Integrating Instructional and Digital Leadership As A Catalyst For Transformational Change in Secondary Education

Mengintegrasikan Kepimpinan Instruksional dan Kepimpinan Digital sebagai Pemangkin Perubahan Transformasi dalam Pendidikan Menengah

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Abstract

This research aims to examine the importance of instructional and digital leadership for transformative change in secondary schools. Current research seeks to understand how the combined effectiveness of these two leadership dimensions may enhance the quality of teaching and learning, enable teachers, and drive change within school systems. The quantitative research sought to gather information from secondary school teachers through a survey. The survey instrument was adapted from well-established instructional leadership and digital leadership questionnaires. Sampling was utilised with a stratified sample of 200 respondents. To examine relationships among the variables, descriptive statistics, Pearson correlation, and multiple regression analysis were used to analyse the extracted data. The results indicate that, with respect to instructional and digital leadership, positive effects on transformational change are significant, and that digital leadership is the primary driver of instructional innovation. The study concludes that a synergistic approach to the two domains of leadership could contribute to a sustainable model for school transformation. Some implications highlight the need for professional development programs, digital literacy, and leadership skills to sustain educators' roles in the 21st century.

Keywords: *Instructional Leadership, Digital Leadership, Transformational Change, Secondary Education, Educational Innovation*

Abstrak

Kajian ini bertujuan meneliti kepentingan kepimpinan instruksional dan kepimpinan digital dalam memacu perubahan transformasional di sekolah menengah. Penyelidikan semasa berusaha memahami bagaimana keberkesanan gabungan kedua-dua dimensi kepimpinan ini berupaya meningkatkan kualiti pengajaran dan pembelajaran, memperkasa guru, serta mendorong perubahan dalam sistem sekolah. Kajian kuantitatif ini mengumpul maklumat daripada guru sekolah menengah melalui kaedah tinjauan. Instrumen soal selidik telah

diadaptasi daripada set soal selidik kepimpinan instruksional dan kepimpinan digital yang mantap serta diterima luas. Pensampelan menggunakan kaedah berstrata melibatkan 200 orang responden. Bagi menilai hubungan antara pemboleh ubah, statistik deskriptif, korelasi Pearson, dan analisis regresi berganda digunakan untuk menganalisis data yang diperoleh. Dapatan kajian menunjukkan bahawa kepimpinan instruksional dan kepimpinan digital memberi kesan positif yang signifikan terhadap perubahan transformasional, dan kepimpinan digital dikenal pasti sebagai pemacu utama kepada inovasi instruksional. Kajian ini merumuskan bahawa pendekatan sinergistik yang mengintegrasikan kedua-dua domain kepimpinan berpotensi menyumbang kepada model transformasi sekolah yang mampan. Implikasi kajian turut menekankan keperluan program pembangunan profesional, pengukuhan literasi digital, serta peningkatan kemahiran kepimpinan bagi memastikan peranan pendidik kekal relevan dan berkesan dalam pendidikan abad ke-21.

Kata kunci: *Kepimpinan Instruksional, Kepimpinan Digital, Perubahan Transformasional, Pendidikan Menengah, Inovasi Pendidikan*

INTRODUCTION

In the 21st century, we live at the pace of technology and society, transforming education every day. Schools today are supposed to prepare them to thrive in a more complicated, connected, digital world. Such a re-orientation necessitates leadership styles that move away from the standard administrative functions to highlight instructional practices and the transformative potential of learning towards digital tools. In the absence of a clear introduction to these changes, educators and policymakers may struggle to understand better the full extent of this transformation (Harrington, 2005).

Instructional leadership, that is, better teaching and learning dynamics, has long been touted as a critical element of improving student achievement and enhancing school effectiveness. They are broadly examined independently, but little time has been devoted to their interaction as a facilitator of transformational change. This paper will attempt to contribute by exploring the confluence of instructional and digital leadership and its impact on culture, pedagogy, and outcomes in secondary schools. In so doing, the investigation reveals the role of visionary leadership in constructing responsive institutions for a bright future that can face the challenges of 21st-century learning.

LITERATURE REVIEW

Instructional Leadership in Secondary Education

Instructional leadership has long been recognised as one of the most significant factors influencing teaching quality and student achievement. According to Hallinger and Murphy (1985), instructional leadership is the process by which school leaders focus on curriculum, instructional practices, and the learning environment to improve student outcomes. In secondary schools, effective instructional leaders set clear goals, monitor teaching and learning, and provide professional development to ensure that teachers continuously enhance their pedagogical practices (Robinson, Lloyd, & Rowe, 2008). Research further suggests that principals who actively engage in instructional leadership cultivate a culture of shared responsibility, resulting in higher levels of teacher commitment and student engagement (Leithwood & Jantzi, 2006; Rahman & Ismail, 2020).

Digital Leadership and Educational Transformation

The same applies equally to the emergence of digital technologies and the concept of digital leadership. Digital leadership extends beyond simply leveraging technological tools, as Sheninger (2014) indicates, to include fostering innovation, building digital ecosystems, and

enabling both teachers and students to use technology meaningfully. Digital leadership in secondary education calls on schools to shift from traditional learning to student-centred education driven by digital platforms and data-driven decision-making (Ng, 2015). Moreover, effective digital leaders not only ensure equitable access to technology for their students but also provide teachers with training and cultivate a mindset of adaptability to rapid technological change (Dexter, Richardson, & Nash, 2020; Salleh & Laxman, 2022).

Synergy of Instructional and Digital Leadership

Although instructional and digital leadership have been addressed in their own separate domains, scholars are increasingly bringing their respective perspectives together. Fullan (2014) contends that achieving a sustainable transformation of schools is grounded in sound instructional principles and the strategic use of technology. Both aspects can be embedded in new ways when linked and have the potential to foster innovation, curriculum delivery, and inter-stakeholder collaboration (Anderson & Dexter, 2005; Fullan, 2020). For instance, instructional leaders who can promote the use of digital tools may motivate data-informed teaching practices. By contrast, digital leaders who possess a pedagogical vision can help ensure the purpose and alignment for technology use with learning goals (Leithwood, Harris & Hopkins, 2020).

Transformational Change in Secondary Education

Transformational change is one of the dimensions of school change at its broadest, systemic level, when it reorients school culture, structure, and outcomes. Leithwood et al. (1999) define transformational leadership as inspiring, motivating, and engaging stakeholders to support a collective vision. Transformational change in secondary education also means revising pedagogical methods, integrating technology-enhanced learning experiences, and helping prepare students for modern skills like critical thinking, creativity, and digital literacy (OECD, 2019, 2021).

Instructional and digital leadership initiatives should work hand in hand as a catalytic factor in this transformation, guiding educational practice toward evidence-based practice and future orientation (Ng, 2019; Ministry of Education Malaysia, 2013). While studies have discussed different aspects of instructional and digital leadership independently, little prior work has considered how these two fields can be integrated to promote transformational change in secondary education as an integrated set of frameworks. This paper seeks to address this gap by examining the nexus of leadership dimensions and their interconnections in shaping adaptive, future-ready schools.

METHODOLOGY

The study uses a quantitative research design to explore how the fusion of instructional and digital leadership will act as a catalyst for transformational change in secondary education. This method was deemed suitable because it allows a quantifiable approach to data collection and a statistical method for examining relations between variables.

We collected data through a school teacher's survey, which helped us gather participants' perceptions and practices regarding leadership integration in a relatively short time frame. The study sample consisted of teachers from chosen secondary schools. To achieve sufficient diversity across school contexts, stratified random sampling was conducted by school category (urban/rural; large/small). A sample of 200 respondents was intended, appropriate for rigorous statistical analysis (Creswell, 2014). The research instrument was a

structured questionnaire based on the literature used to assess instructional leadership (Hallinger, 2011), digital leadership (Sheninger, 2019) and transformational change in education (Leithwood & Jantzi, 2005).

Each item was rated on a five-point Likert scale from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). Both online and printed questionnaires were used to collect data. Participation was voluntary, and confidentiality and anonymity were guaranteed for the respondents. Data were analysed using SPSS version 27. Means, standard deviations, frequencies, and percentages were used to report the characteristics of the participants and the core study characteristics. Simultaneously, Pearson correlation and multiple regression analysis were undertaken to identify the relationships and predictive effects of instructional and digital leadership on transformational change in secondary schools.

RESULT

The results are summarised in four subsections: (i) demographic profile of the respondents, (ii) descriptive statistics of the variables, (iii) correlation analysis, and (iv) multiple regression analysis for predicting transformational change.

Demographic characteristics of the 200 respondents are shown in Table 1. As for gender, there were 76 male teachers (38.0%) and 124 female teachers (62.0%), suggesting a greater proportion of females in the study sample. In terms of teaching experience, 56 teachers (28.0%) reported less than five years of experience, while the largest group consisted of those with five to ten years of experience (n = 72, 36.0%). Also, 28 respondents (14.0%) had 11–15 years of experience, and 44 teachers (22.0%) reported more than 15 years of teaching experience. On the whole, representation points toward a sample dominated by mid-career teachers with meaningful representation of early- and more experienced groups.

Table 1
Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	76	38.0
	Female	124	62.0
Teaching Experience	< 5 Years	56	28.0
	5 - 10 Years	72	36.0
	11 - 15 Years	28	14.0
	> 15 Years	44	22.0

Table 2 shows average values and standard deviation of instructional leadership, digital leadership, and transformational change. Together, these variables ranged well above the midpoint (M = 3.00) and were positive in general perception. Digital leadership (M = 4.02, SD = 0.49) was best rated, followed by transformational change (M = 3.95, SD = 0.52) and instructional leadership (M = 3.89, SD = 0.54).

Table 2
Descriptive Statistics of Key Variables

Variable	Mean	SD
Instructional Leadership	3.89	0.54
Digital Leadership	4.02	0.49
Transformational Change	3.95	0.52

A Pearson correlation coefficient was calculated to describe the associations between leadership dimensions and transformational change. In Table 3, it is observed that both instructional leadership ($r = .62$, $p < .05$) and digital leadership ($r = .68$, $p < .05$) were both positively and significantly associated with transformational change. Instructional leadership and digital leadership were also moderately correlated ($r = .57$, $p < .05$).

Table 3
Correlation Between Leadership Dimensions and Transformational Change

Variable	1	2	3
Instructional Leadership	1		
Digital Leadership	.57**	1	
Transformational Change	.62**	.68**	1

***Correlation is significant at the 0.01 level (2-tailed)*

Thus, multiple regression analysis of both instructional leadership and digital leadership as predictors of transformational change in secondary schools was performed (Table 4). An overall predictive relationship of the predictors with transformational change was also strong ($R = .75$) and accounted for a majority of the variance of the outcome ($R^2 = .56$), which means that these two dimensions of leadership accounted for 56% of the variability of transformational change. Similar to the reported standardised coefficients, both instructional leadership ($\beta = .35$, $p < .05$) and digital leadership ($\beta = .41$, $p < .05$) were statistically significant positive predictors, with digital leadership showing a stronger predictive effect than instructional leadership.

Table 4
Regression Model Predicting Transformational Change

Predictor	B	SE B	β	t	p	95% CI for B	VIF
Constant	0.75	0.20	—	3.75	< .001	[0.36, 1.14]	—
Instructional Leadership	0.28	0.06	.35	4.67	< .001	[0.16, 0.40]	1.42
Digital Leadership	0.33	0.05	.41	6.60	< .001	[0.23, 0.43]	1.42

Model summary: $R = .75$, $R^2 = .56$, Adjusted $R^2 = .56$, $F(2, 197) = 74.30$, $p < .001$.

DISCUSSION

In a study of a diverse sample, the predictive role of instructional and digital leadership in facilitating transformational change in secondary education was examined. Findings indicated that both dimensions were meaningful predictors of transformational outcomes, in which digital leadership (β = .41) is more critical than instructional leadership (β = .35). The results suggest that while classic pedagogical direction is important, leaders' digital skills are also increasingly central in relation to school transformation in the 21st century.

The observation that digital leadership worked better than instructional leadership was reinforced by the OECD (2021), which argued that digitalisation is a major driver of systemic change in education in this area. This is supported by Ng (2019), who argues that digital technologies are becoming central to education reform in Malaysia, especially against the backdrop of the Malaysia Education Blueprint 2013–2025 (Ministry of Education Malaysia, 2013).

These findings are supported by prior research, which emphasises the need to reconcile instructional leadership with digital innovation to enhance learning outcomes (Ainley & Carstens, 2018; Fullan, 2020). Similar to Leithwood et al.'s (2020) claim that when pedagogical and technology connectedness exists, effective leadership effectiveness is highest, this paper demonstrates the most transformational outcomes of instructional and digital leadership

It also underscores the importance of conceptualising professional learning pathways that intersect pedagogical and digital leadership. Modules should integrate a balance of pedagogical and digital skills, including NPQEL, PLC programmes, and continuous in-service modules. These types of pathways will enable school heads not only to deliver high-quality instruction, but also to involve the system in the digital transformation and the convergence of curriculum implementation with the Malaysia Education Blueprint 2013–2025 and the Digital Transformation path.

In practice, these findings emphasise the significance of leadership programs that blend instructional and digital pedagogical elements for training leaders in these programs. School leadership in such programs may equip school leaders to sustain academic quality and to adopt new technologies and approaches to education. Furthermore, such integration could enhance teacher preparedness, foster student connectedness, improve teacher quality of student engagement, and ultimately contribute to the development of future-ready schools.

In action, these results point to a need for a mix in instruction and technology for such leadership development programs to integrate instruction and digital. Programs like these enable school leaders to maintain academic discipline while adapting to and keeping up with technological developments that support current and innovative teaching and learning. Furthermore, this implementation may foster teachers' readiness, increase student motivation and help to shape future equipped schools. However, the study is not perfect. It is purely quantitative, based on survey data that cannot capture the full picture of school leadership. Further research is also recommended into mixed-method models, including the examination of mediating variables (i.e., teacher preparation, digital infrastructure and community engagement).

Finally, we use these findings to provide empirical support for the claim that both instructional and digital leadership influence and catalyse transformative change in the system of secondary education. Linking both leadership modes at the highest levels would be crucial if we were to have pedagogically sound schools, but more importantly, innovative in how they address the dilemmas posed by digital.

CONCLUSION

The results indicate that the transformational change in secondary schools is significantly attributed to a balance of leadership practices, strong instructional direction, and digital capacity. Both instructional leadership and digital leadership were strong positive predictors and together accounted for a substantial proportion of variance in transformational change ($R = .75$; $R^2 = .56$). Digital leadership notably had greater predictive power versus instructional leadership, indicating that digital leadership has been an important lever on sustaining instructional innovation, together with the ability to facilitate digital integration, technology-enabled pedagogy, and educators' digital competency building. Therefore, a synergistic leadership approach, in which instructional priorities are reinforced through strategic digital leadership, is an accessible route toward developing sustainable school transformation models. From a practical standpoint, these results highlight the important role of dedicated professional development aimed at improving educational leaders' and schoolteachers' digital literacy, pedagogical use of technology, and their ability to lead in new ways in 21st-century schooling.

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REFERENCES

Ainley, J., & Carstens, R. (2018). *Teaching and learning international survey (TALIS) 2018 conceptual framework*. OECD Publishing. https://doi.org/10.1787/799337c2-en

Anderson, R. E., & Dexter, S. L. (2005). School technology leadership: An empirical investigation of prevalence and effect. *Educational Administration Quarterly, 41*(1), 49–82. https://doi.org/10.1177/0013161X04269517

Dexter, S., Richardson, J. W., & Nash, J. B. (2020). Leadership for technology use, integration, and innovation: A review of research. *Journal of Research on Technology in Education, 52*(2), 233–252. https://doi.org/10.1080/15391523.2020.1734522

Fullan, M. (2014). *The principal: Three keys to maximizing impact*. Jossey-Bass.

Fullan, M. (2020). *Nuance: Why some leaders succeed and others fail*. Corwin Press.

Hallinger, P., & Murphy, J. (1985). Assessing the instructional management behavior of principals. *The Elementary School Journal, 86*(2), 217–247. https://doi.org/10.1086/461445

Leithwood, K., & Jantzi, D. (2006). Transformational school leadership for large-scale reform: Effects on students, teachers, and their classroom practices. *School Effectiveness and School Improvement, 17*(2), 201–227. https://doi.org/10.1080/09243450600565829

Leithwood, K., Jantzi, D., & Steinbach, R. (1999). *Changing leadership for changing times*. Open University Press.

Leithwood, K., Harris, A., & Hopkins, D. (2020). Seven strong claims about successful school leadership revisited. *School Leadership & Management, 40*(1), 5–22. https://doi.org/10.1080/13632434.2019.1596077

Ministry of Education Malaysia. (2013). *Malaysia Education Blueprint 2013–2025 (Preschool to Post-Secondary Education)*. Putrajaya: Ministry of Education Malaysia.

Ng, W. (2015). *New digital technology in education: Conceptualizing professional learning for educators*. Springer. https://doi.org/10.1007/978-3-319-05822-1

Ng, W. (2019). Technology adoption in Malaysian schools: Addressing the digital divide. *Journal of Education and Information Technologies, 24*(2), 1083–1101. https://doi.org/10.1007/s10639-018-9814-0

OECD. (2019). *OECD skills outlook 2019: Thriving in a digital world*. OECD Publishing. https://doi.org/10.1787/df80bc12-en

OECD. (2021). *OECD digital education outlook 2021: Pushing the frontiers with artificial intelligence, blockchain and robots*. OECD Publishing. https://doi.org/10.1787/589b283f-en

Robinson, V. M. J., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly, 44*(5), 635–674. https://doi.org/10.1177/0013161X08321509

Sheninger, E. (2014). *Digital leadership: Changing paradigms for changing times*. Corwin Press.