for Instructional Leadership and teacher performance is 0.230, the path coefficient value for Emotional Intelligence and teacher performance is 0.234 and the path coefficient value for Intellectual Intelligence and teacher performance is 0.521. A greater impact on teachers' performance is intellectual intelligence.

### 4.7. Theoretical practical and managerial implications

The principal must be able to determine and set learning objectives in his school, in his implementation the principal always involves teachers in developing and implementing learning goals and objectives and the principal also refers to the curriculum set by the government in developing learning. The dimensions of instructional leadership are defining school goals, managing learning programs, and creating a positive learning climate. In other words, the principal has implemented Instructional Leadership with indicators of setting learning goals, indicators of being a resource for staff, indicators of creating a school culture and climate that is conducive to learning, indicators of communicating the school's vision and mission to staff, indicators of conditioning staff to achieve their goals. High professionalism is an indicator of developing teachers' professional abilities, as well as indicators of being positive towards students, staff and parents. The role of teachers in advancing education is greatly helped by digital technology, and the availability of internet access which makes information sources easier and closer, so that access to information and the implementation of learning are greatly helped. This convenience is an opportunity and a challenge for teachers. Teachers as the spearhead are required to be able to organize a quality learning process. Opportunities to advance education, improve the quality of learning and challenges for teachers to continue to actualize themselves to master technology and increase competence. The principal's instructional leadership is the process of providing influence aimed at improving the quality of learning and teacher behaviour to increase understanding and optimally use their competencies to be more productive and innovative in improving their performance in teaching. Apart from that, there are also ways so that instructional leadership can be carried out effectively, namely interpreting and implementing the school's vision and mission, involving various stakeholders in managing education, delegating tasks and controlling the learning process, the principal as a facilitator who seeks to serve the entire school community, establishing effective communication. The results of research conducted by previous researchers stated that instructional leadership influences student learning more than transformational leadership. There is a

significant relationship between teacher teaching performance and the principal's instructional leadership variables and teacher self-efficacy and can have a positive impact on school progress.

### 5. Conclusion

The results of the analysis using SEM are that the Instructional leadership variable has a positive and significant relationship to teacher performance, the Digital literacy variable has a positive and significant relationship to teacher performance, the Emotional intelligence variable has a positive and significant relationship to teacher performance and Intellectual intelligence has a positive and significant relationship to teacher performance. The principal as a learning leader in improving learning in his school will devote most of his time to teacher development, and if a teacher has received more attention in the learning activities he carries out, then this will improve teacher performance. With current developments, the role of teachers in advancing education is greatly helped by digital technology, and the availability of internet access which makes information sources easier and closer, so that access to information and the implementation of learning are greatly helped. Several elementary school teachers have a phenomenon regarding intellectual intelligence, namely seen from the indicators of numerical intelligence, it can be seen that some teachers still use calculators when calculating and some teachers can calculate quickly and accurately. Teachers who have a high level of emotional intelligence generally also have optimal performance. Teachers who have a level of intelligence low emotional levels, generally also have suboptimal performance. The novelty of this research is the discovery of a model of the relationship between instructional leadership variables, digital literacy variables, emotional intelligence variables, and intellectual intelligence variables on teacher performance which did not exist in previous research studies. This research has a novelty, namely a model analyzed using SEM-PLS in the digital era.

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### References

- Achmadi, H., Antonio, F., Pramono, R., et al. (2020). Identification of the positive and negative emotions that appeared among high school students when selecting a university at Jakarta and surrounding area. Systematic Reviews in Pharmacy, 11(9), 759-766.
- Aldhaheri, A. (2017). Cultural intelligence and leadership style in the education sector. International Journal of Educational Management, 31(6), 718–735. https://doi.org/10.1108/ijem-05-2016-0093
- Alowais, M., Rudd, G., Besa, V., et al. (2023). Digital literacy in undergraduate pharmacy education: a scoping review. Journal of the American Medical Informatics Association, 31(3), 732–745. https://doi.org/10.1093/jamia/ocad223

- Arifiati, N., Nurkhayati, E., Nurdiawati, E., et al. (2020). University Students Online Learning System During Covid-19 Pandemic: Advantages, Constraints and Solutions. Systematic Reviews in Pharmacy, 11(7).
- Asbari, M., Wijayanti, L., Hyun, C. C., et al. (2020). The role of knowledge transfer and organizational learning to build innovation capability: Evidence from Indonesian automotive industry. International Journal of Control and Automation, 13(1), 319-333.
- Bach, C., & Sulíková, R. (2021). Leadership in the Context of a NewWorld: Digital Leadership and Industry 4.0. Managing Global Transitions, 19(3), 209–226. https://doi.org/10.26493/1854-6935.19.209-226
- Baroudi, S. (2022). Leading in times of crisis: evidence of digital transformational leadership among Arab female educational leaders. International Journal of Leadership in Education, 1–22. https://doi.org/10.1080/13603124.2022.2108506
- Boyatzis, R. E., Stubbs, E. C., & Taylor, S. N. (2002). Learning Cognitive and Emotional Intelligence Competencies Through Graduate Management Education. Academy of Management Learning & Education, 1(2), 150–162. https://doi.org/10.5465/amle.2002.8509345
- Brown, F. W., Bryant, S. E., & Reilly, M. D. (2006). Does emotional intelligence as measured by the EQI influence transformational leadership and/or desirable outcomes? Leadership & Organization Development Journal, 27(5), 330–351. https://doi.org/10.1108/01437730610677954
- Cohen, J. (2006). Social, Emotional, Ethical, and Academic Education: Creating a Climate for Learning, Participation in Democracy, and Well-Being. Harvard Educational Review, 76(2), 201–237. https://doi.org/10.17763/haer.76.2.j44854x1524644vn
- Dabke, D. (2016). Impact of Leader's Emotional Intelligence and Transformational Behavior on Perceived Leadership Effectiveness: A Multiple Source View. Business Perspectives and Research, 4(1), 27–40. https://doi.org/10.1177/2278533715605433
- Dašić, D., Ilievska Kostadinović, M., Vlajković, M., et al. (2024). Digital Literacy in the Service of Science and Scientific Knowledge. International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE), 12(1), 219–227. https://doi.org/10.23947/2334-8496-2024-12-1-219-227
- Desmaryani, S., Kusrini, N., Lestari, W., et al. (2024). Investigating the role of brand image and halal labels on purchase decisions: An empirical study of rice processing firms. Uncertain Supply Chain Management, 12(1), 481-488.
- Elias, M. J., Bruene-Butler, L., Blum, L., & Schuyler, T. (2000). Voices from the field: Identifying and overcoming roadblocks to carrying out programs in social and emotional learning/emotional intelligence. Journal of educational and psychological consultation, 11(2), 253-272. https://doi.org/10.1207/S1532768XJEPC1102\_06
- Fahmi, K., Sihotang, M., Hadinegoro, R. H., et al. (2022). Health Care SMEs Products Marketing Strategy: How the Role of Digital Marketing Technology through Social Media? UJoST- Universal Journal of Science and Technology, 1(1), 16-22. https://doi.org/10.11111/ujost.v1i1.55
- Hallinger, P. (2005). Instructional Leadership and the School Principal: A Passing Fancy that Refuses to Fade Away. Leadership and Policy in Schools, 4(3), 221–239. https://doi.org/10.1080/15700760500244793
- Hensellek, S. (2022). Digital Leadership. Journal of Media Management and Entrepreneurship, 2(1), 1–15. https://doi.org/10.4018/jmme.2020010104
- Jimenez, R. G., & Galicia, L. S. (2023). Instructional Leadership Skills, Emotional Competencies, and Teachers' Work Performance in Selected Public Junior High Schools. Technium Education and Humanities, 5, 45–68. https://doi.org/10.47577/teh.v5i.8950
- Kamaruddin, E., Salman, I., Annahidl, N., et al. (2024). Investigating the role of digital transformation and digital innovation on school performance. International Journal of Data and Network Science, 8(3), 1557-1566.
- Marks, H. M., & Printy, S. M. (2003). Principal Leadership and School Performance: An Integration of Transformational and Instructional Leadership. Educational Administration Quarterly, 39(3), 370–397. https://doi.org/10.1177/0013161x03253412
- Mayastinasari, V. (2022). The Role of Work Ethics, Work Motivation, Job Satisfaction and Compensation on Police Performance in the Digital Era. UJoST- Universal Journal of Science and Technology, 2(1), 294-307. https://doi.org/10.11111/ujost.v2i1.109
- Nagoya, R., Bernarto, I., Antonio, F., et al. (2021). Exploring intention to enroll university using an extended stimulus-organismresponse model. Academy of Strategic Management Journal, 20, 1-12.
- Ne'matovna, R. Z. (2024). Problems of emotional intelligence stability in the formation of individual values. Academia Repository, 5(3), 218-220.

- Neumerski, C. M. (2012). Rethinking Instructional Leadership, a Review. Educational Administration Quarterly, 49(2), 310–347. https://doi.org/10.1177/0013161x12456700
- Nugroho, B. S., Widdah, M. E., Hakim, L., et al. (2020). Effect of Organizational Citizenship Behavior, Work Satisfaction and Organizational Commitment toward Indonesian School Performance. Systematic Reviews in Pharmacy, 11(9).
- Nurdiani, T. W., Aulia, M. R., Putra, G. W., & Kusnadi, I. H. (2024). Analysis of Digital Literacy Sources to Identify The Relationship Between Population Income, Socio-Economic and Subjective Well-Being. Jurnal Sistim Informasi Dan Teknologi, 42–47. https://doi.org/10.60083/jsisfotek.v6i2.350
- Olaleye, B. R., & Lekunze, J. N. (2023). Emotional Intelligence and Psychological Resilience on Workplace Bullying and Employee Performance: A Moderated-Mediation Perspective. Journal of Law and Sustainable Development, 11(12), e2159. https://doi.org/10.55908/sdgs.v11i12.2159
- Praditya, R. A. (2024a). Investigation of the Role of Digital Marketing, Competitive Advantage and Digital Business Strategy on Financial Performance. UJoST-Universal Journal of Science and Technology, 3(2), 19-24.
- Praditya, R. A. (2024b). Linking the Role of Promotion of Access to Digital Facilities, Social Media and Digital Literacy on Marketing Performance. UJoST-Universal Journal of Science and Technology, 3(2), 25-31.
- Praditya, R. A. (2024c). The Role of service quality, product quality, location and product innovation on consumer purchasing decisions and word of mouth. Journal of Industrial Engineering & Management Research, 5(2), 20-24. https://doi.org/10.7777/jiemar.v5i2.517
- Praditya, R. A., & Purwanto, A. (2024). Linking The Influence of Dynamic Capabilities and Innovation Capabilities on Competitive Advantage: PLS-SEM Analysis. PROFESOR: Professional Education Studies and Operations Research, 1(02), 6-10.
- Prayuda, R. Z. (2024d). The Role of Price Perceptions, Product Quality, and Brand Image on Purchasing Decisions. Journal of Industrial Engineering & Management Research, 5(2), 15-20. https://doi.org/10.7777/jiemar.v5i2.516
- Purwanto, A., Purba, J. T., Bernarto, I., et al. (2023). Investigating the role digital transformation and human resource management on the performance of the universitie. International Journal of Data and Network Science, 7(4), 2013–2028. https://doi.org/10.5267/j.ijdns.2023.6.011
- Rahayu, S., Usman, H., & Wibawa, S. (2022). Principals Instructional Leadership and Culture-Based Instructional Program under Organization Change. RES MILITARIS, 12(4), 1458-1467.
- Robinson, V. M. J. (2010). From Instructional Leadership to Leadership Capabilities: Empirical Findings and Methodological Challenges. Leadership and Policy in Schools, 9(1), 1–26. https://doi.org/10.1080/15700760903026748
- Saikia, M., George, L. S., Unnikrishnan, B., et al. (2023). Thirty years of emotional intelligence: A scoping review of emotional intelligence training programme among nurses. International Journal of Mental Health Nursing, 33(1), 37–51. https://doi.org/10.1111/inm.13235
- Salami, S. O. (2010). Emotional intelligence, self-efficacy, psychological well-being and students attitudes: Implications for quality education. European Journal of Educational Studies, 2(3), 247-257.
- Sartika, N. S., Subroto, D. E., Mauladaniyati, R., et al. (2020). Effect of Pedagogic, Professional Competency, and Work Motivation Toward Indonesian Primary School Teachers Performance. Systematic Reviews in Pharmacy, 11(9).
- Siswanto, E., Samsudi, E. S., & Sutopo, Y. (2024). The role of psychological security climate, leadership, and self-efficacy on teachers capability through knowledge management. Int J Eval & Res Educ ISSN, 2252(8822), 8822.
- Schlaerth, A., Ensari, N., & Christian, J. (2013). A meta-analytical review of the relationship between emotional intelligence and leaders' constructive conflict management. Group Processes & Intergroup Relations, 16(1), 126–136. https://doi.org/10.1177/1368430212439907
- Shafait, Z., Khan, M. A., Bilan, Y., et al. (2021). Modeling the mediating roles of self-directed learning and knowledge management processes between emotional intelligence and learning outcomes in higher education. PLOS ONE, 16(7), e0255177. https://doi.org/10.1371/journal.pone.0255177
- Sharma, R. K., & Sharma, K. K. (2022). The Role of Leadership Style towards Digital Transformation of Educational Institutes in Era of Industrial Revolution 4.0. Indian Economy, 57.
- Southworth, G. (2002). Instructional Leadership in Schools: Reflections and empirical evidence. School Leadership & Management, 22(1), 73–91. https://doi.org/10.1080/13632430220143042

- Soyoof, A., Reynolds, B. L., Neumann, M., et al. (2023). The impact of parent mediation on young children's home digital literacy practices and learning: A narrative review. Journal of Computer Assisted Learning, 40(1), 65–88. https://doi.org/10.1111/jcal.12866
- Stiggins, R., & Duke, D. (2008). Effective Instructional Leadership Requires Assessment Leadership. Phi Delta Kappan, 90(4), 285–291. https://doi.org/10.1177/003172170809000410
- Suyudi, S., Nugroho, B. S., El Widdah, M., et al. (2020). Effect of leadership style toward Indonesian education performance in education 4.0 era: a schematic literature review. Systematic Reviews in Pharmacy, 11(10).
- Syafnan, S. (2022). Digital literacy and emotional intelligence to Ibtidaiyah Madrasah students' learning results. Chinese Journal of Geotechnical Engineering, 44(8), 32-39.
- Udayana, A. A. G. B., Fatmawaty, A. S., Makbul, Y., et al. (2023). Investigating the role of e-commerce application and digital marketing implementation on the financial and sustainability performance: An empirical study on Indonesian SMEs. International Journal of Data and Network Science, 8(24), 167-178.
- Vivian Tang, H., Yin, M., & Nelson, D. B. (2010). The relationship between emotional intelligence and leadership practices. Journal of Managerial Psychology, 25(8), 899–926. https://doi.org/10.1108/02683941011089143
- Yokuş, G. (2022). Developing a guiding model of educational leadership in higher education during the COVID-19 pandemic: A grounded theory study. Participatory Educational Research, 9(1), 362–387. https://doi.org/10.17275/per.22.20.9.1
- Zeike, S., Bradbury, K., Lindert, L., et al. (2019). Digital Leadership Skills and Associations with Psychological Well-Being. International Journal of Environmental Research and Public Health, 16(14), 2628. https://doi.org/10.3390/ijerph16142628