

Unveiling the Dynamic Landscape: Exploring Practices, Challenges, and Resilience Strategies of Digital Leaders in Secondary Education

Catherine G. Danganan^{1*}, Alberto G. Gamboa²

¹College of Education Pampanga State University, Philippines.

²College of Arts and Sciences Pampanga State University, Philippines.

*Corresponding Author: cgdanganan@dhvsu.edu.ph

Citation: Danganan, C. G., & Gamboa, A. G. (2025). Unveiling the Dynamic Landscape: Exploring Practices, Challenges, and Resilience Strategies of Digital Leaders in Secondary Education. *Journal of Cultural Analysis and Social Change*, 10(3), 587–598. <https://doi.org/10.64753/jcasc.v10i3.2457>

Published: November 27, 2025

ABSTRACT

Education institutions are increasingly affected by rapid technological advancement which drives school leaders to foster the culture of innovation and do digital transformation. Guided by change management theory, this qualitative exploratory study investigates the practices, challenges and resilience strategies of seven (7) secondary school digital leaders. Data were collected using semi-structured interviews and analyzed using reflexive thematic analysis. The findings highlight on their leadership practices such as capacity building and professional development, instructional supervision and monitoring, strategic technology integration and, advocacy and digital leadership mindset, while also revealing the persistent challenges including infrastructures and resource constraints, resistance to technological change, and professional development needs. Importantly, study also uncovers the resilience strategies used by these school leaders, such as adaptation through continuous learning, resilience in managing challenges, collaboration and support networks, strategic, stress management and proactive leadership and innovation. The findings are grounded on the change management theory, as it provides a framework for understanding how digital leaders incorporate, integrate and implement technological innovations in their respective schools. Based from the findings, the study recommends a comprehensive technology-oriented professional development policy measures that address infrastructure gaps, build change readiness, and enhance leader collaboration in the organization. These findings offer actionable insights for strengthening digital leadership capacity and sustaining technology-driven educational reform.

Keywords: Digital Leaders, Leadership, Technology.

INTRODUCTION

In today's rapidly changing environment, organizations need digital leaders who can effectively promote organizational commitment among their employees. This requires a deep understanding of the intersection between digital technologies, leadership, and employee engagement. As school organizations continue to adopt new digital technologies, they require leaders who can effectively navigate this digital landscape and inspire commitment and engagement from their employees. Digital leaders in education play a crucial role in the effective integration of technology and innovation into educational institutions. They can create a vision for the future, build strong relationships with employees and stakeholders, and foster a culture of continuous learning and improvement. They are the leaders that have the ability to leverage digital technologies and tools to drive innovation, collaboration, and productivity within their organizations. Digital leadership practices, such as promoting the use of digital tools, and encouraging collaboration using technology to communicate with the employees may promote professional development opportunities, and teachers' organizational commitment. Abbasi et al (2020) elucidated that the improvement of the flexibility of the employee is dependent on digital

technology and the effective use of the resources improve because of the availability of the technology. New digital technology became available rapidly that resulted in the development of innovative digital solutions (Joas, 2020). In common principle, digital leadership is considered a subset of information technology roles which are related to innovation to the highest level (El Attoti, 2019).

Zeke (2019) defined digital leadership as a type of leadership that makes use of digital technology to achieve the goals of the organizations. Its primary goal is to produce a transformation of the process from conventional to the influence of information technology. It is not just introducing the latest application of digital technology on the performance of their work but utilizing the data that makes it an important asset. Digital leadership is the ability of the leader to execute strategies and realization of clear and meaningful vision using the digitization process (de Araujo, 2021). The fast-phasing world made the styles of the leaders shift from the conventional way of leadership to digital leadership. Leaders' adjustment and efforts to shift from the traditional to digital era requires a new type of leadership style that will enable them to thrive in a digital workplace which is characterized by high-tech skills leading to management and team collaboration in an optimum level (Bresciani, et al, 2021).

According to Shah (2020), digital leadership is the leader's involvement and contribution in the transition towards knowledge-based community and their skills in technology and application. Hansellek (2020) pointed out that activating digital transformation and enabling organizations to realize their full potential in the digital environment can be characterized as the goal of digital leaders. The abilities required to understand digital technologies, handle the technology proficiently and use them effectively is also an important characteristic of a digital leader. Bolte, 2018 noted that digital leaders promote an agile workplace, which increases client satisfaction and clear indication of innovation. Essential characteristics of digital leaders include personal competency and the ability to use a variety of approaches and tools, such as mindset and design-based thinking. (Oberer, 2018). Puliwarna et al. (2023) mentioned important characteristics of digital leaders such as open-mindedness towards digitization of the work in the work environment, they even emphasized that digital leaders must be sensitive and adaptive to the changes of the digital era. Moreover, they reiterated that a leader must be a risk taker on the transformation processes of digital technology. As cited in Ghamrawi & Tamim (2022), a digital leader can be described as a transformational figure aiming to achieve digital evolution within their organization by leveraging the motivations of their staff members. It was also emphasized based on their findings that digital leaders are expected to be digital competent as they exhibit strong knowledge on digital technologies. Moreover, the leader also drives its staff to adopt innovation which entails the development of digital culture, as these technologies bring differentiation on the learning opportunities. While in the study of Highton (2023), it was stated that digital leaders in education encompass a collection of skilled personnel who hold leadership roles in the institution where technology plays a crucial role in strategically providing advanced education. This technology encompasses IT, audiovisual services, educational technology, student systems, operational systems data, and information technology infrastructure. Digital leaders play a pivotal role in guiding the organization's vision of the digital landscape, breaking down both internal and external barriers to facilitate this transformation. They engage in educating their peers, adapting their technical proficiencies for new purposes, and employing design thinking approaches to cultivate innovation (Abatiello et. al, 2017; Highton 2023). In this study digital leaders in education refers to those who provide a clear and specific description of the characteristics, roles, and responsibilities of individuals who hold leadership positions and are actively involved in guiding, implementing, and promoting the integration of digital technologies within educational institutions. These leaders are expected to demonstrate a combination of technological expertise, pedagogical understanding, and strategic vision to effectively leverage digital tools and approaches for enhancing teaching, learning, and administrative processes in educational settings. Their role involves not only the use of technology but also the ability to inspire and guide educators, students, and stakeholders towards embracing innovative practices that support educational goals and outcomes.

However digital leaders may also experience challenges, as identified by McLeod (2015). Digital leaders in education encounter a range of challenges that arise from the complex interplay between technology, pedagogy, and institutional dynamics. Some of the prominent challenges they face include technology integration, resistance to change, resource constraints, data privacy and security, professional development, rapid technological changes, cultural shift and sustainability (McLeod, 2015; Pratama et.al., 2020; Alajmi, 2022).

Digital leaders in education play a crucial role in integrating technology into teaching practices, yet they often face challenges such as infrastructural limitations and resistance to change (Larson, Miller, & Ribble, 2009). A significant hurdle for these leaders is ensuring ongoing staff development and overcoming resistance, which requires resilience and adaptive strategies for sustainable implementation (Yusof, Yaakob, & Ibrahim, 2019). Moreover, fostering resilience among digital leaders is essential for navigating the rapidly evolving technological landscape and maintaining effective leadership amid continuous change (Antonopoulou, Halkiopoulos, Barlou, & Beligiannis, 2021).

Global studies have highlighted the critical role of digital leaders in successfully integrating technology in education and foster a culture of innovation. However, while these international perspectives provide valuable

insights, they may not fully capture the perspectives in developing countries like in the Philippines, where budget constraints, implementation of educational policies and technological infrastructures vary significantly

Most existing local literature on digital leadership in the Philippines tends to emphasize the effect of digital leadership on the teachers' performance, the practical application of digital leadership and its effectiveness on school management (Lopez-Figueroa et. al., 2025; Acebuche, 2023; Dela Rosa, 2022). Despite these efforts to produce articles about the real lived experiences of the digital leaders, there is a gap in contextualizing on secondary high schools. Thus, in addressing this gap, facts and evidences concerning the perspectives, practices and experiences of the digital leaders in secondary education may bring changes in leadership development programs, and resource prioritization.

Highton concluded that there were growing number of literatures regarding digital leadership but there remains a limited number of studies examining digital leaders and their leadership in diversity in education. Conducting research to comprehend the experiences of digital leaders who leads education institutions may hold the potential to revolutionize other institutions. Recent studies on this topic offers a comprehensive understanding about digital leadership which were focused on its conceptual foundation, key characteristics and the reasons that led these leaders to transform their schools and engaged them to innovation. Prior research also focused primarily on the roles and competencies of leaders. However, it was notable that there was scarcity of empirical studies on the actual lived practices, challenges and strategies of these digital leaders. This gap is crucial on school leaders who faced pressure in adapting rapid technological advancements in their institutions. Thus, this study seeks to address the gap by exploring the practices, challenges and resilience strategies of digital leaders in schools.

THEORETICAL FRAMEWORK

This study is anchored on the Change Management Theory. As schools undergo a rapid technological transformation. School leaders play a crucial role in leading and sustaining change. In this theory, Kotter (1995) provided the bases on how leaders create an urgency for change, manage resistance and do the changes or innovation. This theory is aligned on the core practices of digital leaders. This theory also supports the exploration of challenges that digital leaders encountered and how they managed to sustain change and brought innovation.

STATEMENT OF THE PROBLEM

The researchers explore the experiences of digital leaders in secondary schools, focusing on their leadership challenges and coping strategies.

Specifically, it seeks to answer the following questions:

1. What are the practices of the digital leaders in secondary schools?
2. What are the challenges faced by digital leaders in secondary schools?
3. What are the coping strategies used by the digital leaders to successfully implement new technologies?

METHOD

Research Design

This research is qualitative-exploratory in nature. According to Erickson (2017), exploratory research is focused on small samples of qualitative data in search of new insights. This design allowed the researchers to describe and explore the experiences and perspectives of digital leaders in driving the school's digital transformation and generate insights into the phenomenon under investigation.

Selection of Informants

In the selection of the informants, the researchers coordinated with the Schools Division Office and district supervisors to identify principals known for their active use of digital tools and platforms, such as Learning Management Systems (LMS), digital communication channels, and technology-based monitoring systems. These school principals had been consistently involved in initiatives promoting digital literacy among teachers, implementing digital innovations in their schools, and navigating the challenges of technology integration during and after the COVID-19 pandemic.

As regards to the criteria set by the researchers are the following: a. high school principal who provided and promoted digital learning in their schools and have five year and above experience in managing schools. In this study, seven (7) informants were selected.

Participant Code	Gender	Years in Principalship	Highest Educational Attainment	School Classification
P1	Male	12	Doctor of Education	Secondary Public School
P2	Male	10	Master of Arts in Education	Secondary Public School
P3	Female	9	Doctor of Education	Secondary Public School
P4	Female	13	Master of Arts in Education	Secondary Public School
P5	Male	8	Master of Arts in Education	Secondary Public School
P6	Female	14	Doctor of Philosophy in Education	Secondary Public School
P7	Female	12	Doctor of Education	Secondary Public School

Research Instrument

The main research instrument used in this study is a semi-structured interview guide. A set of questions guided the interviews, focusing on the experiences and perspectives of the informants regarding their role as digital leaders essentially focus on their practices, challenges and coping strategies. The interview questions were developed based on the research questions and were reviewed by researchers with extensive experienced in qualitative research.

Data Collection

The researchers sought the permission and consent of the selected informants to be interviewed. The interviews were conducted in-person and the conversation were audio-recorded with consent from the informants.

Data Analysis

The data were analyzed using the reflexive thematic analysis method developed by Braun and Clarke (2019). The analysis process involves six steps: data familiarization, initial coding, mapping and examination of meaningful properties to derive initial general themes, theme review to refine and check the codes and themes, naming and defining of themes, and organization of narratives around each theme. Throughout the analysis process, the researchers continuously read and re-read the transcripts, take notes, and remain mindful of potential biases that influence the qualitative processes. The final output of the study was a written report that includes a detailed description of each theme in relation to the research questions, as well as transcripts of the participants' responses.

Ethical Considerations and Guidelines

As with any research involving human participants, ethical considerations are of utmost importance in this study about digital leaders in higher education institutions. All participants were provided with a clear and detailed explanation of the research objectives and procedures, including the risks and benefits of participation. They were given the opportunity to provide their voluntary and informed consent to participate. The researchers ensured that all information is kept confidential and anonymous. Pseudonyms were used instead of actual names, and any identifying information will be removed from the data. The researchers also ensured that all data collected is securely stored and protected from unauthorized access or use. The researchers treat all informants with respect and dignity, and ensure that their rights and welfare are protected at all times. The informants were given the opportunity to debrief and discuss any concerns or questions they may have about the study.

Establishment of Trustworthiness and Rigour

To establish the trustworthiness of this study on digital leaders and their experiences, several measures were undertaken. Embracing qualitative research methods, the researchers selected the informants purposefully, focusing on experienced digital leaders with significant expertise in guiding schools through their digital transformations. Data collection was carried out through semi-structured interviews, with a comprehensive and varied data set. Third, the data analysis process involved the researchers independently coding and analyzing the data, with regular discussions and checks to ensure the reliability and consistency of the findings. Fourth, member checking was conducted, where the participants were given the opportunity to review the findings and provide feedback to ensure that their perspectives are accurately represented. Lastly, the researchers maintained reflexive journals throughout the research process, documenting their own biases and assumptions and reflecting on their impact on the research. This ensures that the findings are credible and trustworthy, and that the research process is transparent and accountable.

FINDINGS AND DISCUSSION

The informants of this study were seven (7) high school principals from the Cluster 1 Division of Pampanga. They were recognized as digital leaders in their respective educational institutions. These informants were

purposely selected for their exceptional roles in driving their schools through digital transformation particularly in the wake of 21st century learning. These principals serve in secondary schools and had offered diverse perspectives on digital leadership practices. They have administrative experiences ranging from 5 to over 20 years in service. What sets these informants apart is the proactive engagement with educational technologies. They have demonstrated strong competencies in utilizing digital platforms for instruction, communication, supervision and even professional development. They have led school-based initiatives such as adoption of learning management system, digital literacy training for teachers through school learning action cell and integration and promotion of ICT in instruction and administration. Furthermore, these principals have proven their ability to lead their schools through digital transitions. This is evident during the shift to remote and blended learning modalities. Despite of systemic challenges, their insights provided a crucial lens in understanding the practices they implemented, the challenges they encountered and resilience strategies they adopted to bring digital transformation in public secondary education.

Table 1. Emerged themes on the Practices of Digital Leaders in Secondary Education

Themes	Codes	Example Responses	Frequency
Capacity Building and Professional Development	Peer mentoring, SLAC, technical assistance, online training	"We conduct peer mentoring sessions to assist teachers in adapting to new tools."	6 times
Instructional Supervision and Monitoring	Monitoring progress, regular assessment, curriculum alignment	"We assess the impact of technology integration through regular evaluations and curriculum reviews."	5 times
Strategic Technology Integration	Google Classroom, hybrid education, research-based strategies	"We integrate Google Classroom and blended learning techniques to enhance student engagement."	5 times
Advocacy and Digital Leadership Mindset	Leading by example, fostering digital culture, proactive implementation	"As digital leaders, we model best practices by using technology in our own instruction."	4 times

Practices of Digital Leaders in Secondary Education

This overarching theme pertains to the practices of the selected informants on how they manage to bring and sustain change in their schools. As stated in the Change Management Theory, schools undergo a rapid technological transformation. School leaders play a crucial role in leading and sustaining change. In this theory, Kotter (1995) provided the bases on how leaders create an urgency for change, manage resistance and do the changes or innovation. This theory is aligned on the core practices of digital leaders.

A comparative perspective underscores the convergence and divergence with the existing literatures. Yu & Ismail, 2024; Caneva & Pulfrey highlights the role of digital leaders in bringing systematic change in the organization, while local studies as cited in Torato et. al, (2021); Cabral et. al. (2019), emphasize the how these digital leaders foster collaborative and problem-solving strategies such as the School Learning Action Cell. It is notable, that the findings stressed the identified practices may form a more comprehensive view of digital leadership practices than the segmented approaches commonly found in previous studies

Capacity Building and Professional Development

Majority of the informants stated that through School Learning Action Cell, teachers are empowered and encourage to learn new tools which can help them to become more productive as teachers. They engage them on peer mentoring sessions, online trainings and also provide them technical assistance. As mentioned in Cabral et.al. (2019), it was stated in DepEd Order No. 35, s. 2016, the Learning Action Cell, is where teachers are engaging to work collaboratively and provide solutions on the challenges they faced such as learner diversity, inclusion, content and pedagogy, assessment and ICT integration. Digital leadership play a crucial role in promoting capacity building and professional development to integrate effective technology in schools (Caneva & Pulfrey, 2023).

Instructional Supervision and Monitoring

Digital leaders also see to it that they assess and monitor the impact of technology in educational setting, as they drive to promote positive change and improve educational outcomes. Aldawood, et. al. (2019) cited that in digital leadership in educational supervision promotes instructional efficiency and may inspire innovation. Digital supervision and communication emphasizing the need for technology bring significant positive effects on learning outcomes.

Strategic Technology Integration

Another significant practice of the informants is the use of different technology applications in the classroom and office management. These includes DEPED Computerization Program Enhancement, DepEd Learning Management system, the use of blended and hybrid learning tools. Torato et. al. (2021), stated that among the key aspects of digital leadership include policies on the implementation of blended learning approaches and trainings for teachers on the new teaching strategies. The importance of digital leadership has grown and brought significant impact during the time of COVID 19. Challenge on technology integration, reforms on education and roles on leadership continues to evolve (Yu & Ismail, 2024). These are essential in fostering innovation in the educational setting.

Advocacy and Digital Leadership Mindset

As digital leaders, the informants mentioned that they are technology users in their respective schools. To inspire their co-workers, they must possess competencies such as data analytics and strategic thinking (Irfan, et.al., 2024). Moreover, Terania, (2023) mentioned that digital leaders must also have a digital mindset and skills necessary for technology-driven transformation.

Table 2. Emerged theme on Challenges Faced by Digital Leaders in Secondary Education.

Theme	Codes	Example Responses	Frequency (Saturation)
Infrastructure and Resource Constraints	Poor internet, lack of gadgets, insufficient funding	<i>"The availability of internet connection is a challenge."</i> (DL3)	6
Resistance to Technological Change	Age-related reluctance, skepticism	<i>"The challenges of motivating 'seasoned' teachers to embrace the change."</i> (DL7)	5
Professional Development Needs	Training, mentoring, technical support	<i>"Providing comprehensive training sessions that address common issues."</i> (DL6)	5

Challenges Faced by Digital Leaders in Secondary Education

This overarching theme pertains on the challenges faced by the informants in their schools as they strive to integrate technology into the learning environment. These are the infrastructures and resource constraints, resistance to technological change and professional development needs. While such issues are well-documented globally (Gbadebo, 2024; Sudrajat et al., 2022; Oran, 2024), the findings show a distinctive local pattern between resource limitations and resistance toward technological change.

Infrastructure and Resource Constraints

Digital transformation in education encountered significant challenges particularly in developing countries. These includes limited infrastructures and resources, and insufficient funding (Gbadebo, 2024). Poor internet access, and technology-resistant teachers are also some of the obstacles which brought infrastructure limitations and engagement issues (Sudrajat, et. al., 2022). Locally, these limitations are caused by delays in resource procurement, which is not always emphasized in global studies.

Resistance to Technological Change

One of the usual hindrances in digital transformation is the resistance to technological change, as some of the staff lack the digital skills, and also the absence of technological infrastructures (Oran, 2024). Moreover, according to Hamlaoui (2020), highlights the importance of knowing the causes of technology resistance in order to find out what possible remedies can resolve this prominent reason in transforming the schools. In this study, informants noted that resistance is out of fear of failure, lack of confidence, and generational differences among teachers. These are factors that is usually present among the local public schools.

Professional Development Needs

School administrators look for ways on how to address the challenges in implementing technological change in their schools. One of the solutions they have considered is to give seminars/webinars or trainings to their staff. However, it was also considered as one of the barriers, as there is a need for budget and good organizational management (Alde, 2024). In local context, schools often rely on webinars or training sessions making skill acquisition inconsistent. This shows a training gap regarding teacher confidence teachers' capacities and the use of technology.

Table 3. Emerged Theme on Resilience Strategies of Digital Leaders in Secondary Schools

Themes	Codes	Example Responses	Frequency
Adaptation Through Continuous Learning	Self-directed learning, peer support, trial and error	"We keep updating our knowledge through webinars and hands-on experimentation."	6 times
Resilience in Managing Challenges	Problem-solving, emotional resilience, adaptability	"Despite technical failures, we find alternative solutions and remain persistent."	5 times
Collaboration and Support Networks	SLAC sessions, mentorship, partnerships	"We rely on collaboration with colleagues and external experts to navigate challenges."	5 times
Strategic Stress Management	Time management, workload balancing, mindfulness techniques	"We schedule tasks efficiently and take mindful breaks to stay productive."	4 times
Proactive Leadership and Innovation	Leading by example, fostering innovation, risk-taking	"We embrace change and encourage others to explore new digital tools without fear."	4 times

Resilience Strategies of Digital Leaders in the Secondary Schools

This overarching theme is about the resilience strategies of school digital leaders. These strategies were identified as how the informants overcome the challenges encountered in bringing digital changes in their schools. These strategies show how they embrace uncertainty so they can thrive amid the unpredictable change in the educational setting. During the time of digital transformation among the schools in the country, adaptive and flexible leadership is a must as school leaders establish resilient culture. In this study, resilience is not just a fixed personal trait but it emerges as an adaptive strategy that helped these digital leaders to overcome the infrastructural constrains, problems towards technological readiness in the schools. As seen in the local perspective, the Department of Education offered systemic reforms to rapidly rolled out these strategies.

Adaptation Through Continuous Learning

School leaders play a crucial role in fostering change and innovation. As cited by Wulandari & Pudjiarti (2024), they must know how to introduce culture of experimentation by means of continuous learning in order adapt to the challenges brought by the digital trends. As majority of the informants mentioned that they became adaptive by keeping abreast with the new trends in technology and that is through attending webinars or trainings. These school leaders also looked forward on how to apply what they have learned in these webinars.

Resilience in Managing Challenges

Resilient digital leaders are equipped in managing challenges. Usually, they deal with these problems based from their experiences and maintain positive outlook despite of failures and uncertainties. They can easily adapt to the changing environment by accepting the fact that out of failures and success, experiences brought more opportunities for them to grow and adapt to changing circumstances (Kayes, et.al., 2017). Moreover, Kaufman (2018), cited that digital leaders who have optimistic outlook has a different approach in problems by having creative and innovative mindset which can help them lead more effectively in a changing organizational practice brought by innovation.

Collaboration and Support Networks

According to Wullschleger et. al. (2023), through collaboration, school organizations may enhance school improvement by promoting cooperation among faculty members. In DepEd schools, they have organized the School Learning Action Cell. It is a school-based program or approach designed to provide the needs of the teachers and staff. These are also collaborative learning sessions designed to provide interventions on the problems of the school (Gamboa, 2023).

Strategic Stress Management

To lessen the problems, the informants see to it that they balance the distribution of tasks and workloads in their schools. The digitalization of work also brings risk factors such as distributed team work, mobile work, constant availability expectations, and inefficient technical support, which can increase stress. Digital leaders tend to promote stress and health leadership which can buffer these effects and show support to employees who need technical support (Bregenzer & Jiménez, 2021). As the workplace becomes increasingly digitalized, leaders must adapt their behaviors to effectively support employee well-being and manage the unique challenges of virtual and work from home environments.

Proactive Leadership and Innovation

The informants claimed that they have to lead by example. They must adapt to the new system in order to promote and bring change in their schools. As mentioned in Murniashi (2023), proactive leaders fully mediate the relationship of transforming and innovation in work. It enhances organizational effectiveness by encouraging their staff to voice out their concerns in bringing technological change in their schools.

These findings reveal that resilience among secondary school digital leaders is both practice and sensitive - oriented. These leaders may have adapted the global concepts of digital leadership into local viable ways that will resolve the constraints and may lead to opportunities in the Philippine public school system. Implementing these can accelerate technology adoption, more consistent access to digital resources, and engage teachers and students to become more active and elevate their performance. The integration of adaptive leadership with innovative practices emphasizes the critical role of resilience in pursuing sustainable digital transformation in secondary education.

Mapping of the Digital Leadership Practices, Challenges and Resilience Strategies to Kotter's Change Management Framework

Conceptual Framework: Mapping Findings to Kotter's 8-Step Change Model



The Kotter's Change Management theory provides a structured lens about the practices, challenges and resilience strategies in secondary education. In the early stages of Kotter's framework, the identified leadership

practices in this study are aligned particularly in the establishment of sense of urgency and formation of guiding coalitions. The initiatives on the development and communication of the shared vision and empowerment of the stakeholders helps to reduce the barriers on the implementation. A critical component in sustaining momentum for change is to recognize and reflect of the success of incremental change. The challenges faced by the digital leaders ranged from inadequate infrastructures and resistance to change. These give emphasis on the relevance of Kotter's emphasis on the vision reinforcement and systematic barrier removal. While the resilience strategies resonate with the later stages of the Kotter's model. These strategies may help to overcome the immediate challenges. The mapping demonstrates that effective digital leadership in education is an iterative and adaptive cycle as it aligns with the change management principles.

CONCLUSIONS

The study revealed some of the secondary schools' digital leaders' practices in carrying out their roles such as capacity building, instructional supervision, technology integration, and a proactive digital mindset. The study emphasized that digital leadership of the secondary educators goes beyond the technical, it is dynamic and transformative in nature and that secondary digital leaders aim is to reshapes school system to meet the demands of the rapidly evolving digital landscape.

This study also emphasize that the digital leaders are key drivers of change, shaping school system and teaching practices. Major challenges such as inadequate infrastructure, resistance to technology, and limited training—especially in under-resourced schools were identified. Addressing these issues requires coordinated efforts through school-level initiatives and strong policy and financial support. Continuous learning, managing stress, working with others, and being proactive help digital leaders handle challenges and lead effectively in changing school environments. Through combination of emotional awareness with innovation, digital leadership is seen as a forward-looking approach that supports long-term improvement, especially in schools with limited resources.

LIMITATIONS

The study primarily focuses on secondary school digital leaders, which may limit the applicability of its findings to primary or higher education settings. While emphasizing capacity building and technology integration, it does not thoroughly examine how infrastructural and resource constraints influence leadership effectiveness. Although staff training is identified as an ongoing challenge, the study offers limited insights into sustainable, long-term solutions for resistance to technological change. The coping strategies, such as continuous learning and resilience, may not be equally effective across different school environments or cultural contexts. Furthermore, the research's approach lacks empirical data on the tangible outcomes or impacts of digital leadership initiatives on student achievement and overall school performance.

RECOMMENDATIONS

Based from the findings of the study the following are recommended:

1. Digital leaders can foster digital equity by creating partnerships among respected organizations about digital leadership to address access barriers and promote digital literacy through training and professional learning. They can also support innovation by adapting resources and encouraging a culture that embraces risk-taking with digital technologies.
2. Secondary schools and the digital leaders should invest in comprehensive professional development programs that emphasizes technology integration and collaborative teaching to encourage innovation and improvement.
3. To help digital leaders in education, the Department of Education should invest in infrastructure, promote technology adoption by highlighting its benefits and managing change effectively, and enhance training through professional development programs and support systems. These efforts will ensure that schools have the necessary resources and expertise to integrate technology successfully.
4. It is further recommended to the Department of Education to implement infrastructure upgrades to its schools, peer technology mentorship programs to eliminate resistance by pairing a digitally skilled teachers to those who lack the skills, and promote continuously ICT training integration. It is also suggested that schools must create a digital transformation roadmap. This digital transformation roadmap will be the visual representation on how the school transform from a regular to a digital school. This will also reflect the needs of innovation on the future years. This shall be properly monitored and assessed.

5. Encourage a culture of collaboration among faculty members through structured support networks and initiatives, allowing teachers to share experiences, best practices, and strategies for effectively implementing new technologies.

REFERENCES

- Abidina, Z., Heddyb., Astutic. Y. G. A., Adhad. S., Asroric. K., Subrotof. D. E., Zaharag. V. M., Kahpih. H. S., Purwanto. A., Julyantoj. O. & Azizik. E. (2020) Effect of Transformational and Transactional Leadership Toward Iso 22000:2018 Food Safety Certified Company Performance. *Systematic Reviews in Pharmacy*, 11 (7), 529-538. <https://doi.org/10.31838/srp.2020.7.77>
- Acebuche, A. (2023) Digital Leadership Towards Effective School Management: A Systematic Review, *Psychology and Education: A Multidisciplinary Journal* 16, 174-191 <https://doi.org/10.5281/zenodo.10451815>
- AlAjmi, M. (2022) The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Kuwait, *International Journal of Educational Research*, Volume 112, <https://doi.org/10.1016/j.ijer.2022.101928>.
- Aldawood, H., Alhejaili, A., Alabadi, M., Alharbi, O., & Skinner, G. (2019). Integrating Digital Leadership in an Educational Supervision Context: a Critical Appraisal. *2019 International Conference in Engineering Applications (ICEA)*, 1-7. <https://doi.org/10.1109/CEAP.2019.8883484>
- Alde, A. (2024). Digital Leadership and School Management Capabilities of School Administrators and Teachers Digital Teaching Performance: Basis for Professional Development Program. *International Journal for Multidisciplinary Research* 6. <https://doi.org/10.36948/ijfmr.2024.v06i03.23615>
- Antonopoulou, Hera & Halkiopoulos, Constantinos & Barlou, Olympia & Beligiannis, Grigorios. (2021). Associations between Traditional and Digital Leadership in Academic Environment: During the COVID-19 Pandemic. *Emerging Science Journal*. 5. 405-428. <https://doi.org/10.28991/esj-2021-01286>.
- Bolte S., Dehmer J., Niemann J. (2018), Digital Leadership 4.0. *Acta Technica Napocensis. Series: Applied Mathematics, and Engineering* 61(4), 637-646 <https://atna-mam.utcluj.ro/index.php/Acta/article/view/1102>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597. <https://doi.org/10.1080/2159676X.2019.1628806>
- Bregenzer A, Jimenez P Risk Factors and Leadership in a Digitalized Working World and Their Effects on Employees' Stress and Resources: Web-Based Questionnaire Study. *Journal of Medical Internet Research* 23(3) <https://doi.org/10.2196/24906>
- Bresciani, S., Ferraris, A., Romano, M., and Santoro, G. (2021). "Digital Leadership," in *Digital Transformation Management for Agile Organizations: A Compass to Sail the Digital World*, (Bingley: Emerald Publishing Limited). 97–115. <https://doi.org/10.1108/978-1-80043-171-320211006>
- Büyükbeşe, T., Dikbaş, T., Klein, M. & Batuk Ünlü, S. (2022). A Study on Digital Leadership Scale (DLS) Development. *Kahramanmaraş Sütçü İmam Üniversitesi Sosyal Bilimler Dergisi*, 19 (2), 740-760. <https://doi.org/10.33437/ksusbd.1135540>
- Cabral, J., Millando, M. (2019). School Learning Action Cell (SLAC) Sessions and Teachers' Professional Development in Buhaynasapa National High School. *Ascendens Asia Journal of Multidisciplinary Research Abstracts*. <https://ojs.aaresearchindex.com/index.php/AAJMRA/article/view/8463>
- Caneva, C. & Pulfrey, C. (2023). Digital Capacity Building in Schools: Strategies, Challenges and Outcomes. *International Journal of Digital Education and Communication*, 13, 45-64 <https://doi.org/10.52358/mm.vi13.394>
- de Araujo, L. M., Priadana, S., Paramarta, V., and Sunarsi, D. (2021). Digital leadership in business organizations. *Int. J. Educ. Adm Manag. Leadersh.* 2, 45–56. <https://doi.org/10.51629/ijeamal.v2i1.18>
- Dela Rosa, M. A. (2022). Digital Leadership and Teachers' Performance: Basis for a Proposed Training Program. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(12), 2669-2685. <https://doi.org/10.11594/ijmaber.03.12.19>
- Ehlers U. (2020). Digital Leadership in Higher Education. *johepal*. 1(3), 6-14. <https://doi.org/10.29252/johepal.1.3.6>
- El Attoti, I., Van Ee, J., Joku S., De Waal, B. M. E. (2019). How can Digital Leadership guide the Customer Journey? An Exploratory Study, *ECMLG 2019 15th European Conference on Management, Leadership and Governance*, Berlin, 475-484 https://www.researchgate.net/publication/358729671_Digital_Leadership_A_Systematic_Conceptual_Literature
- Engesmo, J., & Panteli, N. (2021). Digital Leaders and the Transformation of the IT Function. *Scandinavian Journal of Information Systems*, 33(1), Article 4. <https://aisel.aisnet.org/sjis/vol33/iss1/4>
- Enyesil, K. (2021) Digital Leadership, Leadership Paradigm of the Digital Age: A Conceptual Framework. *Equinox Journal of Economics Business and Political Studies*, 8(1), 98-112. <https://doi.org/10.48094/equinox885320>

- Erickson, G. (2017). New Methods of Market Research and Analysis. <https://doi.org/10.4337/9781786432698.00008>
- Gamboa, M. (2023). Implementation of School Learning Action Cell (SLAC) and its Monitoring and Evaluation Strategies Employed by Teachers and School Head in the Division of Occidental Mindoro, Philippines. *International Journal of Research Publication and Reviews* 4(11). 2157-2161 <https://doi.org/10.55248/gengpi.4.1123.113119>
- Gbadebo, A. (2024). Digital Transformation for Educational Development in Sub-Saharan Africa. *International Journal of Social Science and Religion (IJSSR)* 5 (3):397-418. <https://doi.org/10.53639/ijssr.v5i3.262>
- Gilson, L. L., Maynard, M. T., Jones Young, N. C., Vartiainen, M., and Hakonen, M. (2015). Virtual teams research: 10 years, 10 themes, and 10 opportunities. *J. Manag.* 41, 1313–1337. <https://doi.org/10.1177/0149206314559946>
- Hamlaoui, S. (2020). Teachers' Resistance to Educational Change and Innovations in the Middle East and North Africa: A Case Study of Tunisian Universities. Springer VS, Wiesbaden. <https://doi.org/10.1007/978-3-658-31160-5>
- Highton, M. (2023). Biases and Power: Understanding the Experiences and Perceptions of Workplace EDI amongst Digital Leaders in Higher Education. *Journal of Perspectives in Applied Academic Practice*, 11 (1), 3-9, <https://doi.org/10.56433/jpaap.v11i1.540>
- Irfan, B., Djabbari, M., Herianto, D., Yanto, E. & Faisal, A. (2024). Digital Leadership: Its Influence on Driving Digital Policy Adoption in the Public Sector. *Perkembangan Kajian Sosial*, 1(2), 111-118. <https://doi.org/10.69616/perkasa.v1i2.37>
- Kaufman, S. B. (2018). Self-Actualizing People in the 21st Century: Integration With Contemporary Theory and Research on Personality and Well-Being. *Journal of Humanistic Psychology*, 63(1), 51-83. <https://doi.org/10.1177/0022167818809187>
- Kayes, A. B., Kayes, D. C., & Kolb, D. A. (2005). Experiential learning in teams. *Simulation & Gaming*, 36(3), 330–354. <http://dx.doi.org/10.1177/1046878105279012>
- Kotter, J. (1995). Leading Change. Why Transformation Efforts Fail. *Harvard Business Review*, 73 (2), 59-67
- Larson, L. & Miller, T. & Ribble, Mary. (2010). 5 considerations for digital age leaders: What principals and district administrators need to know about tech integration today. *Learning & Leading with Technology*. 37. 12-15.
- López-Figueroa, J. C., Ochoa-Jiménez, S., Palafox-Soto, M. O., & Sujei Hernandez Munoz, D. (2025). Digital Leadership: A Systematic Literature Review. *Administrative Sciences*, 15(4), 129. <https://doi.org/10.3390/admsci15040129>
- McLeod, S. (2015). The Challenges of Digital Leadership. <https://www.nais.org/magazine/independent-school/winter-2015/the-challenges-of-digital-leadership/>
- Murniasih, F. (2023). The Role of Proactive Personality on Transformational Leadership and Innovative Work. <https://doi.org/10.26539/pcr.511665>
- Behavior. *Psychocentrum Review*, 5(1) Nugroho, B. S., Widdah. M. E., Hakim. L., Nashirudin. M., Nurlaeli. A., Purnomo. J. H., Aziz. M., Adinugraha. H. H., Sartika. M., Fikri. M. K., Mufid. A., Purwanto. A. & Fahlevi. M. (2020) Effect of Organizational Citizenship Behavior, Work Satisfaction and Organizational Commitment toward Indonesian School Performance. *Systematic Reviews in Pharmacy*, 11 (9), 962-971. <https://doi.org/10.31838/srp.2020.9.140>
- Oberer, B., Erkollar A. (2018). Leadership 4.0: Digital leaders in the age of industry 4.0. *International Journal of Organizational Leadership* 7(4), 404-412. <https://doi.org/10.33844/ijol.2018.60332>
- Oran, G. (2024). Digital Transformation and Digital Leadership in Higher Education Institutions: Insights from Literature. *International Journal of New Approaches in Social Studies*, 8(2), 198-213. <http://dx.doi.org/10.38015/sbyy.1587587>
- Pratama, M. & Kurniady, D. (2021). Influence of Digital Leadership Models on the Performance of Educators and Educational Personnel in the COVID-19 Pandemic in the First Middle School. *Advances in Social Science, Education and Humanities Research* Volume 526 <http://creativecommons.org/licenses/by-nc/4.0/>
- Puliwarna T, Pantja D, Tanti, E. (2023) The Effect of Digital Leadership, Organizational culture, digital competence and organization's commitment on Organizational Performance: Information Technology System in Indonesian Navy. *International Journal of Scientific Research and Management*. Vol. 11. Issue 4. <https://doi.org/10.18535/ijssrm/v11i04.em06>
- Shah, S.S., Patki, S.M. Getting traditionally rooted Indian leadership to embrace digital leadership: challenges and way forward with reference to LMX. *Leadersh Educ Personal Interdiscip J* 2, 29–40 (2020). <https://doi.org/10.1365/s42681-020-00013-2>
- Sudrajat, D., Arif Rinaldi, D., Nining, R., Pandu Adi, C., Purniadi, P. (2022). Creating Digital Literature through Transformational Leadership; Challenges and Solutions. *Jurnal Manajemen Pendidikan Islam* 6(4) <https://doi.org/10.33650/al-tanzim.v6i4.3982>

- Terania, L. (2023). A Review on Developing Digital Leadership: Assessing Strategies and Implications to Generate Links for Promoting Digital Leadership in Higher Education Institutions. *Journal of Interdisciplinary Perspectives*, 1(4), 36-41. <https://doi.org/10.69569/jip.2023.0028>
- Torrato, J., Aguja, S., & Prudente, M. (2021). Examining School Administrators' Technology Integration Leadership. *The International Journal of Learning*, 38-42. <https://doi.org/10.18178/IJLT.7.1.38-42>
- Wasono, L. W., and Furinto, A. (2018). The effect of digital leadership and innovation management for incumbent telecommunication company in the digital disruptive era. *Int. J. Eng. Technol.* 7, 125–130. <https://doi:10.14419/ijet.v7i2.29.13142>
- Wulandari, D. & Pudjiarti, E. (2024). Kepemimpinan Adaptif Dalam Dunia Digital: Mengatasi Tantangan Dan Peluang Di Era 4.0. (2024). *Transformasi: Journal of Economics and Business Management*, 3(1), 207-220. <https://doi.org/10.56444/transformasi.v3i1.1682>
- Wullschleger, A., Vörös, A., Rechsteiner, B., Rickenbacher, A. & Merki, K. (2023). Improving teaching, teamwork, and school organization: Collaboration networks in school teams, *Teaching and Teacher Education* Vol. 121 <https://doi.org/10.1016/j.tate.2022.103909>
- Yu, K. & Ismail, A. (2024). A Bibliometric Investigation of Leadership and Technology Integration in Education: Trends and Insights over Three Decades. *Multidisciplinary Reviews* 7(8) <https://doi.org/10.18178/IJLT.7.1.38-42>
- Yusof, Mat & Mohd Yaakob, Mohd Faiz & Ibrahim, Mohd. (2019). Digital Leadership Among School Leaders in Malaysia. 10.35940/ijitee.I8221.078919.