

Digital Culture Leadership in Elementary Education

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ABSTRACT: *We have entered an era of digital technology where individuals or organizations are obliged to fully embrace digital technology with ever-increasing change and improvement. Leaders must have skills and capabilities to use digital technology and apply these throughout the organization, to create a continuous improvement strategy that drives every data in their organization to change. This research focusses on developing a conceptual framework of such digital culture leadership for Elementary Education. It is proposed as a model for the attributes of the leaders of educational management in the digital age, encompassing: (1) Digital leadership, (2) Digital culture, (3) Change management, (4) Digital innovation and (5) Digital transformation. The factors within each of these categories are defined as follows; Digital leadership consists of five elements, which are vision, collaboration, management skills, digital literacy and innovation/creativity. Digital culture consists of four elements, which are collaboration, data-driven, customer centric, and innovation. Change management process consists of seven components, which are organizational structure, organization culture, strategy, decision making, process, technology and people. Digital innovation consists of three elements, which are digital application, change management and digital infrastructure. Through the proposed digital transformation processes applied to six organizational elements of strategy, staff, technology, data analytics, process and organizational culture, this research framework can be used as a way to enhance digital culture leadership with a vision for digital transformation. It provides a review methodology for the education administrator's current leadership practices, to suggest holistic improvements to management efficiency.*

Keywords: Digital Transformation, Digital leadership, Digital Innovation, Digital Culture, Change Management

1. Introduction

In the digital transition era, technology has been introduced to transform non-technological or traditional workflows into digital processes, replacing old technologies with new technologies. This applies equally to educational authorities as with business organizations. Schools were slowly adjusting to the use of technology, but were subjected to sudden disruption during the COVID-19 crisis. In the management of education, executives reacted and have played a very important role in this change in order to implement digitalization and remote

learning. There is already a large volume of research related to the digital transition in the education system. Digital leadership in education is a challenge for executives to lead the education system (Ehlers, 2020) to be transformed in all its forms to survive in the digital age (Bygstad et al., 2022). However comparatively little research has been applied to digital leadership at Primary School level. Leadership is critical in making changes and developing the education management infrastructure. To adopt digital technology in management services, executives need to understand digital transformation as applied to their role as digital leaders. In essence, having the right vision and digital skills (Pata et al., 2021), keeping pace with new technologies that are changing frequently according to the Principle of Requesting Digital Transformation (Mohamed Hashim et al., 2021), used to solve problems to improve the efficiency of the workplace. Reshape the work pattern in the organization to create a new culture of operations that uses information technology to help with management digital Innovation.

For this reason, additional research is needed on the subject of digital culture leadership in primary education as a way to support executives to create education management strategies in the digital age. This should assist change and development in all areas of digital leadership roles, by defining a model of work in an organization that contributes to educational innovation in digital transformation.

2. Objective

- (2.1) Synthesis of digital transformation factors for elementary education.
- (2.2) Synthesis of digital culture leadership.
- (2.3) To develop a conceptual framework of digital culture leadership for elementary education.

3. Literature Review

(3.1) Digital Transformation

Digital transformation is the unifying impact of many digital innovations that apply to practitioners. Change of structure applying new practices, values and beliefs that replace or reinforce existing rules within the organization, ecosystems, industries or fields (de Bem Machado et al., 2022). Digital transformation means changing use of digital tools, not just changing devices, but changing the entire management process. Therefore, it is a review of the global management model that affects all areas. It affects teaching, it affects learning, it affects everything (Mohamed Hashim et al., 2021).

(3.2) Digital Leadership

Is defined as electronic leadership or virtual leadership, involving virtual or ICT intermediate abilities, causing changes in behavioral performance, thoughts, feelings, and attitudes. At primary and middle school level Leaders are the ones who effectively contribute to students' digital collaboration skills (Saputra & Saputra, 2020). It is equally important for leaders at all levels in internal and external organizations. Digital leadership includes: electronic reliability, electronic technology skills, electronic transformation management, team building, e-social skills and communications (van Wart et al., 2019).

(3.3) Digital Culture

Corporate culture is a value system with unique standards in each organization and can result in congruent understanding and cooperative existence of people in the organization. Digital culture is an organizational culture that supports and endorses the use of digital technology to achieve sustainable business success (Saputra & Saputra, 2020). This culture influences skills or abilities and talent development. Cultural intelligence is important for digital leadership. This is especially true in managing employees with a wide range of perspectives and cultural diversity. Within an organizational framework this is an important tool for leadership success in the digital world (Rüth & Netzer, 2020).

(3.4) Change Management

Is a continuous process of implementing changes in an operational environment. Change management is about innovative strategies and activities to deal with sudden changes. Change management can apply to most organizations, from planning to control, such as: Changing organizations and changing work structures, product development for user satisfaction (Kaur, 2018). In terms of educational management, it is a both a science and an art of human resource management. The objective being training of all employees with recognition of performing their duties in accordance with management standards and methods to achieve the objectives of the education system with the highest quality and efficiency (Ungureanu, 2014).

(3.5) Digital Innovation

A product, process, or business model that is seen as a new model. There must be some significant changes on the part of the adopter and be personalized or enabled by IT (Fichman et al., 2014). Digital innovations typically follow a roadmap that starts with digital technology combined with changing corporate requirements and environmental influences which necessitates digital improvements. In some cases, this process of digital innovation has become one that transforms the way teaching and tools are used and confirms the university's role as a stimulant of digital innovation in the wider ecosystem.

4. Research Methodology

This study aims to develop a conceptual framework of elementary education digital culture leadership incorporating three steps as follows; Step (1) The analysis stage analyzes and synthesizes documents and research of digital transformation for elementary education, Step (2) Synthesis of results as follows: digital leadership, digital culture, change management and digital innovation are digital culture leadership and Step (3) Develop a conceptual framework of digital culture leadership for elementary education.

Topic Process/component/element	Concept	Reference
Digital transformation		
Strategy/vision	This means having an organization's digital asset product channel or changing it by using digital at the heart of its operations, which requires aligning the entire organization, from executives to operating employees in the bottom tier. Resulting in an organization that perpetuates digital transformation.	(Abad-Segura et al., 2020; Agasisti et al., 2020; Appio et al., 2021; Bygstad et al., 2022; de Bem Machado et al., 2022; Ghavifekr & Wong, 2022; Kaputa et al., 2022; Mohamed Hashim et al., 2021; Pata et al., 2021; Rof et al., 2020; Tungpantong et al., 2021)
Staff people		
Technology		
Data & Analytics		
Process		
Culture		

5. Results

(5.1) Synthesis of digital transformation factors for elementary education.

The synthesis of digital transformation factors for elementary education from relevant documents, theories and related research as shown in Table 1.

Table 1. Synthesis of component digital transformation for elementary education.

From Table 1, Synthesis of component digital transformation for elementary education applies to six elements, which are (1) Strategy/vision, (2) Staff/people, (3) Technology, (4) Data & Analytics, (5) Process and (6) Culture.

(5.2) The results of synthesis as follows: digital leadership, digital culture, digital innovation and change management are factors for digital culture leadership as shown in Table 2.

Table 2. Synthesis of digital leadership, digital culture, digital innovation and change management as factors for digital culture leadership.

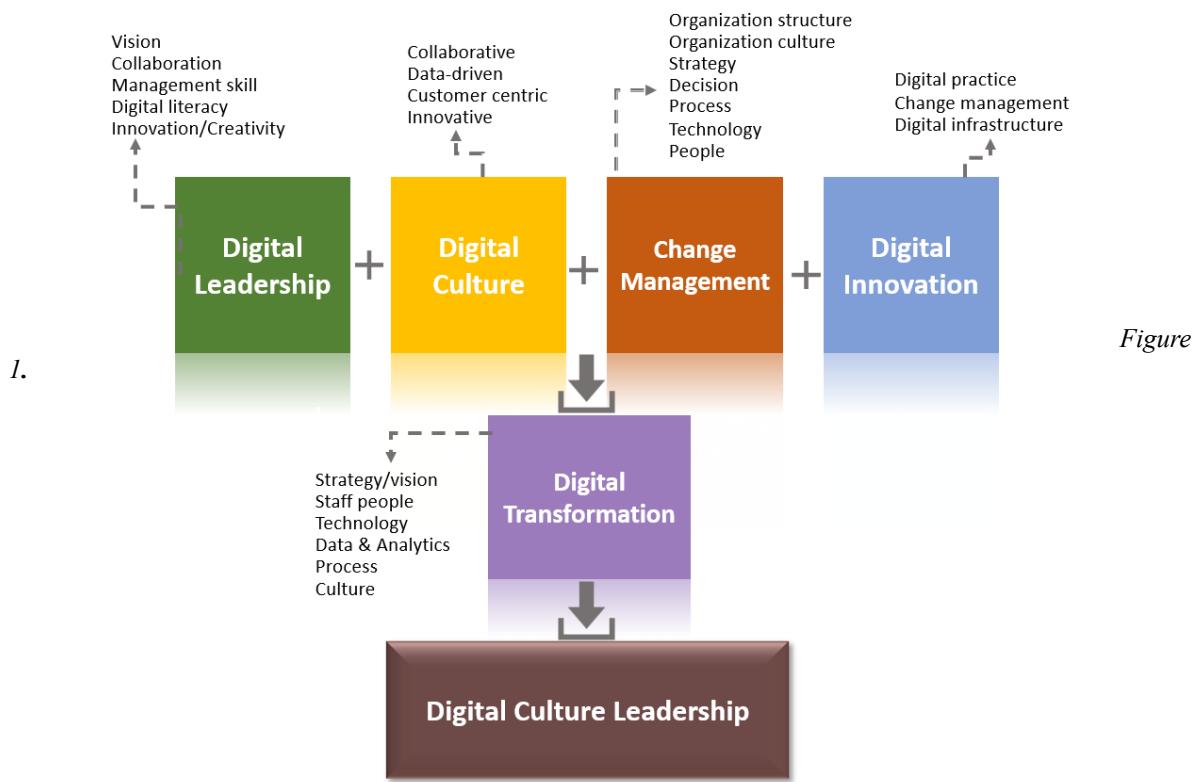
Topic Process/component/element	Concept	Reference
Digital leadership Vision Collaboration Management skill Digital literacy	Principals who embrace digital skills and technology acceptance to create and implement strategies that align the digital transformation process and have participatory management which will lead	(AlAjmi, 2022; AlNuaimi et al., 2022; Basu, 2022; Ehlers, 2020; Karippur & Balaramachandran, 2022; Neumeyer & Liu, 2021; Rüth & Netzer, 2020; Sağbaş & Alp ERDOĞAN, 2022; Sarah et al., 2022; Tolwińska, 2021; van Wart et al., 2019)
Digital culture Collaborative Data-driven Customer centric Innovative	Digital culture is an organizational culture that supports the use of digital technology to collaborate throughout the organization. It is a process that is constantly adapted to the operation. Shifting from a traditional work culture to innovation is fundamental to achieving sustainable success.	(Cruz et al., 2021; Cultri & Bazilio, 2021; Hemerling et al., 2018; Kalimullina et al., 2021; Kvitka, 2020; Mohebi & Professor, 2019; Ou-Sekou et al., 2021; Paniago et al., 2021; Saputra & Saputra, 2020)

Table 2. Synthesis of digital leadership, digital culture, digital innovation and change management as factors for digital culture leadership (Continue)

Topic Process/component/element	Concept	Reference
Change management Organization structure Organization culture Strategy Decision Process Technology People	Change management is a systematic activity or structure to prepare the organization to continue to make effective changes. From planning to control in an operational environment, it's about innovative strategies.	(Alqatawenh, 2018; Erofeeva et al., 2020; Gallastegui & Forradellas, 2021; Gulden et al., 2020; Kaur, 2018; Lazar & Lixandru, 2020; Rousseau & ten Have, 2022; Saleem et al., 2020; Somadi & Salendu, 2022)
Digital innovation Digital practice Change management Digital infrastructure	A product, process, or business model that is seen as a new model. There must be some significant changes on the part of adopters in the digital process or enabled by IT	(Aditya et al., 2021; Agasisti et al., 2020; Agélie Genlott et al., 2019; Ciriello et al., 2018; Hinings et al., 2018; Kähkipuro, 2021; Nambisan et al., 2017; Pata et al., 2021; Planes-Satorra & Paunov, 2019; Wiesböck & Hess, 2020)

From Table 2, the synthesis of digital leadership, digital culture, digital innovation and change management are factors for digital culture leadership as follows; Digital leadership consists of five elements, which are (1) Vision, (2) Collaboration, (3) Management skill, (4) Digital literacy and (5) Innovation/Creativity. Digital Culture consists of four elements, which are (1) Collaborative, (2) Data-driven, (3) Customer centric, and (4) Innovative. Change Management process consists of seven components, which are (1) Organization structure, (2) Organization culture, (3) Strategy, (4) Decision, (5) Process, (6) Technology and (7) People and Digital Innovation consists of three elements, which are (1) Digital practice, (2) Change management and (3) Digital infrastructure.

(5.3) Develop a conceptual framework of digital culture leadership factors for elementary education as shown in Figure 1.



Conceptual framework factors of digital culture leadership for elementary education

From Figure 1, this shows the conceptual framework factors of digital culture leadership for elementary education. The research concept consists of these primary elements and processes (1) Digital leadership, (2) Digital Culture (3) Change management and (4) Digital Innovation. All of which school administrators should apply to achieve a digital transformation process that leads to digital culture leadership in a capacity to manage primary education in the digital age.

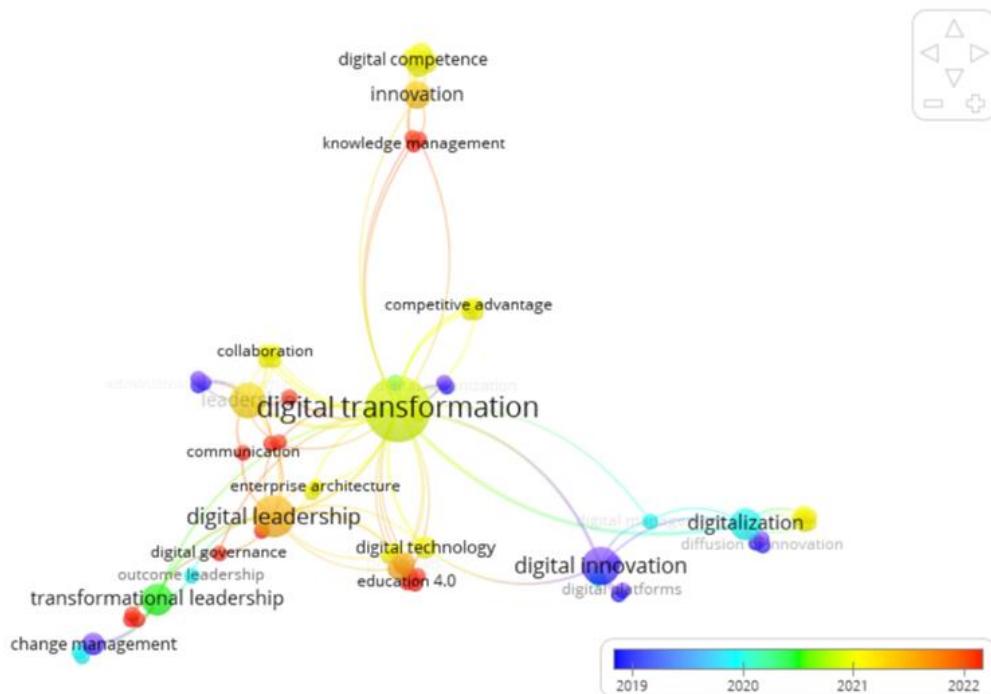


Figure 2. Evaluation of the network of keywords based on co-occurrence

From Figure 2 this represents the evolution of each keyword cluster. This graphic demonstrates the importance the main keywords according to the timeline in which they have occurred. The persistence of each group of words is observed when differentiating the period in which they have been studied from 2019-2022.

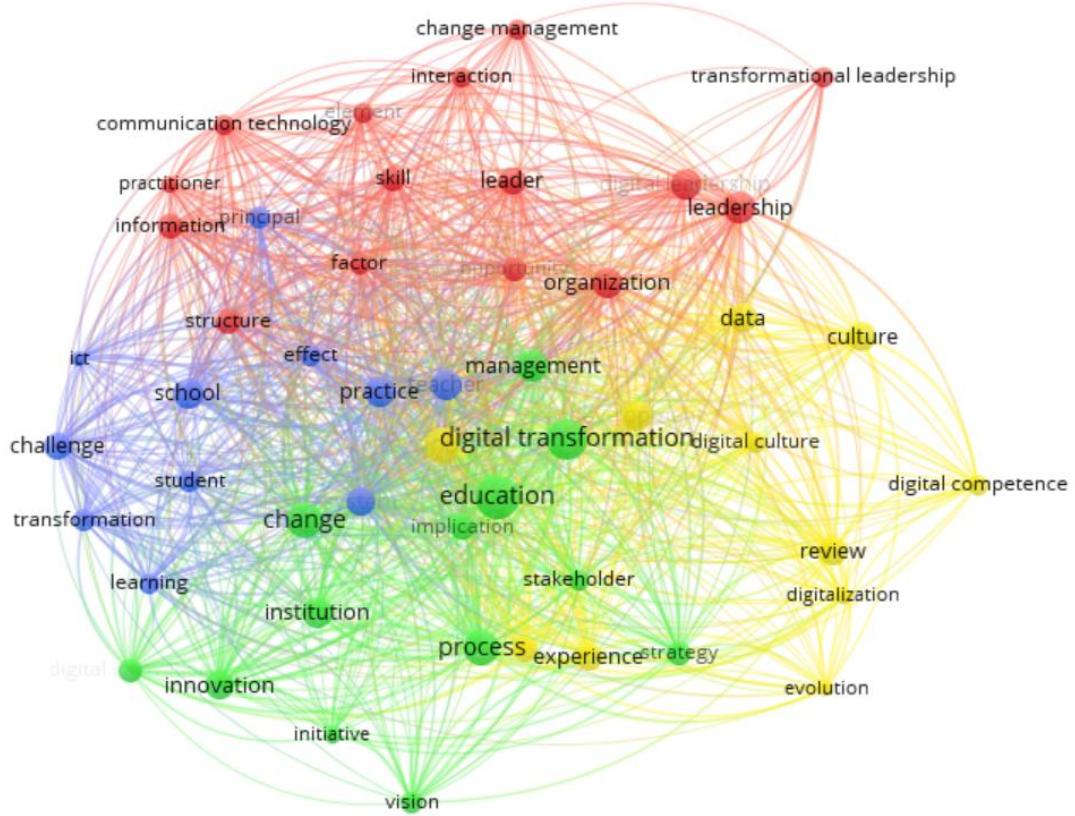


Figure 3. Network of keywords based on co-occurrence

Figure 3 shows the relationship of keywords for digital culture leadership for elementary education, based on co-occurrence. Synthesis of keywords from documents, articles, theories as classified is one of the main contributors of the bibliometric analysis (Abad-Segura et al., 2020). The main keywords used in the articles of the research area are digital leadership, digital culture, change management, digital innovation and digital transformation which are primary factors for digital culture leadership.

6. Conclusion

This research attempts to identify the capabilities that educational leaders need to develop in managing education in the digital age. Necessitated by an era of digital technology where individuals or organizations require the ability for effective change management (Organizational structure, Organization culture, Strategy, Decision, Process, Technology and People), fully embrace digital innovation (Digital practice, Change management and Digital infrastructure), digital leadership (elements of which are Vision, Collaboration, Management skill, Digital literacy and Innovation/Creativity) have the skills and capabilities to use technology and adoption in the organization to create a digital culture (Collaborative, Data-driven, Customer centric, and Innovative) to achieve goals related to communicating information in line with human resources and information technology to stimulate behavioral and technological change, leading to innovation. Digital transformation (Strategy/vision, Staff/people, Technology, Data & Analytics, Process and Culture) is a driving process in the digital context, in which it is possible to leverage digital capabilities within digital organizations.

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