



Transformational-Digital Leadership of School Principals for Service Acceleration and Digital Literacy: Empirique Study Literature Review

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Abstract. The influence of technological sophistication and the internet has caused various disruptions that are currently global in nature in society, especially in the leadership of school principals who are required to keep up with the times with their relation to the digital world. Elementary schools have become a crucial target in this change, responding to social demands and the recent acceleration of changes in the world of education. This research examines the analysis of empirical evidence related to transformational-digital leadership, including the acceleration of digital services and digital literacy. Data were collected through literature studies in the last eleven years of research. Our findings focus on the fact that this digital-transformational leadership structure is designed around a combination of technology, motivation, and leadership style. This was done to strengthen the digital literacy of a school and efforts to accelerate digital-based services in schools, especially in classroom learning and administrators.

Keywords: transformational digital leadership, digital services, digital literacies

1 Introduction

It is feared that the disruption that has hit the world of industry and business will also affect educational institutions. Therefore, many groups put forward the pressure to carry out digital transformation in educational institutions, including elementary schools, so that they can survive in an era of highly accelerated change. This pressure grew stronger when the Covid-19 outbreak hit almost all countries in the world. A deep awareness of digitizing services is increasingly widespread, although in practice there are still many educational institutions, especially elementary schools, which experience obstacles. One of the biggest obstacles actually comes from the leader himself. In fact, it is precisely in the hands of leaders that the acceleration of service and the digital literacy of school members can be developed.

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School principals must exercise digital leadership in order to foresee potential issues and to train teachers for the industrial revolution 4.0 and society 5.0 eras. Leadership plays a very important role, especially the type of leadership that is appropriate to the era, namely the digital era. Leadership that is in accordance with the digital era is of course the type of digital leadership. Digital leadership has special characteristics related to aspects of agility, speed, "aggressiveness", the ability to adapt to changes that are often sudden and unexpected [1]–[3]. In the digital age, school organizations must also be adaptable. Their survival depends in large part on their leaders, who must be aggressive, inventive, and unconventional.

The principal's digital leadership cannot be separated from technology-related activities, especially in organizational decision making, policy, and technology implementation [4]. There are five constructs associated with digital leadership, according to ISTE (International Society for Technology in Education, or ISTE), including transformational leadership, digital learning culture, excellence in professional practice, systemic improvement, and digital citizenship [5].

Utilization of information technology in schools, learning, and digital communication has been found to help improve school performance. Personal communication using digital technology has been able to replace face-to-face personal communication [6]. The era of digital information technology requires collaboration between technology and human capabilities through self-learning algorithms, mobile self-driving, machine and human interconnection, as well as big data analytics [7].

The era of the covid 19 emergency has passed and can be handled properly by almost all countries, including by educational institutions in providing services to multiple stakeholders. The emergency situation, which prevented pupils from attending school as usual, gave practically all educational institutions the impetus to switch from manual to digital services. The Indonesian government, through the Ministry of Education and Culture, issued a Joint Decree (in Indonesia called SKB) of 4 Ministers concerning guidelines for implementing learning during a pandemic which became the starting point for changing the face-to-face (off-network/offline) learning model to in-network or virtual face-to-face learning (online) [8]. The SKB of 4 ministers is a guide for schools to carry out online learning that requires information technology in its implementation.

In the era of and after Covid-19, digital transformation is a necessity, although it can also be a disruptive factor (disruption) unprecedented in societies, industries, and organizations driven by developments in digital technologies including big data analytics, cloud computing, artificial intelligence, and the Internet of Things (IoT) [9]. As a result, since that time, the term "digital transformation" has been used to describe changes in an organization's operating environment or in the way that work is done, roles, and business offers as a result of the use of digital technology [10]. Digitalization is a restructuring of social life in digital communication and media infrastructure; sooner or later it will also color the life of educational institutions, including elementary schools [11].

The digitalization of the education sector is unstoppable, because it will be able to help sustain learning that is beneficial for students and teachers in dealing with medical emergencies due to the Covid-19 crisis [12]. Rapidly developing digital

technologies have a wide range of opportunities to play a significant role in the post-epidemic future thanks to efforts to combat the pandemic. Building a governance paradigm that is compatible with digital technology after COVID-19 is crucial for making governance with digital leadership a norm in the digital society [13]. Changes in organizational governance are needed, so that organizations remain relevant and competitive because those who do not want to change actually put themselves at risk of failure (Krail & Kralova, 2016).

The need for service digitization is most urgent in educational institutions, especially elementary schools. The role of the school principal as an educational leader in the digital era requires new roles related to the digitalization of services. The change in literacy of elementary school students, which was previously limited to reading, writing and arithmetic (in Indonesia called *calistung*), towards technological, human and digital literacy according to the demands of the 21st century, also requires digital leadership roles for school principals. Therefore, it is appropriate to conduct an in-depth study of the school principal's digital leadership model, to accelerate service and digital literacy in elementary schools.

2 Literatur Review

2.1 Digital Leadership

Digital leadership is a conscious activity carried out by leaders to influence those they lead by prioritizing digital information technology to be used as a tool for searching and analyzing information or data that is very useful for making decisions [15]. Digital leaders are leaders who can lead by utilizing digital technology [16]. Prayuda (2022) states that a leader can be categorized as carrying out digital leadership if he fulfills all digital activities: (1) virtual meetings; (2) virtual discussion; (3) virtual information sharing; (4) on line file sharing; (5) virtual communication; (6) teaching and supervision of virtual learning; (7) virtual student performance monitoring; (8) virtual teacher professionalism development; (9) promotion of virtual school goals; (10) exposure to construction (design) with digital technology [17]. [18] in his research offers the concept of digital leadership competencies which are divided into six dimensions or aspects, namely: (1) technological skill, (2) communication skill (3) social skill, (4) team building skill, (5) change management; and (6) trustworthiness.

2.2 Transformational-Digital Leadership

In implementing digital-transformational leadership, a leader does not have to specialize in technology. The important thing needed in the process of technological transformation is the ability of a leader to be able to drive digital transformation and manage complex changes in an organization's digital transformation process [19]. Meanwhile [20] in his study said that digital transformation leaders must have speed competence, dare to take risks, and be firm

Based on research conducted by [21], in the era of information technology that is the cause of major and fundamental changes (disruption). For this reason, new leadership competencies are needed that are able to adopt and adapt leadership performance towards digital transformational leadership. There are 3 digital transformational leadership competencies suggested by Valentine and Stewart, including; (1) skills, knowledge and experience in managing and using technology for strategic advantage and institutional performance, (2) making technology-based activity decisions and managing risks, (3) using technology in each activity to show process and results as well as evaluation.

2.3 Digital Services

The practice of providing students with digital services supports learning activities so that educational objectives can be met successfully and efficiently. The types of digital services are classified into 2 dimensions, namely digital services in the classroom and digital services in managerial [22]. Digital services in class can be in the form of: 1) type of learning; 2) the role of the teacher; 3) the role of the student; 4) open and contextual. Digital managerial systems can be in the form of: 1) infrastructure access; 2) the nature of collaboration; 3) teacher professional development.

2.4 Digital Literacies

Digital literacy is an individual's ability to understand and use digital technology. Individuals need digital literacy to interpret information contained in cyberspace/social media/the internet so that their knowledge can develop and become better individuals [23]. To grow digital literacy competence, it can be started from education. Teachers as examples for students must also have good digital literacy competencies, so they can search, evaluate and compile learning materials and media through digital media [24]. The scope of digital literacy as defined by the framework digital competencies (DigComp) includes: 1) information and data literacy (browsing, searching, filtering data), (2) communication and collaboration (interacting, sharing, engaging in citizenship, collaborating), (3) digital content creation (developing, integrating and re-elaborating digital content, copyright, licensing and programming), (4) security (protecting devices, protecting personal data and privacy, protecting health and well-being), and (5) problem-solving skills, or attitudes in using information and communication technology (solving technical problems, identify technology needs and responses, creatively use digital technology, identify digital competency gaps) [25].

3 Method

The research method used in this study is a sort of qualitative research, and the research's descriptive design, which is based on sources like articles, books, and journals, was used to carry out the investigation [26]. In addition, the author will review and critique concepts, facts, and scientific advancements that make a positive contribution

to academic orientation. Additionally, the author of this study expects this research to provide methodological and theoretical contributions to the issue she has chosen. This descriptive analysis is used to describe social phenomena, facts, and data [27]. Researchers will create and process this data in order to learn more about the research topics they have chosen.

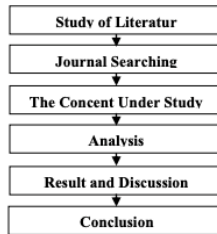


Figure. 1. Literature Review Flow

4 Result and Discussion

All selected studies have a discussion of digital-transformational leadership and digital literacy acceleration. First, we found studies that referred to transformational-digital leadership and so on. Second, we found studies related to digital literacy and its acceleration.

4.1 Transformational-Digital Leadership Principal of Elementary School

Digitalization is very important for every organization and society. Digital technology has a significant impact on how businesses interact with customers, do marketing, distribute products, and conduct business activities. New developments in digital technology offer new opportunities and challenges for organizations and society [28]. An firm can be compelled to shut down if it can't keep up with how its rivals are utilizing digital technology or what customers are expecting. Society is susceptible to instability and the breakdown of social institutions if it does not take advantage of new chances for cooperation, communication, and exchange of information [29]. Leaders must show the way forward, but they will fall behind if they lack the knowledge to use digital technology and the instrumentation that goes along with it, as well as the knowledge to fully use their relationships with stakeholders [30].

[31] characterized as extremely complicated and dynamic the job of technology leaders in education. In addition to their official position as technical authorities, they assert that it is more crucial for technology leaders to act as facilitators and focus on others' development. Moreover, technology leadership entails transformative leadership skills including communicating an organizational vision for using technology. Similarly, [32] assert that technology is a game changer for educational leadership.

In order to build and promote the school, the principle, as a leader, has leadership tasks and patterns connected to persuading his subordinates to constantly carry out his

instructions [33]. Numerous hypotheses and findings demonstrate how crucial the principal's leadership is to the success or failure of a school. This is because the principal is the one who decides whether a school organization succeeds or fails in accomplishing its educational objectives effectively and efficiently [34]. Transformational-digital leadership relates to the use of technology and observing contemporary conditions. Digital leadership is the skill of leading, influencing others, bringing about long-lasting change through information access, and cultivating connections to foresee developments that will be crucial to a school's success in the future. Because of this, it takes a dynamic mix of attitudes, actions, and abilities to alter or enhance school culture with technology support [35]. His digital-transformational leadership framework was created using a mix of technology, inspiration, and leadership techniques. School administrators can use digital leadership to raise student achievement and make their institution more competitive. One of the most precise, quick, cross-hierarchical, workgroup-oriented, collaborative, and innovation-focused methodologies is digital transformational leadership [36].

Empirical research showing the value of technological leadership in education and the effectiveness of transformational leadership styles lend weight to the theoretical premise. To deal with change brought on by technology, some of the literature aimed at school administrators promotes a transformational leadership style. [37] present a meta-analysis of several empirical research that looked at the connection between computer literacy, technology integration, and transformational leadership in schools. He discovered that higher levels of technology adoption and integration were related to transformative leadership. [38] discovered that principals who adopted a people-first leadership style as opposed to one that set the pace for the school were more likely to see instructors adopt technology. Although transformational leadership is not specifically examined in this study, descriptions of more effective leadership styles do share characteristics with descriptions of transformational leadership styles, including a focus on interpersonal relationships, various forms of support and encouragement for followers, and communication of a common vision. [39] carried out a case study on tech initiatives in a middle school in the US. They discovered that centralized pre-implementation planning had caused some issues, but that individual administrators and faculty members were highly skilled at coming up with solutions on their own. More adaptable planning is advised for administrators, as well as fostering unofficial support networks, to deal with the unavoidable disruptions.

According to a study [40] on the connections between various leadership philosophies, transactional, transformational, and empowering (genuine) leadership are all related to innovative behavior in digital leadership. [41] accepts that every major organization's digital transformation process will involve a variety of leadership philosophies, and that for the transformation plan to be effective, leaders, resources, and teams must work together. Based on the results of the research indicated above, it was established that the problems were connected because initiatives launched by digital leaders needed to have stakeholder support in order for resources to be allocated and for the massive empowerment of the digital transformation to occur.

4.2 Accelerating Services and Digital Literacy in Elementary Schools

Digital technology is a potent tool that may accelerate school services and offer new opportunities for people to learn and cooperate, among other ways to assist improve education. Recently, 5G internet coverage is worldwide and more and more sophisticated devices are connected to each other. Thus, it is mandated to school principals and educators to use the potential of advanced digital to accelerate services and digital literacy in such a way that access to quality education is universal and available in all places[42]–[44].

In light of recent technology advancements, instructors must become proficient with a variety of devices, including smartphones and tablet computers, to avoid being left behind. Teachers should also utilize all online resources available to them to ensure that their lessons are engaging, fascinating, and current. More than only video games and cartoon movies can be found in technology. How well students, parents, and teachers use technology to further education will determine excellence. When technology is effectively employed in the classroom, learning is enhanced and students are more engaged [45].

The development of a compatible e-learning platform has grown to be crucial to the accessibility and quick adoption of digital learning. Learning models such as learning style, teacher and student roles, or AI-powered systems created specifically for ed-utainment are also featured [22].

Children's education outside of the classroom continues to be greatly aided by technology. Digital learning encourages learning by thinking outside the box and instills in kids a sense of "I can do it." Theoretical debates on services and digital literacy are becoming more common in this period. Combining digital technology tools and resources with children's education has various benefits, including the following: increasing involvement, new ideas and concepts introduced, and chances to communicate and work with others [46].

Another study that looked into how five-year-old primary school students in New Zealand utilized iPad apps found a link between the apps' quality of engagement and learning and their design and content [47]. The 45 apps used for this study were mostly concerned with the improvement of essential literacy and numeracy abilities. The most successful apps for improving student learning and encouraging "thoughtful engagement" offered: (a) clear and easy-to-understand learning objectives and instructions, (b) consistent and orderly steps and procedures, (c) formative feedback, (d) elements of 24 "game, practice, and learning," and (e) The children's attention was maintained on the learning objectives thanks to the framework of the rules [47].

5 Conclusion

Based on the results of the study above, the results show that digital technology is the most effective way to accelerate school performance, including minimizing repetitive work, time-consuming tasks carried out by administrators and teachers. Educational technology software can save a lot of time and energy by automating some of their daily operations. Students are taught how to use technology optimally,

responsibly, and can learn for life. In a short period of time, this technology will be successfully implemented in education to accelerate services and digital literacy in elementary schools. This digital acceleration refers to innovation that considers available resources while simultaneously driving economic and social growth. It aims to dramatically catch up while producing long-term output.

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