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Digital Leadership Proposed Framework Concepts for Teachers

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Abstract

One of the key leadership philosophies that is receiving a lot of attention in schools today is digital leadership. However, very little attention has been paid to developing the framework for digital leadership. Therefore, the aim of this study is to develop digital leadership proposed framework concepts based on a systematic review for teachers. A few studies on digital leadership in education were used for this study. Ten key variables were identified to measure the digital leadership of teachers. The most dominant variable in measuring digital leadership is excellence in professional practise, followed by visionary leadership, digital age learning culture and systemic improvement, then digital citizenship, followed by communication, the use of digital technology and public relations. The least dominant variables are learning space and environment, and student learning and engagement. These variables comprise the framework concepts for digital leadership. However, these variables have their own limitations. Firstly, the infrastructure such as the internet and electronic devices such as a tablet, computer or laptop. Secondly, the attitude of administrators and teachers towards this style of leadership is a major problem. Digital leadership will help to improve the educational environment in terms of the most effective teaching and learning methods compatible with the Covid-19 pandemic. In terms of contribution to the body of knowledge, this study provides new variables for researchers interested in measuring digital leadership in teachers. For the future, this study recommends conducting an in-depth study to identify sub-constructs for these ten variables. It is also recommended to investigate the extent of teachers' digital leadership skills as this may help stakeholders in planning the training needed by teachers.

Keywords: Digital Leadership, Variables, Systematic Review, Framework, Teacher.

Introduction

Digital leadership has emerged as a central focus in contemporary educational discourse (Dasruth 2020). Brown (2014) conceptualizes digital leadership as the capacity of school administrators, teachers, and technology leaders to effectively integrate technology into their

belief systems and practices to enhance student outcomes. Essentially, digital leadership involves leveraging digital tools to drive transformative change in educational management (Hamzah et al. 2021). To accurately gauge the extent of digital leadership, a rigorous assessment process is imperative.

Assessment is a quantitative or qualitative process employed to determine the characteristics of an individual or group (Brown 1990). Variables, fundamental components of research (Adegun, 2005), are essential for effective assessment. These variables, capable of manipulation in experimental contexts (Abiodun-Oyebanji, 2017), can be categorized into distinct groups or attributes (Abiodun-Oyebanji, 2017). Despite the significance of variables in assessment, the development of a specific framework for digital leadership remains under-explored. This study aims to address this gap by constructing a conceptual framework for digital leadership among teachers based on a systematic review.

Variables

The literature identifies several key variables pertinent to digital leadership assessment. The operationalization of these variables is influenced by the researcher's conceptual framework (Musid et al., 2024). A systematic review of articles from Scopus, Web of Science, and Google Scholar, spanning from 2014 to 2022, yielded an initial list of 25 potential variables. Through frequency analysis, ten variables emerged as the most prominent. These variables, ranked by frequency of occurrence, are presented in Figure 1.

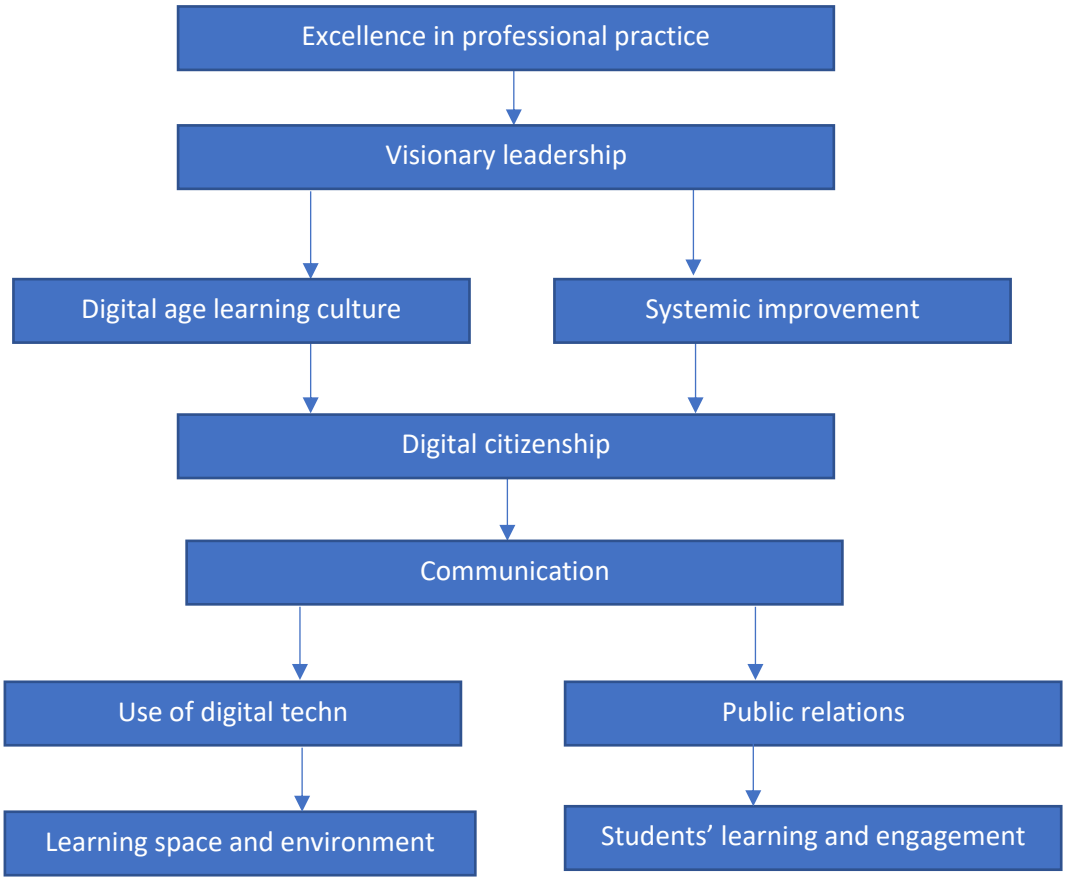

Figure 1. Digital Leadership Proposed Framework Concepts for Teachers

Excellence in Professional Practice

A cornerstone of effective digital leadership is a strong commitment to teacher professional development. School principals play a pivotal role in fostering this growth by creating environments that support digital innovation (England, 2018). Their ability to strategically lead digitalization and pedagogical advancements is essential for empowering teachers to become confident and effective digital educators (Lindqvist & Pettersson, 2018). This, in turn, equips teachers with the leadership skills necessary to excel in online teaching (Rusnati & Gaffar, 2021).

Visionary Leadership

Visionary leadership is a critical component of effective digital leadership. Visionary leaders possess the foresight to anticipate how emerging technologies can reshape teaching and learning (Lim & Teoh, 2022). They are characterized by their openness to innovation and their ability to inspire a shared vision for leveraging technology to drive organizational transformation (Macatuno-Nocom, 2019; International Society for Technology in Education, 2009). While visionary leadership is often associated with positive outcomes, its impact on digital leadership performance can vary, as evidenced by Lim and Teoh's (2022) findings in Malaysian higher education.

Digital Age Learning Culture

A digital age learning culture, characterized by rigorous, relevant, and engaging learning experiences for all students (International Society for Technology in Education, 2009; Salamzadeh et al., 2021), is a critical component of digital leadership. Research indicates a positive correlation between a strong digital age learning culture and institutional performance (Lim & Teoh, 2022). As technology continues to evolve, institutions must prioritize cultivating such a culture to prepare students for the digital age (Lim & Teoh, 2022).

Systemic Improvement

Systemic improvement is essential for effective digital leadership. It involves leveraging information and technology to drive organizational performance and create a sustainable digital learning environment (International Society for Technology in Education, 2009). School leaders must foster a culture of continuous improvement while equipping students with the necessary skills to thrive in the digital age (Štrukelj et al., 2019). While research indicates high levels of systemic improvement in some contexts (AlAjmi, 2022), its impact on institutional performance can vary, as evidenced by findings from Malaysia (Lim & Teoh, 2022).

Digital Citizenship

Digital citizenship is a critical component of digital leadership, encompassing the responsible, ethical, and effective use of technology (Dotter et al., 2016; Walters et al., 2019). It involves fostering a culture of collaboration, empowerment, and creativity within the digital environment (AlAjmi (2022); Hamzah et al. (2021); Ismail et al. (2021); Omar & Ismail (2021); Zhong (2017).

Communication

Effective communication is fundamental to leadership and is particularly vital in the digital age (Bass, 2000; Harris, 2009). Two-way communication between school leaders and stakeholders is essential for building trust and shared understanding (Saraih et al., 2022).

Social media has emerged as a powerful tool for facilitating communication and engagement within the school community (Saraih et al., 2022).

Use of Digital Technology

The rapid integration of digital technology into education has transformed teaching and learning practices (Singh, 2021). While various terms are used to describe this variable, including technology use, digital technology support, and digital assessment, the core concept revolves around the effective and ethical implementation of technology in educational settings. The COVID-19 pandemic accelerated the adoption of digital tools, necessitating their use for both teaching and administrative purposes (Karakose et al., 2021). Research consistently demonstrates the potential of digital technology to enhance student learning outcomes and teaching efficiency (Wekerle et al., 2022; Singh, 2021).

Public Relations

Effective public relations has become an indispensable component of modern school leadership (Lopez, 2017). By fostering positive relationships with stakeholders, schools can garner support for their initiatives and build a strong community (Çoruk, 2018). Social media has revolutionized public relations practices by providing a platform for transparent communication and engagement (Saraih et al., 2021). It enables schools to share achievements, gather feedback, and build long-term relationships with their audience (Kelleher & Sweetser, 2012; Briones et al., 2011).

Learning Space and Environment

The physical and digital learning environment is a critical component of digital leadership (Sheninger, 2019a). Effective school leaders create spaces that foster innovation, collaboration, and student engagement (International Society for Technology in Education, 2009; Westerman et al., 2014). The COVID-19 pandemic accelerated the need for adaptable learning environments that seamlessly integrate technology (Aksal, 2015; Antonopoulou et al., 2020). Ultimately, a conducive learning environment enhances both student and teacher experiences.

Student Learning and Engagement

Ultimately, the success of digital leadership is measured by its impact on student learning and engagement (Sheninger, 2019a). Digital leaders prioritize learning and innovation, recognizing their critical role in organizational success (Rusnati & Gaffar, 2021; Van Laar et al., 2017). By fostering a culture of continuous learning and development among teachers, school leaders can enhance student outcomes (Sterrett & Richardson, 2020). Educators must design learning experiences that equip students with the knowledge and skills to thrive in the digital age (Allen, 2020).

Table 1
Number of Studies for Each Variable and Citations

No.	Variable	No. of Studies	Citations
1	Excellence in professional practice	12	(Agustina *et al*., 2020a; 2020b; Aksal, 2015; AlAjmi, 2022; Riveros, 2015; Garcia & Abrego, 2014; Hamzah *et al*., 2021; Ismail *et al*., 2021; Omar & Ismail, 2021; Rusnati & Gaffar, 2021; Sheninger, 2019a; Zhong, 2017)
2	Visionary leadership	10	(Agustina *et al*., 2020a; 2020b; Aksal, 2015; AlAjmi, 2022; Garcia & Abrego, 2014; Hamzah *et al*., 2021; Ismail *et al.*, 2021; Omar & Ismail, 2021; Suksai *et al.*, 2021; Zhong, 2017)
3	Digital age learning culture	8	(Agustina *et al*., 2020a; 2020b; AlAjmi, 2022; Garcia & Abrego, 2014; Hamzah *et al*., 2021; Ismail *et al*., 2021; Omar & Ismail, 2021; Zhong, 2017)
4	Systemic improvement	8	(Agustina *et al*., 2020a; 2020b; AlAjmi, 2022; Garcia & Abrego, 2014; Hamzah *et al*., 2021; Ismail *et al*., 2021; Omar & Ismail, 2021; Zhong, 2017)
5	Digital citizenship	7	(Agustina *et al*., 2020a; 2020b; AlAjmi, 2022; Hamzah *et al*., 2021; Ismail *et al*., 2021; Omar & Ismail, 2021; Zhong, 2017)
6	Communication	6	(Aksal, 2015; Riveros, 2015; Yusof *et al*., 2019; Rusnati & Gaffar, 2021; Saraih *et al*., 2022; Sheninger, 2019a)
7	Use of digital technology	3	(Avidov-Ungar *et al*., 2020; Karakose *et al*., 2021; Suksai *et al.*, 2021)
8	Public relations	3	(Riveros, 2015; Saraih *et al*., 2021; Sheninger, 2019a)
9	Learning space and environment	2	(Riveros, 2015; Sheninger, 2019a)
10	Student learning and engagement	2	(Riveros, 2015; Sheninger, 2019a)

Discussion

There are clear overlaps among several variables: learning space and environment, students' learning and engagement, digital age learning culture, and use of digital technology are all intrinsically linked to technology integration in teaching and learning. The COVID-19 pandemic accelerated the need for digital transformation in education, demanding innovative solutions to meet the needs of the digital generation (Iivari et al., 2020). Digital leadership is essential for navigating this transformation, requiring a strategic vision to optimize the use of technology across all stakeholders and improve teaching and learning outcomes (Damayanti & Mirfani, 2021).

Digital leadership necessitates the active involvement of school administrators in integrating technology into teaching and learning (Dogan, 2018; Prince, 2018). The COVID-19 pandemic underscored the critical importance of digital competencies for both school leaders and teachers (Karakose et al., 2021). Communication and public relations are interconnected elements of digital leadership. Both are essential for disseminating information and building relationships with stakeholders (Khateeb et al., 2021). The strategic use of social media for communication and public relations purposes is a hallmark of effective digital leadership (Scicluna, 2020).

The remaining four variables—digital citizenship, excellence in professional practice, visionary leadership, and systemic improvement—exhibit distinct characteristics. Digital citizenship focuses on ethical technology use and behavior (Choi, 2016; Dotter et al., 2016), while excellence in professional practice emphasizes strategic leadership for digital integration and pedagogical development (Håkansson Lindqvist & Pettersson, 2018). Visionary leadership centers on inspiring a shared vision for technology-driven transformation (International Society for Technology in Education, 2009), and systemic improvement prioritizes continuous improvement in digital learning and skill development (Štrukelj et al., 2019). Collectively, these variables encompass the multifaceted competencies required for effective leadership in today's digital age.

Among the ten identified variables, five emerged as key indicators of digital leadership: excellence in professional practice, visionary leadership, digital age learning culture, systemic improvement, and digital citizenship. **Excellence in professional practice** is foundational to digital leadership. It mandates educators to foster a culture of innovation and professional growth, empowered by technology integration to enhance student learning. This involves allocating resources and time for continuous development in technology fluency and integration (International Society for Technology in Education, 2009). **Visionary leadership** is characterized by a leader's ability to articulate a compelling and attainable vision for the organization's future (Makhrus et al., 2022).

Thirdly, a **digital age learning culture** is essential for student success. Education has become inextricably linked to technology, necessitating digital literacy among educators (Singh, 2021). However, the digital divide between urban and rural areas remains a challenge (Singh, 2021). **Systemic improvement**, the fourth key variable, provides a structured approach to organizational change, ensuring stability while driving efficiency (AlAjmi, 2022). It facilitates targeted improvements within the complex landscape of digital leadership (Kane et al., 2019). **Digital citizenship**, the fifth and final key variable, is crucial for navigating the digital world responsibly and ethically. Further research into systemic improvement and digital citizenship is imperative to address the evolving challenges faced by educational leaders, particularly in Malaysia (Lim & Teoh, 2022).

Digital leadership involves leveraging digital resources to influence others toward achieving organizational goals (Masrur, 2021). Five key variables—excellence in professional practice, digital age learning culture, digital citizenship, systemic improvement, and visionary leadership—comprehensively capture the essence of digital leadership. This framework encompasses both leaders and followers within the digital ecosystem. Students are primary beneficiaries of effective digital leadership, as it aligns with 21st-century learning demands. School administrators and teachers are instrumental in implementing these principles. The selection of these five variables is grounded in their established role as constructs in digital leadership research, both domestically and internationally. Their inclusion enhances the study's validity, reliability, and accuracy. Omitting relevant constructs compromises the study's integrity, potentially leading to questionable conclusions.

Recommendation

The findings of this study illuminate potential avenues for future research. Firstly, a comprehensive investigation into subconstructs of the ten identified variables is warranted.

Accurately assessing these variables requires a granular understanding of their components, as subconstructs form the building blocks of constructs (Mat Said et al., 2021). Secondly, assessing the level of digital leadership among teachers emerges as a critical research priority. The widespread adoption of technology during the COVID-19 pandemic has likely catalyzed a shift towards digital leadership (AlAjmi, 2022). Identifying the current level of digital leadership among teachers can inform targeted training initiatives to develop specific digital leadership skills (Bekele, 2020). Formative assessment of digital leadership can provide valuable feedback for researchers and practitioners alike (Tosuncuoglu, 2018).

Conclusion

This conceptual paper introduces a framework for measuring digital leadership among teachers, comprising ten variables: excellence in professional practice, visionary leadership, digital age learning culture, systemic improvement, digital citizenship, communication, use of digital technology, public relations, learning space and environment, and students' learning and engagement. These variables offer a comprehensive foundation for assessing digital leadership and enhancing teaching and learning processes. However, several constraints must be considered. First, adequate technological infrastructure, including internet connectivity and devices, is essential for successful digital leadership implementation. Second, positive attitudes among administrators and teachers are crucial. Resistance to change can hinder the adoption of this leadership style. This study contributes to the body of knowledge by identifying key variables for measuring digital leadership among teachers. To advance this research, two areas for future exploration are proposed: in-depth analysis of subconstructs within the ten variables and assessment of digital leadership levels among teachers. These studies will provide valuable insights for developing targeted training programs and improving educational outcomes.

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