



# Acceleration Of Principals' Skills In E-Learning Leadership In The Digital Age

Mustiningsih, Djum Djum Noor Benty, Hasan Argadinata

Universitas Negeri Malang, Malang, Indonesia

mustiningsih.fip@um.ac.id

**Abstract.** The use of digital technology today is not only as a complement, but has become a top priority in efforts to provide services to the community, especially students. As managers, principals have a responsibility to provide access to digital technology and provide an understanding of how important its use in the learning process is for teachers and staff. This community service activity aims to improve the principal's skills in leadership and the use of e-learning in the digital era for elementary schools in Binangun District, Blitar Regency. The training approach is used in the implementation of this community service activity. The results of the evaluation of these activities showed that in both aspects, namely leadership and the use of e-learning in the digital era, participants achieved an average score of 92.00, which was in the very good category. In addition, there are significant differences in skills and use of e-learning by participants before and after attending the training program that has been implemented. The success of this training program also shows that investing in the skills development and knowledge of principals in a digital context is the right step. This not only improves the quality of education, but also prepares students to face an increasingly digital and globalized world. As an ongoing effort, it is important to continue to support principals and school staff in keeping abreast of digital technology developments and ensure that the use of e-learning remains effective and relevant in the learning process. Thus, Binangun District Elementary School will continue to be an educational institution that is ready to face future challenges in the digital era.

**Keywords:** leadership, principals, e-learnig, digital age.

## Introduction

The existence of digital technology is a hope for the progress of the educational process, considering the positive impact that can be obtained [1]. In addition to providing benefits, digital technology also inspires teachers to be more creative and innovative in designing learning in the digital era.

In the midst of this increasingly digital era, school principals are faced with demands to develop their leadership skills, especially in creating interesting learning experiences in the digital era. As a learning leader, the role of the principal is very important in

supporting teachers in managing the learning process in schools. The principal's learning leadership is transactional, emphasizing meeting the needs of teachers and learners [2]. This means that headteachers are obliged to create a positive climate in schools so that teachers and staff can continue to use technology in learning, adapt to change [3], and continue to improve their competencies [4, 5]. Learning success is not only measured by the results and performance of school members, but also by the principal's leadership factors. E-learning-based leadership is essential to drive technology-based innovation and digital transformation in the learning process [6].

In the context of e-learning-based leadership in the digital era, there are several characteristics that must be possessed by school principals, namely (1) characteristics of digital business, (2) good social attitudes, and (3) an inclusive general mindset [9]. This is because the headmaster must be a good example for teachers and staff in the use of technology to improve teaching and learning in schools [7].

As previously described, coaching related to e-learning leadership skills in the digital era is very important, especially in facing the transition period of the Covid-19 pandemic. Global challenges that demand graduates who are proficient in the field of digitalization and competent in the world of work are an obligation that must be carried out by every school in the Binangun District, Blitar Regency. Therefore, fostering e-learning leadership skills in the digital age is a special concern for school principals, who play a major role in determining the success of learning in schools to produce quality graduates. Therefore, this service activity is aimed at the principal of the elementary school in Binangun District, Blitar Regency [8].

This service activity has the main objective to provide concrete support to school principals in facing the dynamics presented by the development of digital technology in the world of education. In this regard, there are several specific objectives to be achieved: First, is to increase the principal's understanding of the importance of digital technology in the educational context and how to integrate it effectively into the learning environment in the school. This aims to ensure that school principals understand the added value of digital technology in improving the learning process. The second is to help school principals develop the leadership skills needed to facilitate the use of digital technology by teachers and school staff in learning. School principals must be able to be agents of change who motivate and guide the team of educators in adopting digital technology. Third, is to encourage principals to create a conducive environment in schools, where digital technology can be used productively by all school members. This means creating a culture that supports innovation and collaboration in technology-based learning. Fourth, it is to provide principals with the tools and resources they need to measure the impact of digital technology use on student learning outcomes and teaching effectiveness. This will help them make informed decisions to continuously improve learning. Fifth, is to help principals identify the latest trends and innovations in e-learning and educational technology. With this knowledge, they can continue to develop the school as a relevant and useful learning center, in accordance with the times [9, 10].

Through this activity, it is hoped that school principals will become more effective leaders in steering their schools towards an increasingly digital future. This will not only improve the quality of education provided to learners, but also prepare them for

success in an increasingly connected and technology-driven world. School principals play a central role in creating quality and relevant learning environments in the digital age, and this is the main focus of this service activity.

## Method

Community service activities were carried out at Ngem-bul 04 Elementary School, located in Binangun District, Blitar Regency, on September 10, 2022. In this program, a training approach is used with the aim of improving the leadership quality of school principals in the digital era in Elementary Schools in Binangun District, Blitar Regency. This activity consists of three stages, namely preparation, training, and evaluation. The evaluation was conducted to measure the success of participants in understanding the concept of principals' skills in e-learning leadership in the digital era. This evaluation uses pre-test and post-test sheets, and applies descriptive analysis techniques and Paired Sample T-Test tests [11].

This evaluation aims to measure the extent to which the principal's understanding and skills increase in the context of e-learning leadership in the digital era after attending training. Pre-test and post-test results will be analyzed descriptively to assess changes that occur in participants before and after training. In addition, the Paired Sample T-Test will be used to measure the level of significance of the difference between pre-test and post-test values. This will provide a clearer picture of the effectiveness of training programs in improving the understanding and skills of school principals in the context of e-learning leadership in the digital era. Thus, this community service activity has a strong scientific approach in designing, implementing, and evaluating training programs to improve the competence of school principals in facing the challenges of the digital era in Elementary Schools in Binangun District, Blitar Regency.

## Results and Discussion

This community service program uses a training approach. Improving the skills of school principals in e-learning leadership in the digital era in Public Elementary Schools in Binangun District, Blitar Regency, is carried out in at least three stages. The first stage is preparation, so that community service activities are obtained maximum results, as for several activities carried out in the preparation stage, including coordinating with school supervisors, coordinating the Binangun District, Blitar Regency regarding the preparation of guidelines and training agendas, technical implementation of activities, and preparation of training materials. This preparatory stage involves the participation of the school supervisor of the Binangun District area coordinator of Blitar District as a partner in this community service activity, and involves the community service team assisted by two alumni and one student from the Department of Education Administration FIP UM.



**Fig. 1.** Presentation of material and provision of self-training

The next stage after preparation is the training stage which is carried out directly at SDN Ngembul 04, Binangun District, Blitar Regency. The training activity was held on Saturday, September 10, 2022, which was attended by 26 school principals, from 11 State Elementary Schools in Binangun District, Blitar Regency. The resource persons in this activity consisted of lecturers from the Department of Education Administration, Faculty of Education, State University of Malang (UM), assisted by two alumni and one student from the Department of Education Administration FIP UM. The presentation of material by the resource persons related to the principal's skills in e-learning leadership in the digital era as an opening activity, then continued with a pre-test filling session and digital learning application practices at the end with a question and answer session and post-test filling.



**Fig. 2.** Post-test filling process Trainees

After the training stage is completed, the last stage is evaluation. Evaluation is carried out based on the results of the training process that has been carried out. The evaluation of the results aims to determine the success rate of participants in school principal skills training activities in e-learning leadership in the digital era, from the evaluation will also be known the differences experienced by participants before and after participating in community service activities. The results of the analysis of the success of improving the principal's skills in e-learning leadership in the digital era as a whole are shown in Table 1.

**Table 1.** Frequency and Mean Distribution of Pre-Test and Post Test Values of Principals in E-Learning Leadership in the Digital Age

Score	Interval		Category	Frequency	Mean	Description	
Pre-Test	0	-	25	Poor	0	53,04	Good
	26	-	50	Less Good	8		
	51	-	75	Good	18		
	76	-	100	Very Good	0		
Post-Test	0	-	25	Poor	0	92,00	Very Good
	26	-	50	Less Good	0		
	51	-	75	Good	0		
	76	-	100	Very Good	26		
N : 26							

Based on the results of the analysis, there was an increase in the skills of e-learning leadership principals in the digital era in Binangun District, Blitar Regency. Based on Table 1, participants consisted of 26 principals of public elementary schools. The average pre-test score was 53.04 in the good category, while there was a significant increase in the post-test of 92.00 in the very good category.

After the skill improvement shown in Table 1 was found, the normality test was then carried out using the Kolmogorov Smirnov test, which can be seen in Table 2.

**Table 2.** Pre-Test and Post Test Data Normality Test Principals in E-Learning Leadership in the Digital Age

One-Sample Kolmogorov-Smirnov Test			
		PRE KS KEP ELEAR	POST KS KEP ELEAR
N		26	26
Normal Parameters <sup>a,b</sup>	Mean	53,0385	92,0000
Most Extreme Differences	Std. Deviation	5,02379	6,44981
	Absolute	0,234	0,215
	Positive	0,234	0,169
	Negative	-0,189	-0,215
		0,234	0,215
Test Statistic		.006	.015
Asymp. Sig. (2-tailed)			

Next, a difference test was carried out using the Paired sample T-test with the help of SPSS 24.0 to get different test results before and after training. In Table 3, it is known that the sign value is 0.00 ( $<0.05$ ), this shows that there is a significant difference

in the skills of school principals in leading e-learning in the digital era located in Binangun sub-district, Blitar Regency before and after attending the training.

**Table 3.** Paired Sample Test Results T-Test Principals of E-Learning Leadership in the Digital Age

		Paired Differences					t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
					Lower	Upper				
P	PRE_KS_KEP_E	-	6,	1,	-	-	-	2	0,0	
air l	LEARN	-	38,96	75	32	41,69	36,24	29,43	5	00
	POST_KS_KEP_ELEARN									

The evaluation in this training is expected not only to determine the improvement of the principal's skills in e-learning leadership, but also to measure how the principal utilizes e-learning in the digital era, especially in managing the education unit he leads. Based on the results of the analysis, there was an increase in the skills of school principals in the use of e-learning in the digital era in Binangun district, Blitar kabupaten. The calculation results in Table 4 participants consisted of 26 principals of public elementary schools. The average pre-test score was 44.62 in the poor category, while there was a significant increase in the post-test of 92.00 in the very good category.

**Table 4.** Distribution of Frequency and Mean of Pre-Test and Post Test Values of Principals in the Utilization of E-Learning in the Digital Age

Score	Interval		Category	Frequency	Mean	Description
Pre-Test	0	-	25	Poor	0	Less Good
	26	-	50	Less Good	14	
	51	-	75	Good	7	
	76	-	100	Very Good	0	
Post-Test	0	-	25	Poor	0	Very Good
	26	-	50	Less Good	0	
	51	-	75	Good	0	
	76	-	100	Very Good	36	
N : 26						

After the next skill improvement was found, a normality test was carried out using the Kolmogorov Smirnov test, in Table 5 below the results of the Kolmogorov Smirnov test.

**Table 5.** Pre-Test and Post Test Data Normality Test of Principals in the Utilization of E-Learning in the Digital Age

One-Sample Kolmogorov-Smirnov Test			
		PRE_KS_ELEARN	POST_KS_ELEARN
N		26	26
Normal Parameters <sup>a,b</sup>	Mean	44,6154	92,0000
Most Extreme Differences	Std. Devia-	7,64762	5,54256
	tion	0,139	0,192
	Absolute	0,139	0,154
	Positive	-0,102	-0,192
	Negative	0,139	0,192
Test Statistic		.200	.014
Asymp. Sig. (2-tailed)			

**Table 6.** Paired Sample T-Test Results of School Principals in the Utilization of E-Learning in the Digital Age

Paired Samples Test									
Paired Differences									
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	PRE_KS_ELEARN - POST_KS_ELEARN	-47,38	8,59	1,69	-50,86	-43,91	-28,12	25	0,000

Next, a difference test was carried out using the Paired sample T-test with the help of SPSS 24.0 to get different test results before and after training. In Table 6, it is known that the sign value is 0.00 ( $<0.05$ ), this shows that there is a significant difference in the skills of school principals in utilizing e-learning in the digital era located in Binangun sub-district, Blitar Regency before and after attending training.

The use of digital technology in learning is expected to be used even though the Covid-19 pandemic has slowed down. Not only to facilitate school management matters but also to answer global challenges in the preparation of quality human resources who are able to adapt to the times [12, 13]. The development of the era that has entered the era of the industrial revolution 4.0 is marked by the existence of artificial intelligence that is fully utilized and influences the way of human life, how to work and how to interact with others [14, 15].

School principals are the main leaders who are required to have knowledge, abilities and skills to be responsive to the development of the times, especially in terms of using digital technology to manage learning in schools [16, 17]. The principal as the top manager has the right to mobilize changes, especially to transform all activities in the school towards digitizing both administrative activities and classroom learning activities [18]. E-learning leadership is a form of development in the management of learning in schools where the principal tries to integrate digital technology in an effort

to facilitate, help and encourage change so that teachers want to improve and improve their competence in teaching [19, 20]. To succeed in e-learning leadership, school principals must arrange all technical aspects of learning oriented towards the use of digital technology.

On the other hand, school principals are obliged to build good relationships and communication with teachers, so that compact and strong teamwork is formed so that digital-based learning programs can be carried out properly [21]. In order for e-learning leadership to run optimally, school principals need to provide an understanding of digital literacy to all teachers and staff in the school (11). Because, with digital literacy, teachers and staff will understand, organize and be able to use in learning activities, teaching and facilitating school administration activities [20, 22, 23].

Thus, the principal as a leader must try to overcome gaps or weaknesses faced by all teachers and staff related to the use of digital technology through continuous direction and guidance [24]. Furthermore, the principal as a learning leader must be able to develop a productive work environment to satisfy teachers and improve student achievement [25].

## Conclusion

School ship skills in e-learning leadership in today's digital era are needed by every educational unit. This is not necessarily due to the transition of learning during the Covid-19 pandemic, but to respond to the demands of the times and prepare prospective graduates who are adaptive to technology. The principal as a learning leader in schools must introduce and hopefully also provide training for teachers and school staff related to digital technology. Based on the results of the analysis after carrying out service activities, in the aspect of improving the principal's skills in e-learning leadership in the digital era, an average score of 92.0 was obtained with very good categories. And based on the results of different tests that have been carried out, there are significant differences in participants' understanding of the principal's skills in e-learning leadership in the digital era before and after the training program that has been implemented.

## References

- [1] Argadinata H, Gunawan I. The Leadership of Pancasila in Education: Foundation for Strengthening Student Characters in the Industrial Revolution Era 4.0. In: *the 4th International Conference on Education and Management (COEMA 2019)*. Atlantis Press, 2019.
- [2] Argadinata H, Putri FF. Meningkatkan Kompetensi Manajerial Kepala Sekolah Dasar.
- [3] Cimili Gök EB, Özçetin S. The effect of school culture on teachers' organizational commitment. *J Educ Leadersh Policy Stud* 2021; 1–20.
- [4] Kajian J, Kependidikan P, Thasbikha SA, et al. Kepemimpinan Inovatif Kepala Sekolah dalam Manajemen Pembelajaran Online Efektif. 2022; 7: 18–26.



- [5] Tahar A, Setiadi PB, Rahayu S. Strategi Pengembangan Sumber Daya Manusia dalam Menghadapi Era Revolusi Industri 4.0 Menuju Era Society 5.0. *J Pendidik Tambusai* 2022; 6: 12380–12394.
- [6] Argadinata H. Peer Foster Student Program in the Formation of Character Value Gotong royong Students in School. *Int J Educ*; 14.
- [7] Seow P-S, Pan G. Teaching Internal Control Using a Student-Generated Video Project. *e-Journal Bus Educ Scholarsh Teach* 2018; 12: 64–72.
- [8] Nemr MAA, Liu Y. The impact of ethical leadership on organizational citizenship behaviors: Moderating role of organizational cynicism. *Cogent Bus Manag*; 8. Epub ahead of print 2021. DOI: 10.1080/23311975.2020.1865860.
- [9] Daft RL, Lane PG. *The Leadership Experience Fourth Edition*. Fourth Edi. United States of America: Thomson South-Western, a part of The Thomson Corporation., 2008.
- [10] Sandikçi MB, Yıldız M, Kırtepe A. Center the Relationship between Self-Leadership Behaviors of Sports-Sports Training Specialists and Job Satisfaction Levels (An Example from Eastern Anatolia Region). *J Educ Issues* 2021; 7: 175.
- [11] Creswell J. *Research Design Qualitative, Quantitative, and Mixed Methodes Approach*. California: SAGE Publications, 2002.
- [12] Wening MH, Santosa AB. Strategi Kepemimpinan Kepala Sekolah Dalam Menghadapi Era Digital 4.0. *JMKSP (Jurnal Manajemen, Kepemimpinan, dan Supervisi Pendidikan)* 2020; 5: 56.
- [13] Gaspar M, Julião J, Cruz M. Organizational strategies induced by the fourth industrial revolution: Workforce awareness and realignment. *Lect Notes Electr Eng* 2019; 505: 330–336.
- [14] Satya VE. Strategi Indonesia Menghadapi Industri 4.0. *Pus Penelit Badan Keahlian DPR RI*; 10.
- [15] Aryawan W. Strategi Kepemimpinan Kepala Sekolah Di Era Revolusi Industri 4.0 Berlandaskan Pada Konsep Panca Upaya Sandhi. *J Ilm ilmu Sos* 2019; 5: 132–141.
- [16] Klien M. Leadership Characteristics in the Era of Digital Transformation. *Bus Manag Stud An Int J* 2020; 8: 883–902.
- [17] Prince KA. Digital leadership: transitioning into the digital age. *Iceb* 2017; 132–139.
- [18] Lorentzen ACR. Digital transformation as distributed leadership: Firing the change agent. *Procedia Comput Sci* 2021; 196: 245–254.
- [19] Samsu S. Principal Leadership, E-Learning Supervision, Teacher Performance Within Learning Transformation At Madrasah Aliyah Negeri in Jambi Province. *Innov J Relig Innov Stud* 2022; 22: 65–79.
- [20] Hamzah MIM. Digital Leadership: Way Forward For Islamic Education. In: *1st International Conference of Islamic Education (INCISED)*. 2021, pp. 1–16.
- [21] Hayudiyani M, Bafadal I, Sumarsono RB. Kepemimpinan Pembelajaran dalam Implementasi Kebijakan Digital School. *J Pendidik Teor Penelitian, dan Pengemb* 2022; 7: 66.
- [22] Rose MA. Perceptions of Technological Literacy among Science, Technology, Engineering, and Mathematics Leaders. *J Technol Educ* 2007; 19: 35–52.
- [23] Karahan E, Canbazoglu Bilici S, Unal A. Integration of media design processes in science, technology, engineering, and mathematics (Stem) education. *Eurasian J Educ Res* 2015; 221–240.

- [24] Aksal FA. Are headmasters digital leaders in school culture? *Egit ve Bilim* 2015; 40: 77–86.
- [25] Surachmi S. Efektivitas Dimensi Internal Kepala Sekolah dalam Kepemimpinan Pembelajaran. *Cakrawala Pendidik* 2011; 43: 3.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

