Development Guidelines of Digital Leadership for Administrators of Universities in Chongqing

Luo Lilin[1], Jitiyaporn Chaowarakul[2], Chookwan Ratanapitakdhada[3], Sawaphob Debkasikul[4] Boonyanuch Viphoouparakhot[5]
Saint John's University[1,2,3,4], Chulalongkorn University[5]
E-mail: Boonyanuch.vip@gmail.com[1,2,3,4,5]

Received: September 9, 2025; Revised: December 30, 2025; Accepted: December 31, 2025

ABSTRACT

The research aimed to 1) study the current and desired states of digital leadership of administrators of universities in Chongqing, and 2) prioritize the essential needs of developing guidelines of digital leadership of administrators of universities in Chongqing and 3) suggest development guidelines of digital leadership for administrators of universities in Chongqing. The study applied mixed method research design. The population were professors from 10 universities in Chongqing, with a sample of 354 using the Krejcie & Morgan sampling table. A questionnaire with a Likert scale was used to evaluate the current and desired states of seven core dimensions of digital leadership (digital literacy, vision, agility, collaboration, innovation, communication, leadership). Priority development needs were identified via the Priority Needs Index, supplemented by qualitative insights from interviews. Results showed that the overall digital leadership of Chongqing's university administrators was at a moderate level, with room for improvement in all dimensions (agility performs the poorest). The desired state was uniformly high, indicating strong demand for enhancement. Priority development needs, in order, were agility, innovation, vision, digital literacy, leadership, collaboration, and communication. Based on the findings, guidelines were proposed, including training to enhance agility and mechanisms for assessing innovation risks, providing references for local education authorities and university administrators.

KEYWORDS: Digital Leadership, University Administrators, Chongqing

Introduction

Background and Significance

The digital age, characterized by volatility, uncertainty, complexity, and ambiguity (VUCA), has profoundly reshaped organizations and leadership paradigms. The COVID-19 pandemic further highlighted the importance of digital technology in education. Digital leadership is important for managing educational institutions in the digital age. Because it is a process or behavior

of administrators who are aware of knowledge, understanding, evaluating, and using information with judgment. Have the ability to evaluate and use digital technology appropriately. It is essential that executives develop leadership skills, and digital leaders to keep up with the advanced digital changes. (Luebakaluting, M, 2022)

Digital technology is being fully integrated into China's construction in various fields with “new concepts, new business forms and new modes”. (Huang, R., & Hu, Y., 2012). Among them, in the field of education, the digitalization of education has become a key path for deepening change and innovation in China's education and promoting the development of digital transformation in society. (Huo, G., & Miao, J., 2010)

As a key city in southwest China, Chongqing is promoting smart education reform, but its university administrators face challenges such as rigid traditional leadership styles and inadequate understanding of digital transformation. This study aims to address these issues by developing practical digital leadership guidelines.

Research Objectives

1) To examine the current and desired states of digital leadership among Chongqing’s university administrators.

2) To prioritize the development needs for digital leadership.

3) To propose targeted development guidelines.

Research Scope

1) Content Scope: Seven core dimensions of digital leadership: digital literacy, vision,agility, collaboration, innovation, communication, leadership.

2) Population Scope: 4,170 professors from 10 universities in Chongqing; a sample of 354 was selected using the Krejcie & Morgan table.

Literature review

Leadership

Leadership is a complex and multidimensional phenomenon, defined as the art of guiding teams or organizations through decision-making, influence, vision-setting, and motivation to achieve collective goals (Benmira & Agboola, 2021; Simplilearn, 2024). It involves using influence to drive meaningful outcomes and align individual efforts toward shared objectives, serving as a pivotal force in unifying diverse talents and resources toward common aspirations (Ulum & Mun'im, 2023).

Leadership is critical for organizational success, as it inspires and motivates teams by fostering purpose and vision, provides clear guidance through goal-setting and role clarification, facilitates critical decision-making and adapts to change, fosters open communication and accountability, and develops talent to ensure long-term organizational sustainability (Pandey, 2022; Roberts, 2023). In dynamic environments marked by technological advancements and competitive pressures, effective leadership navigates uncertainties, aligns individual contributions with organizational goals, and cultivates a culture of growth, ensuring both immediate performance and enduring success.

And key leadership theories offer diverse perspectives on effective leadership: Transactional Theory focuses on rewards and punishments to motivate performance, emphasizing hierarchy and structured processes

(Western Governors University, 2020); Transformational Theory emphasizes inspiring teams through vision, intellectual stimulation, and individualized support to drive organizational change (Indeed, 2025); Contingency/Situational Theory argues that effectiveness depends on context, requiring leaders to adapt styles to team maturity and situational demands (Cooks-Campbell, 2022); Great Man/Trait Theory suggests leaders possess innate traits like charisma, though this is critiqued for oversimplification (Western Governors University, 2020); and Behavioral Theory posits that leadership is learned through observable behaviors, such as task-oriented or people-oriented approaches (Wright, 2024).

Digital leadership

Definition and importance of digital leadership

Digital leadership refers to the knowledge, skills, and behaviors of administrators in using digital technology to drive organizational transformation. It involves guiding teams to adopt digital tools, fostering a digital culture, and ensuring ethical use of technology (Zhong, 2017; Surakai, 2022). Emphasizing the leveraging of digital literacy, vision, and agility, it enables leaders to adapt to technological changes and effectively promote digital transformation within their organizations (Luebakaluting, 2022).

In the digital age, digital leadership is essential as it allows organizations to navigate rapid technological changes and VUCA (volatility, uncertainty, complexity, ambiguity) environments. It plays a key role in promoting the effective use of digital tools in education and management, driving innovation and digital transformation, and enhancing organizational competitiveness and adaptability (Wright & Ritter, 2023; Luebakaluting, 2022). Without strong digital leadership, organizations may struggle to keep pace with the digital wave and miss out on opportunities for growth and development.

Components of Digital Leadership

This research The researcher studied Digital leadership of administrators of universities in Chongqing by compiling the ideas of 17 academics including: Promsri,C. (2019); Koen, S. (2019); Trefler, A. (2019); Komolwanich, S. et al. (2020); Suksai, T. et al. (2021); Antonopoulou, H. et al. (2021); Surakai, B. (2022); Sheninger, E. (2022); Goel, V. (2022); Bray, J. (2022); Niyamabha, A. & Wichitpatcharaporn, W. (2022); Naebnean, T. & Yafu , S. (2023); Phakamach, P. et al. (2023); Wright, G. & Ritter, J. (2023); Sushmith (2023); Setyo, B., Ubud, S., Wahdiyat , M., & Nur, K. (2023) and Lobacher, P. (2024) Then compiled into digital leadership of administrators of universities in Chongqing in 7 factors:

- Digital Literacy: Proficiency in using digital tools, evaluating information, and leveraging technological trends to integrate learning and management (Surakai, 2022; Bray, 2022).
- Vision: Articulating a clear digital transformation vision, communicating it to stakeholders, and translating it into actionable policies (Promsri, 2019; Trefler, 2019).
- Agility: Adapting to rapid digital changes, using IT for collaboration, and adjusting strategies to seize

opportunities (Koen, 2019; Lobacher, 2024).

- Collaboration: Encouraging cross-boundary information sharing, problem-solving, and teamwork to drive digital initiatives (Promsri, 2019; Wright & Ritter, 2023).
- Innovation: Fostering creative thinking, adopting new technologies, and managing innovation risks (Koen, 2019; Sushmith, 2023).
- Communication: Using digital tools for two-way engagement, motivating teams, and building organizational unity (Sheninger, 2022; Bray, 2022).
- Leadership: Guiding organizations toward digital goals, delegating tasks, and inspiring personnel development (Antonopoulou et al., 2021; Lobacher, 2024).

Development Guidelines of Digital Leadership

Strategies to enhance digital leadership encompass a range of targeted approaches. Training programs are crucial, with a focus on targeted initiatives that build proficiency in digital tools, agility in adapting to technological changes, and innovation capabilities (Suemkratok, 2022; Surakai, 2022). Self-study and workshops also play a key role, enabling independent learning through digital resources and collaborative skill-building activities that foster knowledge sharing and practical application (Phakamach et al., 2023). Additionally, site visits and case studies offer valuable insights by allowing administrators to observe best practices in other institutions, which can then be adapted to inform local strategies (Surakai, 2022). Finally, continuous monitoring—through regular skill assessments and feedback mechanisms—ensures that development efforts are sustained and aligned with evolving needs, supporting long-term improvement in digital leadership (Bokham & Wannasri, 2025).

Related Research

National Research

In China, research on digital leadership has been steadily advancing. Zhao & Zhang (2019) found that the informatization leadership of teachers is significantly influenced by the accessibility of equipment and the convenience of resources, indicating the importance of infrastructure in digital leadership implementation. He & Ni (2022) identified four crucial dimensions of digital leadership for university teachers, namely technology competence, teaching leadership, professional development leadership, and cultural leadership, providing a comprehensive framework for understanding digital leadership in the educational context. Shan (2023) pointed out the lack of theoretical support for integrating digital leadership with big data and proposed a "five forces" model to enhance digital leadership capabilities. These studies have mainly focused on the application of digital leadership in specific sectors like education and the public sector, aiming to promote digital transformation and improve leadership effectiveness in the digital era.

International Research

Internationally, scholars have been exploring digital leadership from various perspectives. Promsri (2019) developed a digital leadership model highlighting digital literacy, vision,

agility, and collaboration as key components, laying a theoretical foundation for understanding digital leadership. Antonopoulou et al. (2021) found a positive correlation between digital leadership and transformational leadership in higher education, suggesting that digital leadership can be an effective means to drive educational change. Surakai (2022) proposed programs to enhance digital leadership through modules on literacy, vision, communication, and collaboration, providing practical strategies for leadership development. Niyamabha & Wichitpatcharaporn (2022) identified priority needs for digital leadership development, including aspects related to student attentiveness and professional development. International research often emphasizes the theoretical construction and practical application of digital leadership in different organizational settings, aiming to help leaders better adapt to the digital - driven global environment.

Conceptual Framework

To explore the digital leadership landscape of university administrators in Chongqing, this research synthesizes insights from key scholars like Promsri (2019), Surakai (2022), and Sheninger (2022). Their contributions help identify seven core dimensions of digital leadership for these administrators: digital knowledge and literacy, vision, agility, collaboration, innovation, communication, and leadership. These dimensions form the basis for understanding the current state of digital leadership among Chongqing's university administrators. Combined with ideas from other involved academics, they shape how we analyze and aim to enhance such leadership. As visualized, the conceptual framework maps how these dimensions connect to the development of targeted guidelines, as shown in the following diagram.

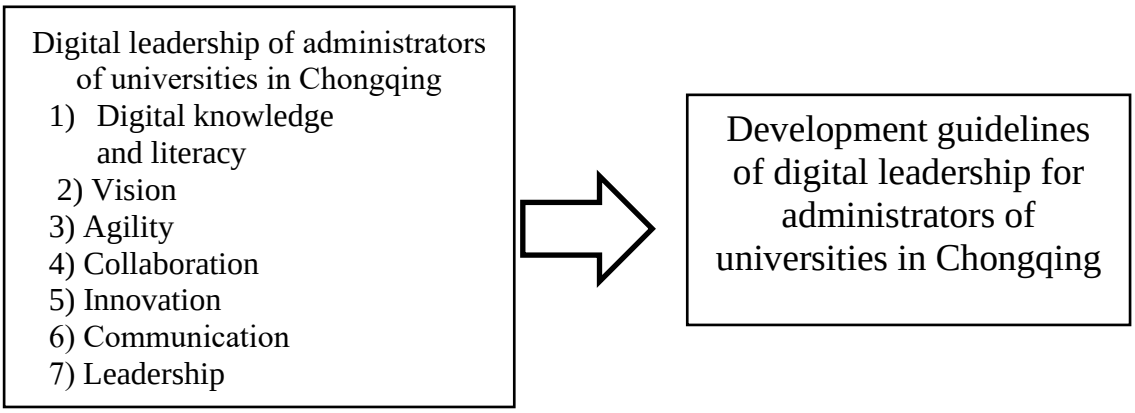

Figure 1 Conceptual Framework

Methodology

This study adopts a mixed-methods approach, integrating quantitative and qualitative research to systematically explore the development guidelines of digital leadership for university administrators in Chongqing. The research process is structured into three sequential steps, with clear procedures for sampling, data

collection, and analysis to ensure validity and reliability.

Step 1: Assessing Current and Desired States of Digital Leadership

This step focuses on quantifying the current performance and desired levels of digital leadership across seven core dimensions: digital literacy, vision, agility, collaboration, innovation, communication, and leadership.

Population and Sample:

The population consists of 4,170 professors from 10 universities in Chongqing, including Southwest University of Political Science and Law, Southwest University, Chongqing University, and others. Using the Krejcie & Morgan sampling table (95% confidence level), a sample of 354 professors was determined, with proportional allocation across institutions (see Figure 2). Simple random sampling was used to select participants within each university.

Table 1 Population and Sample Distribution across Universities

No.	Universities	Population	Sample
1	SWUPL	260	22
2	Southwest University	820	69
3	Chongqing Technology and Business University	300	25
4	Sichuan International Studies University	150	13
5	CQUPT	220	19
6	Chongqing University	680	58
7	Chongqing Normal University	330	28
8	Chongqing Jiaotong University	300	25
9	Chongqing Medical University	550	47
10	Army Medical University	560	48
	Total	**4,170**	**354**

Research Instruments:

A structured questionnaire was developed as the primary tool, comprising two parts: Demographic Information: Gender, age, educational background, and work experience; Digital Leadership Assessment: Items measuring the current and desired states of the seven dimensions, using a 5-point Likert scale (1 = lowest level, 5 = highest level).

Content validity was verified by 5 experts (rectors, deans, and educational administration researchers) using the Index of Item-Objective Congruence (IOC), found that the IOC value of the question was between 0.50 -1.00**.** And Reliability was tested using a pilot study with 30 non-sample professors, which yielded a Cronbach's α coefficient of .994 confirming consistency. Data Collection and Analysis:

Questionnaires were distributed to the 354 sampled professors after obtaining institutional approval. Data were analyzed using descriptive statistics: Frequency and percentage for demographic information.

Mean (M) and standard deviation (SD) to assess current and desired states, with interpretation thresholds:

- 4.50–5.00: Highest level
- 3.50–4.49: High level
- 2.50–3.49: Moderate level
- 1.50–2.49: Low level
- <1.50: Lowest level

Step 2: Prioritizing Development Needs

To identify priority areas for improvement, the Priority Needs Index (PNI modified) was calculated for each dimension:

$$\text{PNI modified} = \frac{(\text{Desired Mean} - \text{Current Mean})}{\text{Current Mean}}$$

Higher PNI values indicate greater urgency for development. Items with PNI values exceeding the dimension average were selected as key focus areas.

Step 3: Proposing Development Guideline

A draft of guidelines was developed based on high-priority needs identified in Step 2. Focus group discussions were conducted with ≥10 administrators and professors from Chongqing universities to validate and refine the guidelines, ensuring practicality and alignment with local contexts.

Research Findings

General Information of the Respondents

The general information of the 354 respondents (n = 354) is summarized in Figure 3, including gender, age, educational background, and work experience:

Results indicate that the majority of respondents are female (57.30%), aged 31–40 years (39.30%), hold a degree higher than a master's (67.20%), and have work experience of no more than 5 years (41.50%)

Current and Desired Conditions of Digital Leadership

The current and desired conditions of digital leadership across seven dimensions are analyzed using mean ($\bar{x}$) and standard deviation (S.D.), as shown in Figure 4:

Table 2: Current and Desired Conditions of Digital Leadership

Digital Leadership	Current Condition			Desired Condition		
	$\bar{x}$ S.D.	Level	Number	$\bar{x}$ S.D.	Level	Number
1. Digital literacy	3.33 0.79	moderate	4	4.36 0.76	high	7
2. Vision	3.32 0.87	moderate	5	4.39 0.63	high	4
3. Agility	3.24 0.89	moderate	7	4.37 0.79	high	6
4. Collaboration	3.40 0.91	moderate	2	4.43 0.76	high	1
5. Innovation	3.30 0.91	moderate	6	4.38 0.62	high	5
6. Communication	3.40 0.92	moderate	1	4.41 0.76	high	2
7. Leadership	3.37 0.92	moderate	3	4.41 0.62	high	3
Overall	**3.34 0.70**	**moderate**		**4.39 0.52**	**high**	

Current Condition: The overall digital leadership of Chongqing university administrators is at a moderate level. Among the dimensions, communication and collaboration perform best, while agility performs the poorest.

Desired Condition: All dimensions are expected to reach a high level, with collaboration and communication being the most sought-after.

Ranking of Priority Development Needs

The priority needs for developing digital leadership are determined using the PNI $_{modified}$ index, as shown in Figure 3:

Figure3: Priority Needs Index of Digital Leadership

Digital Leadership	Current (D)	Desired (I)	PNI $_{modified}$	Order of Needs
1. Digital literacy	3.33	4.36	0.31	4
2. Vision	3.32	4.39	0.32	3
3. Agility	3.24	4.37	0.35	1
4. Collaboration	3.40	4.43	0.30	6
5. Innovation	3.30	4.38	0.33	2
6. Communication	3.40	4.41	0.30	7
7. Leadership	3.37	4.41	0.31	5
Overall	3.34	4.39	0.32	-

Results show that the top three priority needs are agility (PNI $_{modified}$ = 0.35), innovation (0.33), and vision (0.32), indicating these dimensions require the most urgent attention.

Qualitative Insights from Focus group

Focus group with university administrators and professors supplemented quantitative findings, offering practical insights to refine development guidelines. On agility, participants highlighted the need for real-time data monitoring systems to track digital trends dynamically, paired with cross-departmental collaboration platforms (e.g., cloud workspaces) to break silos and enable rapid decision-making. For innovation, suggestions included establishing formal risk assessment mechanisms to evaluate new technologies and piloting initiatives on a small scale to test feasibility before full implementation, balancing creativity with stability. Regarding vision, interviewees emphasized translating digital transformation goals into actionable policies (e.g., curriculum reforms, staff training) and aligning them with broader institutional strategies to ensure coherence and stakeholder buy-in.

These insights were integrated with quantitative results to finalize targeted development guidelines.

Discussion

Discussion and Implications

This study focuses on constructing digital leadership development guidelines for university administrators in Chongqing. through mixed research methods. The research population comprises professors from

10 universities in Chongqing, with a sample of 354 determined using the Krejcie & Morgan sampling table. Through questionnaires incorporating Likert scales, it evaluates the current and desired states of seven core dimensions of digital leadership: digital literacy, vision, agility, collaboration, innovation, communication, and leadership. Priority development needs are identified via the Priority Needs Index, supplemented by qualitative insights from interviews.

Results show that the overall digital leadership of Chongqing's university administrators remains at a moderate level, with room for improvement across all dimensions—agility performs the poorest. In contrast, the desired state is uniformly high, indicating strong demand for enhancement. Priority development needs, in order, are agility, innovation, vision, digital literacy, leadership, collaboration, and communication. Based on these findings, the study proposes targeted guidelines, including training to enhance agility and mechanisms for assessing innovation risks, providing valuable references for Chongqing's education authorities and university administrators, while laying a foundation for subsequent research in this field.

Limitations and Recommendations

However, the study has certain limitations. The sample is limited to professors, not directly including university administrators themselves, which may lead to indirect biases in assessing the current state of digital leadership. Additionally, the cross-sectional research design only presents the state of digital leadership at a specific time point, failing to track its dynamic changes and capture the phased differences in leadership needs during the digital transformation process. Moreover, the analysis of specific indicators within each dimension is insufficient, which may affect the accuracy of intervention measures.

For future research, it is suggested to expand the research objects to include university administrators directly and combine 360-degree evaluations to more comprehensively present the current state of digital leadership. Longitudinal research designs can be adopted to observe the changing trends of digital leadership over time, providing evidence for dynamically adjusting development guidelines. Furthermore, in-depth analysis of the priorities of specific indicators within high-priority dimensions and case studies can be conducted to formulate more targeted improvement plans, and the research scope can be expanded to universities in other provinces and cities for cross-regional comparisons to enrich the universality of the research conclusions.

References

Antonopoulou, H. Halkiopoulos, C., Barlou, O. & Beligiannis, G. (2021). *Digital lead er and transformational leadership in higher education*. Researchgate, March, 96 16-9624. doi: 10.21125/inted.2021.2005

Benmira, S. & Agboola, M. (2021). *Evolution of leadership theory*. BMJ Leader, 202 1: leader-2020-000296. https://doi.org/10.1136/leader-2020-000296

Bokham, Sasiwimon and Wannasri,Jitima (2567). *Guidelines to Promote the Digital L eadership of School's Administrators in Small School under Phrae Primary Educ ational Service Area Office 2.* SWU Educationnal Administration Journal, 21(40), 289-301.

Bray, J. (2022). *What is Digital Leadership*. Retrieved March 2, 2024, from https://gds group.com/insights/article/what-is-digital-leadership/

Huang R. &, Hu Y. (2012). *Informationization Leadership and School Informationizat ion Construction.* Open Education Research, 18(5), 7.

Huo, G., & Miao, J. (2010). *Paradigm of informatization leadership*. Leadership Scien ce, 2010(9),3. https://doi.org/CNKI:SUN:LDKI.0.2010-13-027

Koen, S. (2019). *The 5 skills every Digital Leader needs*. Retrieved February 23, 2024, from https://medium.com/swlh/five-qualities-of-a-digital-leader-9b58c398a312

Likert, R. (1970). *New Partterns of Management.* New York: McGraw-Hill.

Lobacher, P. (2024). *8 components for successful digital leadership*. Retrieved Februar y 19, 2024, from https://www.workpath.com/magazine/digital-leadership

Luebakaluting, M. (2022). *Digital Leadership of Administration under the Secondary Education Service Area Office Trang Krabi*. A minor thesis for the master of educ ation degree in
educational administration Hatyai university.

Niyamabha, A. & Wichitpatcharaporn, W. (2023*). Guidelines for Digital Leadership Development of School Administrators under The Bangkok Metropolitan Adminis tration*. Journal of Education Faculty of education Prince of Songkla university, 3 4(1), (January-April), 32-43

Pandey, N. (2022). *What is the Importance of Leadership in the Workplace*. EMERIT US. Retrieved March 31, 2024, from https://What is the Importance of Leadership in the Workplace?.org/in/learn/importance-of-leadership-in-management/

Phakamach, P. et al. (2023). *Digital Leadership Development Model for Science Schoo l Administrators in Thailand.* RICE Journal of Creative Entrepreneurship and Ma nagement, 4(1), (January-April 2023), 14-26.

Promsri, C. (2019). *Developing Model of Digital Leadership for a Successful Digital Transformation*. Gph International Journal, 2(8) (August 2019), 1-8.

Roberts, S. (2023). *Importance of Leadership in the Workplace.* The knowledge acade my. Retrieved March 31, 2024, from https://www.theknowledgeacademy.com/blo g/importance-of-leadership/

Shan, L. (2023). *An Exploration of Digital Leadership Enhancement Strategies for Hi gher Education Leaders*. Huang Zhang, 24(4),123-125.

Sheninger, E. (2022). *7 Pillars of Digital Leadership in Education*. Retrieved February 19, 2024, from https://www.hmhco.com/blog/pillars-of-digital-leadership-in-edu cation

Simplilearn (2024). *10 Leadership Theories to Master for Managerial Success in 202 4*. Retrieved February, 17 2024, from https://www.simplilearn.com/top-leadership -theories- every-manager-should-know-article

Suemkratok, P. (2022). *The Program Development to Enhance Digital Leadership of t he School Administrators under the Mahasarakham Primary Educational Service Area Office 1*. a thesis for master of education. Mahasarakham university

Surakai, B. (2022). *Development of Programs to Enhance Digital Leadership for Educ ational Institution Administrators under The Secondary Educational Service Area*

Office Buriram. Educational administration and development. Mahasarakham university.

Sushmith (2023). *Principles of Digital Leadership. Retrieved February 21, 2024, from Digital Leadership*. A Guide to What is Digital Leadership (sprintzeal.com)

Trefler, A. (2019). *4 essential qualities for digital leaders.* Retrieved February 23, 2024, from https://www.weforum.org/agenda/2019/01/4-essential-qualities-for-digital-leaders/

Ulum, M. & Mun'im, A. (2023). *Leadership and Performance of Teachers and Employees of SMK Sunan Drajat Lamongan*[J]. Multidisciplinary Journal of Education, Economic and Culture, 2023, 1(1): 1-12. DOI: https://doi.org/10.61231/mjeec.v1i1.48

Wright, G. & Ritter, J. (2023). *Definition digital leadership.* Retrieved January 22, 2024, from TechTarget: https://www.techtarget.com/searchcio/definition/digital-leadership

Zhao, L. & Zhang R. (2019). *Teachers' In formalizations Teaching Leadership*: Connotation, Influencing Factors and Improvement Path. Chongqing Higher Education Research,12(5), 86-97

Zhong, L. (2017). *Indicators of Digital Leadership in the Context of K-12 Education*. Journal of Educational Technology Development and Exchange, 10(1), 27-40.