



Feasibility Study For Using Digital Leadership In Primary Schools

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Abstract:

This study of considers the feasibility of using digital leadership in Iranian primary schools. Purposeful sampling was used to obtain a sample of primary school principals in Shahrood, Iran with at least 5 years experience. Semi-structured interviews were used for data collection, Grounded theory method with the Strauss and Corbin coding approach was used for data analysis. Results showed that digital leadership in primary schools had 114 concepts (open codes) falling into 29 categories (axial codes) and formed 6 dimensions including causal conditions, contextual conditions, intervening conditions, central phenomenon, strategies and consequences. Results showed that the use of digital leadership in primary schools is feasible due to the ability and high interest of principals and staff. Causal conditions include the level of ability and approach of educators, digital revolution, culture building, reforming the educational structure and policies, training and development of human resources and attracting capital. Also, the context include digital strategies, digital educational platform, networking, financial and human resources, digital content and management dashboard. On the other hand, intervening conditions include economic, structural, political, cultural and educational fields in the way of using digital leadership in elementary schools, that should be dealt with effective solutions and strategies including supportive, educational, collaborative, managerial and cultural strategy. Also, the use of digital leadership can improve teaching and learning, promote creativity, update and develop, innovate and improve the quality of education and change in educational culture and leadership patterns. Finally, a model was presented based on the findings of this study.

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Introduction

Today, under the influence of the digital age, organizations and organizational structures are increasingly changing digitally, and digital transformation, as a driving force, affects the future success of organizations. This change covers all fields of business, organization and even governments and provides the possibility to see the future from a new angle (Eryesil, 2021: 98). Along these lines, the world's educational systems must also prepare for the fourth industrial revolution that is currently taking place, as this revolution will shape the labor market through advances in the digital economy, robotics, artificial intelligence, and automation. In addition, the widespread expansion of information and communication technologies in recent years has forced educational institutions to undergo digital changes in order to adapt to the latest technologies (Karakose, Polat and Papadakis, 2021: 2). Therefore, educational institutions must constantly be prepared for the challenges of the digital world. Also, the changes in the field of education must be in line with the existing situation so that students will be equipped with the necessary digital skills to progress in the teaching and learning process that will replace existing methods. For this reason, leaders of educational institutions need to always have effective planning to adapt to the challenges and changes of the digital age and go beyond the limitations of traditional education

(Frolova, Rogach and Ryabova, 2020: 314).

Based on this, Iran's education system, as a public institution that has an important task in the growth and cultivation of the country's talents, needs to keep pace with digital developments. the fundamental transformation of education is an important policy in the education system of the country, which moves in line with the vision document 2025 for the realization of a developed Iran with the first economic, scientific and technological position in the region. For this reason, in order to correct the many defects of the current education system, a basic transformation in its management is necessary. These changes should start from the top of the organizational hierarchy, and managers of educational institutions should take the lead in the direction of digitalization (Molazahi et al., 2021: 149). Therefore, in the digital era, leaders are very important as one of the essential elements, in the success of schools (Yosof, Yaakob and Ibrahim, 2019: 1481) and in general in the progress of society (Rohl, 2022: 70) and it is necessary is to develop their digital literacy skills and develop innovative plans for the safe and effective use of technology (Ribble and Miller, 2013: 137; Baydar, 2022: 32). However, the need for application of digital leadership in the country's education system is indisputable as the education system adapts to the new digital world. In this regard, according to Rohl (2022: 71),

digital leadership is a dynamic combination of mindsets, behaviors and skills that are defined to change and improve school culture through the strategic use of technology. On the other hand, Zhong (2016: 28), provided a more precise definition of digital leadership in the field of education and defined it as the intelligent use of educational technology, including digital devices, services and resources, to guide and inspire the school's digital transformation process. It describes creating and sustaining a digital learning culture, supporting technology-based professional development, and creating a digital organization. From this perspective, digital leadership is not just the use of technology, but a strategic view of school culture that focuses on participation and success. For this reason, creating a digital culture to respond to the needs of today's learners begins with effective school leadership (Aksal, 2015: 78). Therefore, future challenges require the reflection that all principals and teachers should have an open mind on the ability of their organization to adapt to changes and

developments caused by the rapid development of technology (Thannimalai and Raman, 2018: 202). From this point of view, so far experts have identified five basic dimensions of digital leadership, which are: 1) excellence in professional performance, 2) ideal leadership, 3) learning culture of the digital age, 4) digital citizenship and 5) systematic improvement (AlAjmi, 2022: 2), (Gilli, Nippa and Knapstein, 2022: 2), (Hamzah, Nasir and Wahab, 2021: 217), (Ates and Ozlem, 2021: 171), (Karakose, Polat and Papadakis, 2021: 3), (Hamzah, 2021: 3), (Akcil et al, 2019: 324), (Thannimalai and Raman, 2018: 209), (Yorulmaz and Can, 2016: 49), (Zhong, 2016: 2) and (Gorgulu, Kucukali and Sukru, 2013: 58). However, the review of the sources related to the current research showed that despite the importance of this issue, little research has been done in the field of digital leadership in schools, especially in line with the current research. Therefore, a brief review of related research in this field is presented in Table 1.

Table 1: Overview of relevant studies

Row	Researchers/ year	The purpose of the research	Research method/ sample	findings
1	Thannimalai and Raman (2018)	Identifying the level of digital leadership of principals and five structures of visionary leadership, learning culture of the digital era, excellence in professional practice, systemic improvement and digital citizenship in schools.	Systematic random sampling/ 90 principals and 645 teachers	There is a significant relationship between the digital leadership of principals and the competence of teachers in the integration of technology and education. Also, professional development has a significant effect on the relationship between these two variables. The importance of professional development with an emphasis on information and communication technology should be done for school principals so that they can become digital leaders and encourage teachers to integrate technology in the classroom to prepare students for the digital age.
2	Sedighi Gilani (2019)	Providing a framework of capabilities required for leadership success in the digital age	Questionnaire and path analysis and factor analysis	The digital mental framework includes five areas of strategic focus, leadership basis, implementation structure, collaboration level, and the role of information and learning. Also, digital leaders must have the ability to create cooperation and co-creation through customers and other colleagues of the organization so that they can succeed in innovation and providing products and services needed by customers.
3	Lindqvist and Pettersson (2019)	Investigating how school leaders perceive digitization and the digital competence needed in Swedish schools	Qualitative method/ 32 principals	The role of the school leader, as a complex task, has become more complicated as a result of digitalization, and school administrators consider digitalization to be a broad and complex concept that includes technical, educational, administrative, and organizational challenges at all levels of the school organization.
4	Quddus et al . (2020)	Investigating the impact of ecological, servant and digital leadership style on	Quantitative method/ 222 lecturers from Banten University	Digital leadership significantly positively affects the performance of universities.

		university performance		
5	Sharifian, Bab al-Hawaeji and Abazari (2021)	Presenting the digital identity model in the smart government in Iran's government institutions with the mediating role of digital transformation leadership	Mixed approach/ 20 experts and 384 government employees	The digital identity in the smart government is effective in the country's government institutions with the mediating role of leading the digital transformation
6	Rahmati Kohrorudi et al (2021)	Providing a framework to explain the competencies of digital leaders with metacombination method	Meta-synthesis - Criterion-oriented purposive sampling/ 40 valid articles	The identified dimensions are: "emotional intelligence, social intelligence, competitive insight, harmonization of technical-social resources, technological intelligence, leadership of organizational learning and innovation, user-oriented and cultural insight."
7	Masrur (2021)	Investigating digital leadership to improve the teaching competence of university English teachers in Samarida	Quantitative method/ 130 English teachers	Digital leadership actually has a significant impact on teachers' teaching abilities. On the other hand, this study showed that the educational competence of professors is also improved when leaders at different levels are able to provide good digital leadership models in their daily management.
8	AlAjmi (2022)	The impact of digital leadership on teacher competence in technology integration and education during the coronavirus pandemic in Kuwait	Quantitative method/ 113 managers and 404 teachers	Digital leadership among school principals has had a positive impact on teachers' technology integration during the coronavirus pandemic.
9	Obadimeji and Oredein (2022)	The effect of digital leadership and communication styles on the job performance of public primary school teachers in Nigeria	Description of survey type/ 643 teachers	Digital leadership and communication styles have a positive effect on the job performance of public elementary school teachers, which can be a knowledge to the existing theories.

10	Mohamed (2022)	Investigating employee performance under the influence of digital education, digital leadership and mental well-being during the coronavirus pandemic	Quantitative method / 300 university employees	Digital leadership has a positive effect on job motivation and improving employee performance. On the other hand, according to the findings, digital leadership is a factor that should be considered by organizations to maintain employee motivation and maintain optimal employee performance, especially during the coronavirus pandemic, while working online.
11	Tamar et al (2023)	Digital leadership: Managing school virtual spaces in times of crisis	Qualitative method/ 10 female teachers	Data analysis yielded four main themes: the new virtual space in the school organization, the role of principals and teachers in managing virtual spaces, opportunities in managing virtual spaces, and challenges and problems. The findings also highlighted the importance of a more complete understanding of the broader digital leadership role of managing virtual school spaces.
13	Ahmadi et al (2023)	Investigating the Role of Digital Leadership and Technology Flexibility in Intelligent Decision-Making with the Mediation of Intellectual Ethics and Team Reception	quantitative method/ 320 primary managers	The results showed that digital leadership has a direct impact on team acceptance, intellectual ethics and intelligent decision making. In addition, digital leadership has an indirect effect on intelligent decision-making through team adoption and intellectual ethics.
12	Alif and Sari (2023)	The effect of communication and digital leadership on the performance of employees in Bergen Hasan Basri Hospital	Quantitative method/ 399 employees of Brigan Hasan Basri Hospital	Digital leadership, communication and staff performance at Bergen Hassan Basri Hospital are generally very high. Also, digital leadership and communication simultaneously and partially have a significant effect on the performance of Brigen Hassan Basri Hospital by %6/64 and %4/35 under the influence of another variable.

Research indicates that most organizations around the world try to improve, innovate and prepare their employees for effective performance in dynamic environments by reforming

their system. In the digital age, educational leaders are considered as one of the most important elements in the success of schools. Therefore, the role of educational leaders should

change in harmony with society. digital leadership among school principals has a positive effect on the integration of teachers' technology, teachers' job performance and overall school effectiveness, as shown by Thannimalai and Raman (2018), Lindqvist and Pettersson (2019), AlAjmi (2022), Obadimeji and Oredein (2022) and Tamar et al (2023). However, it is obvious that previous research, considering a framework for digital leadership competencies, examining the effects of digital leadership skills, and using quantitative approaches, have only focused on a specific aspect of digital leadership, while other important elements have been less studied. Therefore, a brief and in-depth study of principals' perceptions and opinions regarding various dimensions of digital leadership in the education system in general has not been investigated. Therefore, this has become one of the most important gaps in this field, and considering its vital importance, we decided to research its feasibility in order to fill this research gap, applying digital leadership in primary schools. It is hoped that, the results of this research can be used as a practical guide for policymakers and educational planners to create suitable infrastructure for the use of digital leadership styles by school administrators. Also, the results of this research can provide a reliable basis for the decisions and educational plans of school administrators. The consequences of these changes will ultimately lead to increasing the ability

of students and training skilled and capable citizens in the field of continuous learning. Now, considering the issues above, the main question of this research is how elementary schools can implement digital leadership?

Research method

In this qualitative research the purposeful sampling method was used for selecting participants. Primary school principals in Shahrood, Iran, with at least five years experience participated in the study. Semi-structured interviews were conducted for data collection. After conducting 19 interviews, the data reached theoretical saturation. All interviews were then transcribed and coded using Strauss and Corbin's coding method, namely open , axial and selective coding. For more accuracy in coding and categorizing the data, Maxqda has been used.

Findings

In this study, out of 19 participants, 11 were men and 8 were women with work experience ranging from five to fifteen years. At the first stage of study, our goal was to identify the important and significant patterns, relationships and concepts in the data through the coding process and finally to obtain a model based on findings. For this purpose, the data were coded through three stages of open, axial and selective coding. In the open coding phase, first, the data from the interviews were carefully coded line by line. This step resulted in 383 initial codes, which were reduced to 114 refined codes after identifying and removing duplicate and

redundant codes. In the axial coding stage, one open coded category, namely digital leadership was selected and placed at the center of the process being explored. Further, similar and related concepts were categorized and placed in a group as a part of the model. as the components of The selective coding as the final stage focused on main

categories or themes and the connections between them according to the model suggested by Strauss and Corbin (1988). The main goal at this stage is to identify patterns and basic concepts that have the greatest impact in the interview data. Table 2 shows core categories and themes resulted from three-stage coding process.

Table 2: Core categories and themes

Categories	Subcategories	Themes
Causal conditions	Level of ability and desire	1) high ability and high desire, 2) low ability and high desire, 3) high ability and low desire, 4) low ability and low desire.
	digital revolution	1) Reviewing the views of educational leaders, 2) Formulating a new perspective, 3) Creating a sense of the need for change in all elements of the educational organization, 4) Creating a desire to change and improve the current situation.
	Cultivation	1) digital attitude, 2) creating understanding and interaction between teachers and administrators in the implementation of the plan, 3) developing digital literacy in the family and school, 4) holding discussions for the implementation of the plan, 5) drawing parents' attention to the importance of the plan, 6) explaining and Explaining the importance of the plan to the community, 7) turning the plan into a national program, 8) implementing the pilot plan, 9) paying attention to the needs of teachers and students in using technology
	Reforming the structure and educational policies	1) Granting permission and freedom of action to educational executives, 2) Flexibility in educational policies, 3) Creating a suitable educational environment, 4) Evaluating the performance of managers with points, 5) Intelligent planning to achieve the desired goals, 6) Revision of the transformation document. Fundamental, 7) Revision of teaching and learning methods.
	Training and development of human resources	1) selecting and developing digital leaders, 2) increasing employee motivation, 3) identifying capable teachers and those who resist, 4) holding digital literacy development workshops, 5) training according to the role of people in the team.
	Fundraising	1) financing, 2) providing infrastructure, 3) communicating with investors.
Context	Digital strategies	1) Determining digital goals and planning for their development, 2) Creating appropriate policies and strategies for using technology in the education process, 3) Training and upgrading the digital skills of managers and teachers in order to improve the quality of education, 4) Developing digital educational content.
	Digital educational platform	1) advanced and standard educational environment, 2) creation of electronic report card portal, 3) design of electronic attendance and absence devices, 4) design of electronic library.

	Networking	1) Designing a feedback portal to parents of students' academic performance, 2) Designing a communication portal between the school and parents to provide feedback.
	Financial, material and human resources	1) providing sufficient financial and economic resources for the development and improvement of the digital educational environment in schools, 2) providing minimum digital communication equipment for families at home, 3) expertise and skills of human resources, 4) managers as a source of knowledge.
	Digital content	1) being equipped with electronic educational resources and software, 2) electronic teaching and learning, 3) designing electronic educational progress worksheets, 4) designing electronic portfolios.
	management dashboard	1) Access to up-to-date information to improve managers' decision-making, 2) Providing a portal to display the overall status of the organization's performance at a glance.
The central phenomenon	Leadership model	1) developing a vision, 2) pioneering in the use of new technologies, 3) team building ability, 4) sense of responsibility, 5) regular evaluation and monitoring of performance, 6) having patience in facing challenges.
	Cognitive skills	1) strategic and systemic thinking ability, 2) problem solving skills and logical decision making, 3) critical thinking ability.
	Communication skills	1) the ability to communicate and interact effectively with others, 2) the ability to motivate and increase the confidence of colleagues and personnel, 3) the ability to communicate with investors, 4) the ability to negotiate and justify parents, colleagues and superiors.
	Change management	1) flexibility and the ability to accept new changes in management methods, 2) intelligent use of resources and evaluating their effectiveness, 3) conflict management and cultural diversity in the organization.
	Knowledge of technology	1) constant updating of digital knowledge and information, 2) mastery of digital educational technologies and their effective implementation, 3) management of digital knowledge and information.
Intervening conditions	Economic and infrastructure fields	1) low education per capita for equipping schools with technology, 2) high costs in implementing the plan, 3) high ancillary costs and repairs, 4) limited financial ability of some families in providing the minimum technological facilities, 5) wear and tear of some schools, 6) Not having a suitable and sufficient substrate.
	Structural contexts	1) lack of appropriate policies and vision determination in the field of digital leadership in schools, 2) lack of education support in providing permission for the implementation of innovative projects, 3) centralized education system, 4) weakness in providing appropriate digital infrastructure, 5) large number of schools.
	Political contexts	1) Non-acceptance of changes in the philosophy and underlying concepts of education in education, 2) Lack of sufficient support and support from government officials for innovative plans, 3) The approach of the program and budget organization regarding the consumerism of the education system, 4) Legal restrictions for the use of some Technologies in teaching.
	Cultural and social contexts	1) different cultural and social attitudes among different regions towards technology-based education, 2) lack of discussions to introduce and implement the project, 3) lack of knowledge and

		information about the results and effects of the project, 4) great desire to maintain the status quo.
	Educational fields	1) lack of appropriate and sufficient educational resources and equipment, 2) lack of training courses and practical training for teachers in the field of digital technologies, 3) lack of appropriate standards to evaluate the technology skills of managers and teachers.
Strategies	Supportive measures	1) Providing financial support from the government to implement the plan in schools, 2) Cooperating with higher authorities to receive more support for implementing the plan in schools, 3) Providing incentive plans to attract those interested in implementing the plan in schools.
	Educational measures	1) Reforms and changes from above by the government in order to improve the performance of schools, 2) Providing the necessary training to managers and transferring it to the personnel in the implementation of the plan, 3) Rating the managers based on their competence and ability to implement the plan.
	Collaborative measures	1) The cooperation and participation of officials and managers with the project implementation agents to improve the performance of schools, 2) The cooperation and participation of investors and donors in the implementation of the plan in schools, 3) The participation of parents in the implementation of the plan and preparation to deal with possible resistance, 4) Accompanying and Participation of all personnel with managers in the implementation of the plan
	Management measures	1) intelligent selection of competent and committed managers to implement the plan, 2) flexible ability of managers to implement the plan.
	Cultural measures	1) Paying attention to cultural changes in the society, 2) Studying and investigating the cultural and economic status of parents.
Consequences	Organizational implications	1) improving the level of teaching and learning, 2) diversity in education, 3) creativity and collaboration, 4) updating and development.
	Transorganizational consequences	1) Innovation in the educational system, 2) Improving the quality and efficiency of the educational system, 3) Transformation in educational culture and leadership patterns.

As shown in Table 2 114 themes and 29 subcategories and 6 categories resulted from data analysis which are discussed next.

Causal conditions

Causal conditions are a set of conditions and events that affect the central phenomenon. Based on the views of participants, six categories, including the level of ability and desire, digital revolution, culture building, reforming the structure and educational

policies, training and development of human resources and attracting capital were identified as the causal conditions.

Context

The contextual conditions refer to the subcategories that are necessary for the application of digital leadership in primary schools. These subcategories are considered as basic factors and conditions for carrying out activities and implementing digital strategies in primary schools. Based on the analysis

of findings from interviews with school principals, categories such as digital strategies, digital educational platform, networking, financial, material and human resources, digital content, and management dashboard were identified as background conditions for the use of digital leadership in elementary schools.

Intervening conditions

In the current study, the intervention conditions are focused on identifying the conditions that primary school principals may face in the process of implementing digital leadership. These conditions can arise and create obstacles in the way of using digital technologies, implementing educational changes and reforms, communicating and interacting with school members, managing resources and technological knowledge, and other aspects of digital leadership. Based on the analysis of findings from interviews with school principals, these conditions were identified in different categories such as economic and infrastructure fields, structural fields, political fields, cultural and social fields, and educational fields.

The central phenomenon

In this research, the central phenomenon is digital leadership with characteristics, skills and behaviors necessary for principals in order to be able to effectively implement the digital leadership in schools. Based on the analysis of findings from interviews with school principals, categories such as leadership model, cognitive skills, communication skills, change management, and technology

knowledge are identified as the components of the central phenomenon.

Strategies

In the current research, strategies refer to a set of actions and factors that can be involved in the implementation and application of digital leadership in schools. In fact, the purpose of identifying and analyzing these factors is to better understand the limitations and opportunities in implementing digital leadership and to determine appropriate strategies and actions to deal with it. According to the analysis of the findings, categories such as support measures, educational measures, collaborative measures, management measures and cultural measures were identified as strategies for applying digital leadership in schools.

Consequences

In the current research, the results refer to the identification and explanation of the consequences and effects of using digital leadership in elementary schools. Based on the analysis of findings from interviews with school principals, this dimension is twofold: general organizational consequences and trans-organizational outcomes.

Organizational consequences:

This category refers to the impact of digital leadership on educational settings and primary schools. According to the opinions of the participants, these outcomes may include improving the level of teaching and learning, diversity in education, creativity and

collaboration, and updating and development.

Trans-organizational consequences:

Finally, this category refers to a set of consequences that arise beyond the boundaries of elementary schools. Moreover, these consequences mostly occur outside the internal and limited environment of organizations. In such a way that the changes and developments in organizations may have significant

effects on other factors and related fields, such as the larger society, culture, and politics. According to the participants' point of view, these consequences may include innovation in the educational system, improvement of the quality and efficiency of the educational system, and transformation in the educational culture and leadership patterns. Figure 1 shows the model developed on the basis of findings of this study.

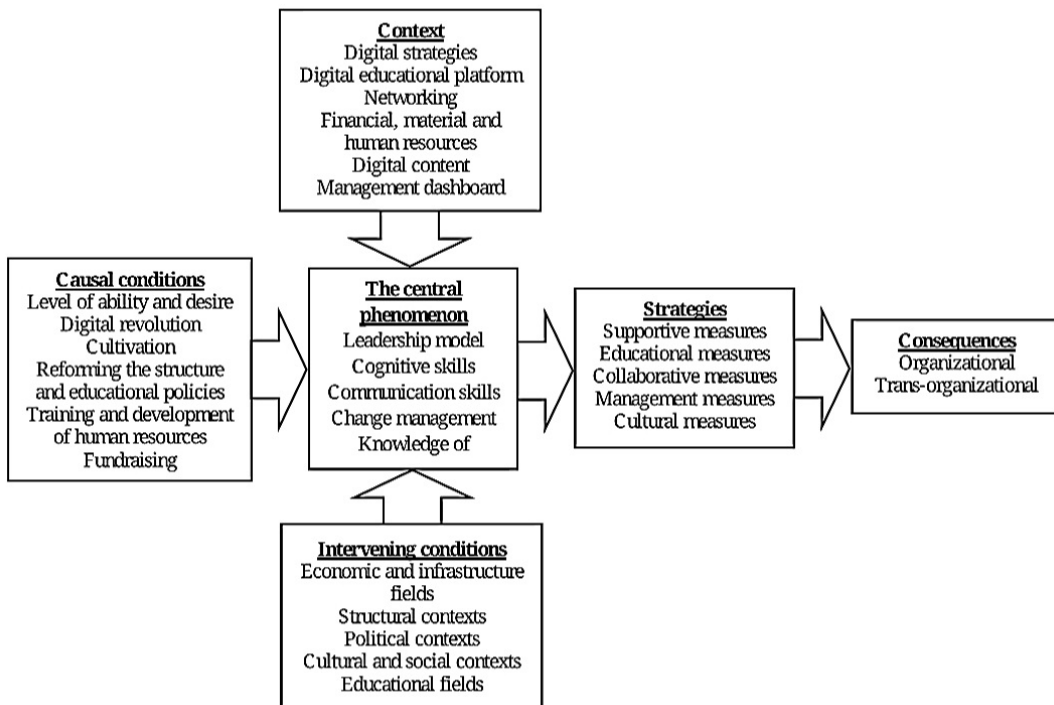


Figure 1: Feasibility model of digital leadership in primary schools

Discussion and conclusion

Regarding the application of digital leadership in primary schools, the results of interviews with the participants showed that the application

of digital leadership in primary schools is possible due to the ability and high interest of most principals and educators, along with a set of causal conditions and context. On the other

hand, in order for managers to be able to effectively implement the digital leadership in the educational settings, they need a series of competencies and skills such as leadership model, cognitive skills, communication skills, change management and technical knowledge. the use of digital leadership in primary schools are expected to improve the level of education and learning, and promote creativity and collaboration.

In today's world, technology and digitization is one of the fundamental aspects of the evolution of modern societies. The Iranian education system is also moving towards digitalization and therefore, technology is used as an essential factor in both daily life and education. These developments require digital leadership in primary schools to provide education in a way that is compatible with emerging needs of the new generation. In fact, with the help of digital leadership, elementary schools become a creative and innovative educational environment, a place for collaboration and creativity. It is expected that dialogue and communication between students and board members to be facilitated, and a major transformation to be created in the educational culture and leadership patterns. As a result, digital leadership in primary schools brings a wide range of opportunities for improving teaching and learning, developing and updating educational resources and creating innovation in educational settings. We hope that the findings of this study will

provide a basis for decisions and educational plans of school principals so that they can act as leaders who are concerned about development of both academic and social life in schools. Based on findings it can be recommended to form an interactive virtual training in which managers and teachers can interactively participate in online educational platforms and to combine theoretical information with practical experiences through interactive meetings and group discussions. Further studies may conduct a SWOT analysis to identify strengths and weaknesses, opportunities and threats for applying digital leadership to schools. Also, it would be quite useful to create a collaborative process between experts, administrators, teachers and parents of students to identify the needs and priorities with regard to school digital leadership. Moreover, in relation to the infrastructure dimension, it is recommended to create a "technology development unit" in schools with the aim of developing educational software and tools for the school. In addition, it is necessary to establish a direct relationship with organizations and people who can be effective in facilitating the use of digital leadership in schools through strategic agreement and cooperation. It is necessary to create a school-centered social network where administrators, teachers, parents, and students can communicate with each other and exchange ideas and information related to digital leadership.

With regard to competencies required for digital leadership, it can be suggested to create a special educational laboratory in the school where administrators and teachers can practice the skills necessary for digital leadership using modern technology equipment. Also, this laboratory can provide interactive and experimental training courses.

Considering the complexity of the research subject and the diversity of the effective factors in the use of digital leadership in elementary schools, it is suggested to consider the use of mixed methods in this field in future studies. The use of mixed methods makes it possible to analyze the data in a deeper and more comprehensive understanding of issue in question. Also, these methods allow us to compare and correlate the results of different methods and provides a better understanding of the process of applying digital leadership in elementary schools.

In addition, future research can be extended to other regions of the country. This geographic expansion may help us to gain a broader perspective on the development and implementation of digital leadership.

Also, researchers can identify and evaluate the success factors and challenges related to the application of digital leadership in secondary schools. This action will help to develop wider strategies and solutions to improve the quality of education using digital leadership.

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