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المجلة الأمريكية الدولية للعلوم الإنسانية والاجتماعية

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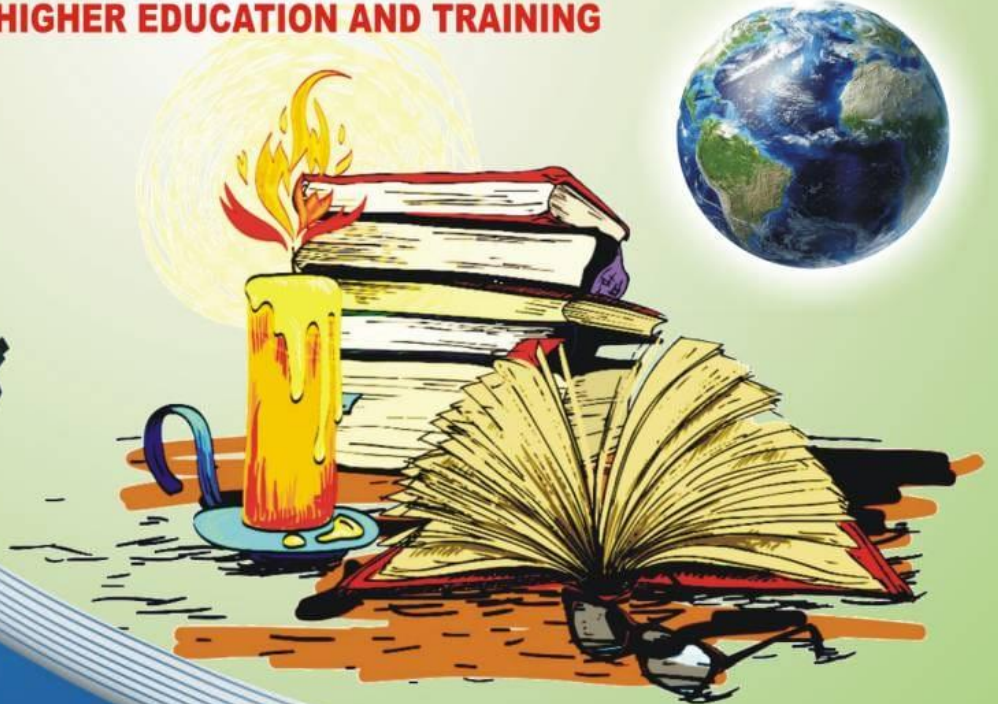
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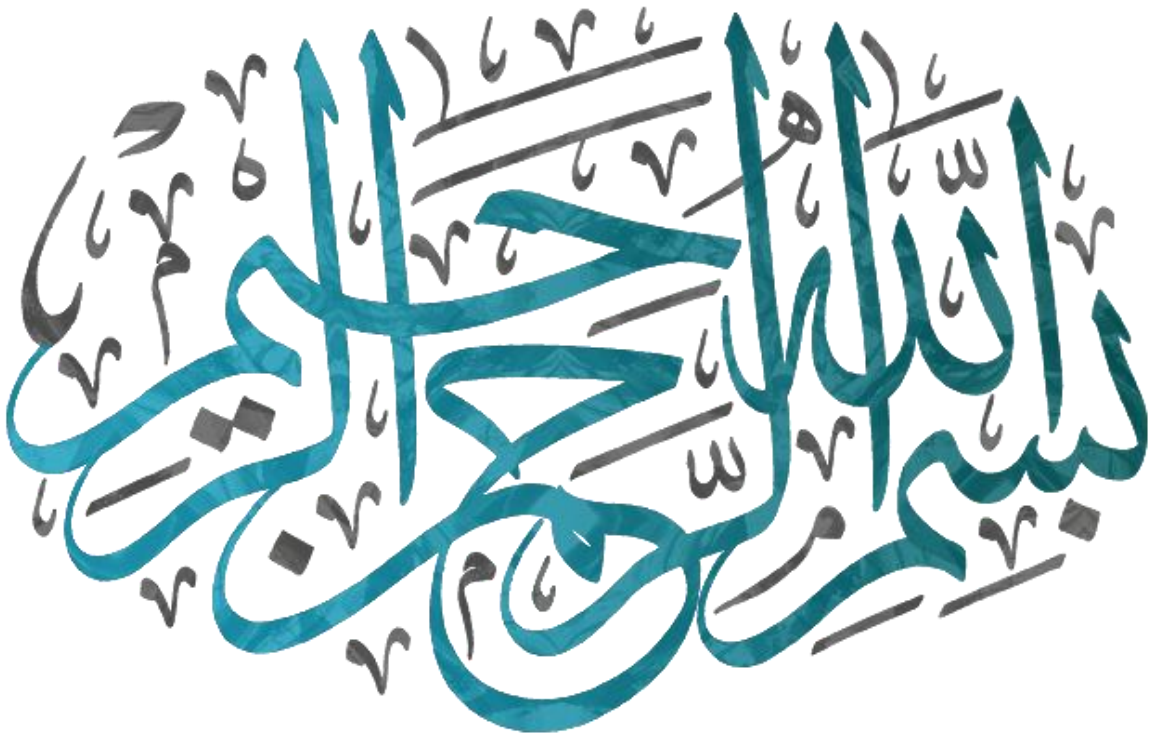
رقم الايداع القانوني في المكتبة الوطنية المغربية (2025 Pe00006)

رقم الايداع القانوني في دار الكتب والوثائق العراقية (2735)

تصدر عن الأكاديمية الأمريكية الدولية
للتعليم العالي والتدريب

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تتألف هيئة تحرير المجلة الأمريكية الدولية للعلوم الإنسانية والاجتماعية من نخبة من العلماء والخبراء المتميزين من مختلف المؤسسات الأكاديمية الدولية. وتتولى الهيئة مسؤولية الحفاظ على جودة البحوث المنشورة وتقديم التوجيه الاستراتيجي لتطوير المجلة.

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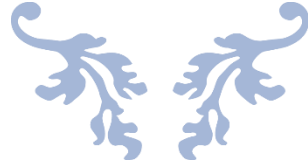
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كلمة العرو



بسم الله الرحمن الرحيم

يسرنا في المجلة الأمريكية الدولية للعلوم الإنسانية والاجتماعية أن نضع بين يدي الباحثين والأكاديميين والقراء الكرام هذا الجزء الثالث من العدد السابع والعشرين، والذي خصصناه لنشر النتاج العلمي والبحوث المشتركة التي أثري بها المؤتمر العلمي الدولي الثالث عشر.

يجيء هذا العدد مستجيباً للرؤية العلمية والتنسيقية التي سعى المؤتمر إلى تحقيقها، والمتمثلة في تعزيز ثقافة البحث العلمي المشترك والرصين، وتجسير الفجوات بين أرباب التخصصات المختلفة في مجالات العلوم الإنسانية والاجتماعية. إن الشراكة البحثية لم تعد مجرد خيار أكاديمي، بل أصبحت ضرورة ملحة لمواجهة التحديات المعاصرة، ورسم معالم حلول منهجية وشاملة تتعدى نطاق الرؤية الفردية إلى آفاق العمل الجماعي المتبصر.

وقد شهد هذا الجزء تنوعاً وثراءً لافتاً في الموضوعات المطروحة؛ حيث توزعت الأوراق البحثية المنشورة بين دراسات تحليلية، وميدانية، ونظرية تلامس أحدث القضايا وأشدّها ارتباطاً بالواقع الإنساني والاجتماعي. وقد خضعت جميع هذه البحوث لمقاييس محكمة من التقييم والمراجعة العلمية لضمان استيفائها لأعلى معايير الرصانة والدقة والأمانة الأكاديمية المتعارف عليها دولياً.

وإذ نُقدّم هذا العدد، فإننا نتوجه بخالص الشكر والتقدير لكل الباحثين والمشاركين الذين أسهموا ببحوثهم ونتاجاتهم الفكرية في إنجاح أعمال المؤتمر وتغذية صفحات هذا العدد. كما نثمن جهود أعضاء الهيئة الاستشارية وهيئة التحكيم ولجان المؤتمر على ما بذلوه من عمل دؤوب ودقة في الفحص والتدقيق لتقديم هذا العمل بالصورة المشرقة التي يليق بها.

وكذلك تضمن العدد بعض البحوث المنشورة لباحثين عرب خارج أعمال المؤتمر المذكور.

ختاماً، نأمل أن يشكل هذا العدد إضافة نوعية للمكتبة العربية والدولية، وأن يفتح آفاقاً جديدة أمام الباحثين لمزيد من العطاء والابتكار العلمي المشترك.

والله ولي التوفيق.

هيئة تحرير المجلة

2026/07/ 29 ديلاوير- الولايات المتحدة الامريكية

الملاحظة القانونية

البحوث المنشورة في المجلة لا تعبر عن وجهة نظر المجلة، بل عن رأي كاتبها.

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School Leadership Support for Technology Integration and Its Impact on Secondary Education Quality: A Narrative Review and Conceptual Model

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Abstract

This study aimed to explore the role of school leadership support for technology integration and its impact on the quality of secondary education through a qualitative narrative review and the development of a conceptual model. Digital technology has rapidly developed and continues to evolve in ways that are changing education systems globally, giving technology integration an increased role in the effective teaching and learning process. While a successful technology integration takes an effective school leader, one who has the ability to develop a vision, provide support, and create a climate in which digital transformation can take place. Only secondary data from peer-reviewed journal articles, scholarly books, international reports, and educational policy documents from 2019-2025 were used for this study. Collected literature was analyzed by thematic analysis to identify patterns and relationships among school leadership support, technology integration, and educational quality. The results indicated that the support of school leaders is a key factor in effective technology integration. Good leadership in terms of digital vision, continuous professional development, sufficient technological resources and collaborative and distributed leadership greatly contributes to teachers' readiness and confidence in the use of educational

technologies. The review also showed that good technology integration has a positive impact on teaching, student engagement, acquisition of digital competences and quality of education. However, the lack of infrastructure, funding, training opportunities, and digital inequalities remain obstacles to successful digital transformation. The study concludes that the integration of sustainable technology in secondary education is a systemic process that relies on the interplay between leadership practices, organizational readiness, teacher capacities and policies that support the process. The conceptual model proposed in this study shows that there is a positive relationship between school leadership support, technology integration and the quality of secondary education, and is a basis for future empirical research

Keywords: School Leadership Support; Digital Leadership; Technology Integration; Secondary Education Quality; Digital Transformation; Educational Technology; Teacher Professional Development; Narrative Review.

دعم القيادة المدرسية لدمج التكنولوجيا وتأثيره على جودة التعليم الثانوي: مراجعة سردية ونموذج مفاهيمي

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الملخص

هدفت هذه الدراسة إلى استكشاف دور دعم القيادة المدرسية في دمج التكنولوجيا وأثره في جودة التعليم الثانوي من خلال إجراء مراجعة أدبية سردية وتطوير نموذج مفاهيمي يوضح العلاقات بين هذه المتغيرات. وقد أدى التطور السريع في التقنيات الرقمية إلى إحداث تحولات جوهرية في الأنظمة التعليمية، مما جعل دمج التكنولوجيا عنصراً أساسياً في تحسين عمليتي التعليم والتعلم. إلا أن نجاح هذا الدمج يتطلب قيادة مدرسية فعّالة قادرة على وضع رؤية رقمية واضحة، ودعم المعلمين، وتهيئة بيئة مدرسية داعمة للتحويل الرقمي. اعتمدت الدراسة على البيانات الثانوية المستمدة من المقالات العلمية المحكمة، والكتب الأكاديمية، والتقارير الدولية، ووثائق السياسات التعليمية المنشورة خلال الفترة (2019-2025). وتم تحليل الأدبيات باستخدام أسلوب التحليل الموضوعي بهدف تحديد الأنماط والعلاقات بين دعم القيادة المدرسية، ودمج التكنولوجيا، وجودة التعليم. أظهرت النتائج أن دعم القيادة المدرسية يمثل عاملاً حاسماً في نجاح دمج التكنولوجيا، حيث تسهم الممارسات القيادية، مثل صياغة رؤية رقمية واضحة، وتوفير التنمية المهنية المستمرة، وتخصيص الموارد التكنولوجية المناسبة، وتعزيز القيادة التشاركية، في رفع جاهزية المعلمين وثقتهم في استخدام التقنيات التعليمية. كما بينت النتائج أن الدمج الهادف للتكنولوجيا ينعكس إيجاباً على فعالية التدريس، وزيادة مشاركة الطلبة، وتنمية الكفايات الرقمية، وتحسين جودة التعليم بصورة عامة. ومع ذلك، ما تزال بعض التحديات، مثل ضعف البنية التحتية، ومحدودية التمويل، ونقص فرص التدريب، والفجوات الرقمية، تشكل عوائق أمام تحقيق التحويل الرقمي المستدام. وتخلص الدراسة إلى أن دمج التكنولوجيا في التعليم الثانوي يمثل عملية نظامية متكاملة تعتمد على التفاعل بين الممارسات القيادية، وجاهزية المؤسسة التعليمية، وبناء قدرات المعلمين، وتوافر السياسات التعليمية الداعمة. ويقترح النموذج المفاهيمي المطور وجود علاقة إيجابية

بين دعم القيادة المدرسية، ودمج التكنولوجيا، وجودة التعليم الثانوي، بما يوفر أساساً للدراسات المستقبلية التي تسعى إلى اختبار هذه العلاقات بصورة تجريبية .

الكلمات المفتاحية: دعم القيادة المدرسية، القيادة الرقمية، دمج التكنولوجيا، جودة التعليم الثانوي، التحول الرقمي، التكنولوجيا التعليمية، التنمية المهنية للمعلمين، المراجعة الأدبية السردية.

1. Introduction

The speed of digital technology change has revolutionized education systems globally, bringing with it opportunities and challenges for any school. The integration of technology has become a necessary part of teaching and learning, facilitating innovative teaching practices, improving the engagement of students and promoting education quality. The effective implementation of technology in schools, however, requires not just the resources of technology, but also effective school leadership that fosters and promotes digital transformation.

School leaders are instrumental in creating a vision for technology integration, offering professional development, procurement of resources, building a collaborative culture, and supporting teachers in the process of implementing technology in the classroom (Dexter & Richardson, 2020; Håkansson Lindqvist & Pettersson, 2019). The importance of principals' digital leadership on teachers' readiness and willingness to use technology for teaching innovation is gaining importance in the field of research (AlAjmi, 2022; A'mar & Eleyan, 2022).

In secondary education, students are expected to acquire higher-order digital skills and critical thinking skills; therefore, leadership support for technology integration becomes even more significant. Good leadership can make a positive impact on school effectiveness, student learning, teacher effectiveness, and instructional effectiveness (Berkovich & Hassan, 2023; Rasdiana et al., 2024).

While there is an increasing literature on digital leadership and digital technology integration, there is limited integration across the various educational settings. Hence, a synthesis of existing knowledge is needed, and the conceptual framework of the impact of school leadership support and technology integration on the quality of secondary education should be

developed. This narrative review aims at filling this gap, reviewing contemporary literature and suggesting a conceptual model to inspire future studies and educational practice.

2. Problem Statement

As technology changes and comes to be used as a tool in the classroom, it has become more critical than ever that leadership support is available to help integrate technology into instruction. While many studies have focused on digital leadership, technology leadership and technology integration, there is a lack of conceptual understanding of how technology integration support relates to educational quality in school leadership. Few studies have focused specifically on secondary school contexts.

Moreover, the literature is scattered throughout countries, education systems and theoretical perspectives, and it is challenging to gain a holistic view of the mechanisms through which leadership support can be related to educational quality outcomes. As a result, educational leaders and policy makers may not have a clearly defined concept to construct the strategy for integrating technology. Thus, there may be a lack of a conceptual framework to inform strategic technology integration efforts.

This research tackles this by reviewing and synthesizing current research regarding school leadership support, technology integration, and a conceptual model of how this impacts quality in secondary education.

3- Questions of the study

- 1) In what ways, according to the literature, were school leaders identified as playing a major role in technology integration?
- 2) What is the role of the influence of school leadership in influencing teachers' implementation of technology use of technology in secondary schools?

3. How does the use of technology relate to the quality of secondary education?
4. Which factors contribute to and/or obstruct effective integration of technology in secondary schooling?
6. What is the relationship between school leadership support, technology integration and the quality of secondary education, as understood through a conceptual model?

4- The aim and objectives of the study

The aim is to build a complete picture of the role of school leadership support for technology integration and how it contributes to improving the quality of secondary education by conducting a narrative literature review and constructing a conceptual model.

Specific Objectives

1. To develop dimensions of school leadership support for technology integration.
2. To explore the effect of teacher leader support on teachers' technology integration.
3. To analyze the role of technology integration in improving the quality in secondary education.
4. To recognize facilitators and barriers to technology integration.
5. To suggest a model that connects school leadership support to technology integration to the quality of secondary education.

5. Significance of the study

- Theoretical Significance

The current study is valuable for the rapidly evolving research on digital leadership, technology integration, and educational quality because of its comprehensive overview of recent literature. While there has been a significant amount of research that has focused on school leadership and educational technology separately, there has been less work that has attempted to examine the relationship between these constructs— school leadership support, the integration of technology, and the quality of secondary education in a cohesive conceptual framework. Thus, this review fills an important space by synthesizing results of different educational contexts and theoretical approaches.

Moreover, the study adds to the theoretical knowledge on digital leadership by identifying the leadership practices that help achieve successful technology integration. The study has developed a conceptual model that provides a structured explanation of how support for leadership affects teachers' technology use and how this technology integration in turn can help to improve educational quality. The proposed model can be used as a basis for future empirical research to investigate these relationships quantitatively or qualitatively.

Additionally, the study sheds light on the current debate regarding educational transformation in a digital age. Digital technologies are becoming a more common part of school life, and it is important to have an understanding of the role that leadership plays in facilitating change. The review thus adds digital transformation to the current body of theory on educational leadership, as part of the school improvement and effectiveness process (Håkansson Lindqvist & Pettersson, 2019; Leithwood et al., 2020; Reis-Andersson, 2024).

- Practical Significance

This study is of practical significance as it can inform educators, policy makers, teachers and educational institutions in their decision-making for technology integration initiatives within the school.

The findings offer a basis for evidence-based leadership practices that foster successful technology implementation for school principals and educational leaders. These practices involve having a clear vision for digital, providing professional development, providing adequate technological infrastructure, collaborating, and developing a supportive digital culture in schools (Dexter & Richardson, 2020; Karakose et al., 2021).

The study underscores the need for leadership capacity building initiatives and digital transformation policies to equip school leaders with the capacity to facilitate digital transformation successfully as a policy-maker. The review can help educational leaders create leadership development curricula that build principals' digital knowledge and skills and improve schools' technology integration readiness (UNESCO, 2023; Boeskens & Meyer, 2025).

For teachers, the study reveals the effect of leadership support on their confidence, motivation, professional development, and disposition to embrace innovative teaching technologies. This insight can be useful for schools to build a conducive environment for continuous professional development and effective technology integration (A'mar & Eleyan, 2022; Rasdiana et al., 2024).

The proposed conceptual model is a tool for researchers that will be tested, improved, and modified as the next phase of research. The model could also

be used to make comparisons between educational systems and cultural contexts.

Last, in the context of the current effervescence of digitalization in the field of education globally, the study provides contemporary perspectives that can support secondary schools in elevating the quality of their teaching, student engagement, digital competence development, and educational effectiveness in the twenty-first century (Timotheou et al., 2023; Farrell et al., 2024).

Conceptual Definitions

School Leadership Support

Technology leadership is defined as to be the one who assists and leads the organizational conditions that can help teachers effectively use technology in education (Dexter and Richardson, 2020). Likewise, Håkansson Lindqvist and Pettersson (2019) highlight that digital leadership is not only about the management of technology and technology resources, but it is a leadership of organizational change, a leadership of building and cultivating digital competences, and a leadership of creating culture that fosters innovation and continuous learning.

Technology Integration

Timotheou et al. (2023) define technology integration as the application of technology and technological innovations to change the way education is provided, enhance learning opportunities, and enhance students' technological skills. UNESCO (2023) also states that beyond access to technology, the successful integration of technology needs to be supported by "appropriate pedagogical approaches, teacher readiness, institutional support, and supportive leadership structures.

Secondary Education Quality

UNESCO (2023) defines quality education as an education that enables learners to gain knowledge, skills, values and competencies relevant for personal development and participation in the contemporary world. Likewise, Leithwood et al. (2020) state that good school leadership makes a significant difference to educational quality through the impact on teaching quality, school climate, teacher effectiveness and school outcomes.

Digital Leadership

Digital leadership, according to Reis-Andersson (2024) is a leadership style that empowers schools to navigate technological shifts and foster organizational learning and growth. Likewise, Karakose et al. (2021) stress that digital leaders are important in assisting teachers, promoting the use of technology, and creating a sustainable environment for digital learning.

Model of the study

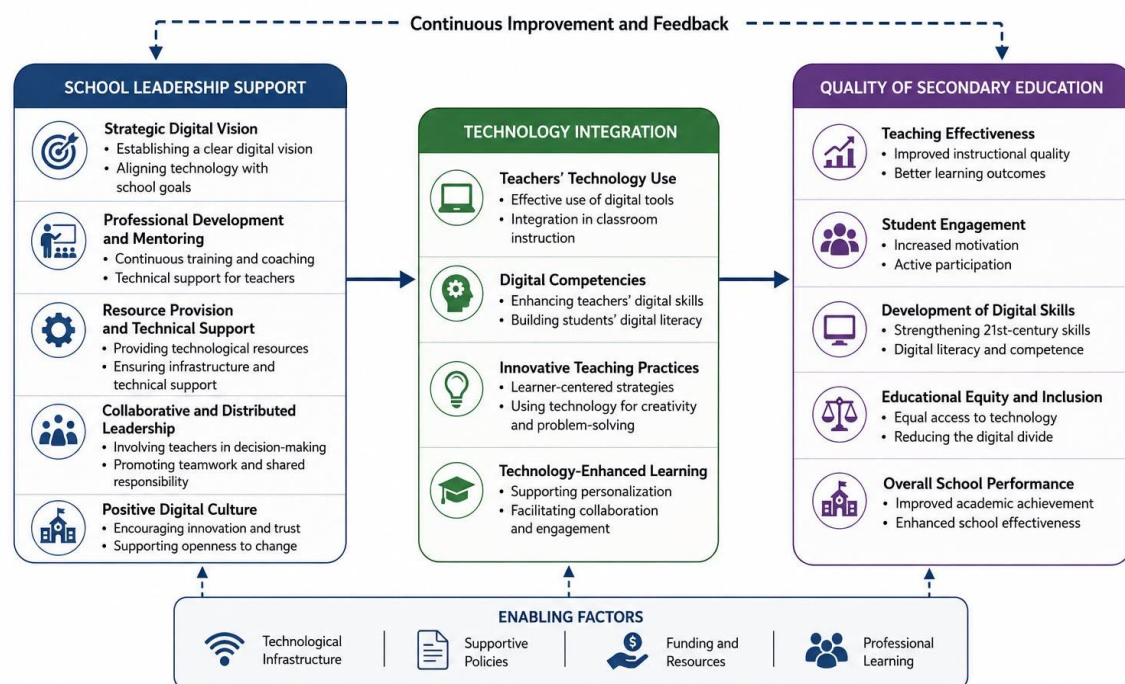


Figure 1. Conceptual Model of School Leadership Support, Technology Integration, and the Quality of Secondary Education.

Figure 1. Proposed Conceptual Model of the Relationship between School Leadership Support, Technology Integration, and the Quality of Secondary Education.

Theoretical Framework

It is believed that a major school leadership support factor is a critical variable for the successful incorporation of technology and, consequently, enhancement of secondary education quality. Based on the literature reviewed, it becomes clear that digital transformation is less of a technical change process and more of an organizational and pedagogical change process that requires strategic leadership, supportive cultures, and continuous professional development.

The theoretical basis for this study is based on theory Digital Leadership Theory, Transformational Leadership Theory, and Distributed Leadership Theory. A digital leader plays a crucial role in clarifying a vision of how the use of digital technology can be beneficial in the school and in creating an innovative culture and set of conditions (Håkansson Lindqvist & Pettersson, 2019; Reis-Andersson, 2024). Good digital leaders are not only responsible for delivering tools of technology, they also foster organisational learning and teachers' digital competences.

Transformational Leadership theory is about the leadership ability to inspire, motivate and empower teachers to engage in education change and innovation. Research indicates that principals who have a clear vision of the role of digital technology in education, provide continuous training and support, and encourage collaboration, significantly increase teachers' readiness and eagerness to use digital technology for their instruction (Karakose et al., 2021; AlAjmi, 2022). Such leadership actions contribute

to having a positive school community, where experimentation is encouraged, and resistance to technological change is kept to a minimum.

In addition, Distributed Leadership Theory highlights the importance of shared leadership between principals, teachers, and professional learning communities for a successful integration of technology (Dexter & Richardson, 2020; Harris, 2020). Shared leadership enables shared responsibility, trust, and organizational learning, which are prerequisites to a sustainable digital transformation.

The literature also suggests that leadership support affects educational quality via the intermediary mechanism of the integration of technology. When technology is used to improve learning outcomes and supported by sufficient infrastructure and professional development, it can positively impact instructional practices, improve student engagement, develop digital skills, and enhance learning outcomes while meeting pedagogical goals (Timotheou et al., 2023; UNESCO, 2023).

The conceptual framework thus assumes that school leadership support in terms of strategic vision, professional development, provision of resources, collaboration, and development of digital culture has a positive impact on technology integration. Conversely, the integration of technology positively affects the quality of secondary education by making education more effective, engaging, equitable, and improving school performance.

Methodology

Research Design

A qualitative narrative review is used for this study. Narrative review research can be used to synthesize, interpret, and critically discuss the

literature to gain a comprehensive understanding of a particular phenomenon and conceptual insights.

Data Sources

Only secondary data gathered from peer-reviewed journal articles, scholarly books, reports of international organizations, and relevant educational policy documents were used in the review.

Literature Selection

The literature reviewed concentrates on the studies that have been published in the period 2019-2025 on the following themes:

- * School leadership.
- * Digital leadership.
- * Technology leadership.
- * Technology integration.
- * Educational quality.

Digital transformation in the school.

Table 1. Characteristics of the Selected Studies

Characteristic	Description
Number of Studies	20 studies
Publication Period	2019–2025
Research Contexts	Schools from Europe, Asia, the Middle East, Africa, North America, and OECD countries
Educational Level	Primarily K–12 and secondary education settings
Research Designs	Quantitative, qualitative, mixed-method, conceptual, policy analysis, bibliometric, and literature review studies
Data Collection Methods	Surveys, interviews, document analysis, systematic reviews, and secondary datasets
Main Variables	School leadership support, digital leadership, technology integration, teacher digital competencies, and educational quality
Main Focus	Examining the role of school leadership in facilitating technology integration and improving educational outcomes

Data Collection Tool

The main data collection instrument is a structured literature review matrix that was developed to extract and structure data from the selected studies.

The matrix includes:

- * Author(s) and year.
- * Research context.
- * Research objectives.
- * Methodology.
- * Leadership dimensions.
- * Technology integration outcomes.
- * Educational quality outcomes.
- * Key findings.

Data Analysis

Thematic analysis is used for analyzing the collected literature. Themes are recognized, classified, contrasted, and combined to identify patterns within the themes of leadership support, technology integration, and educational quality. Results are then used to build the suggested conceptual model.

Scope of the Study

The study centers on literature that was published from 2019 to 2025 that relates to school leadership support for technology integration in secondary education contexts. The review focuses on research related to digital leadership, technology leadership, implementation of educational technology, and enhancing educational quality.

Limitations of the Study

There is no primary data in the study.

2. The findings are based on the quality and availability of published literature.
3. The conceptual model needs to be empirically validated in the future by using quantitative or mixed methods research.

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
Hakansson Lindqvist & Pettersson (2019)	To understand how school leaders navigate the complexities of leading digitalization processes in	qualitative research with semi-structured in-depth interviews and focus groups	The principals and teachers are from several schools in different levels of digitalization and at different educational levels	The research showed that digitalization in schools is not a simple, linear, one-size-fits-all process, but one

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	schools and how leadership vision, organizational culture and sustained support influence the digitalization trajectory in schools. Interpretative	with school principals and teachers. Thematic analysis was conducted to detect the patterns and challenges.	in various institutional settings in Sweden.	that is complex and layered, with a wide range of factors involved, not least procurement of the technology. Leaders needed to establish a clear digital vision and to communicate this vision effectively, implement a systematic approach to creating an organizational culture that embraces change, and then give sustained leadership support over the long-term. One important discovery was that not all school leaders

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				were well equipped in digital competence, which posed a great challenge for institutional changes. The study revealed that technology utilization without a shift in culture did not yield deep results and teacher resistance was sometimes due to a lack of clarity of instruction, not to resistance to technology.
Dexter & Richardson (2020)	To review and synthesize leadership literature on technology integration and determine what leadership practices seem to	Literature review, which over several decades has been performed in systematic way, with quantitative	The review used explicit inclusion/exclusion criteria and was structured following a coding process to extract and compare findings.	The review found three key ways that school leadership has a strong impact on teachers' technology integration: (1) articulating and

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	be most effective in supporting teachers in the use of technology, identify gaps in existing research, and identify a new agenda for the field.	and qualitative synthesis of work.	Literature from around the world in the field of technology leadership in education, for example, from different education systems, at different levels of the education system and from different cultures, which has gone through a peer-reviewed, empirical study	modeling a shared technology vision, (2) securing and equitably distributing resources such as time, infrastructure and funding, and (3) designing and sustaining high-quality professional learning opportunities. One of the major findings was that distributed leadership models (delegating responsibility for technology integration throughout the school) were more effective than top-down

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				directive approaches. The review also revealed that continuous, in-depth professional development was significantly more effective than one-off workshops, and that trust building between leaders and teachers was an overlooked but vital factor that enabled the provision of effective continuous professional development.
Leithwood, Harris & Hopkins (2020)	Seven tenets of effective school leadership were identified and reviewed in the light of current	Extensive evidence-based review of a large amount of international empirical	The seven claims were confirmed and reinforced, with emphasis being placed on how effective	Most importantly, it concluded that leadership has an impact on student outcomes

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	international evidence to determine if they remained valid, were updated, or needed to be discarded.	research (quantitative meta-analyses and qualitative cross-case studies) to critically re-examine leadership claims.	school leadership is the second most significant in-school factor impacting student learning, after the teaching/learning relationship.	primarily in an indirect manner, through improving teacher working conditions, teacher professional motivation and instruction capacity. Shared leadership was identified as a highly effective strategy, as was working collaboratively to make decisions, which benefited teachers' morale and enhanced coherence within the school. Building a culture of collaborative inquiry and creating professional

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				learning communities were both identified as powerful levers for sustaining school improvement over time.
Harris (2020)	The study aimed to reflect on and theorize about the nature of school leadership amidst the COVID-19 crisis, looking at how leadership demands were changed, leadership became more distributed, and adaptive leadership models emerged. Conceptual and analytical discussion based on field observations,	The paper draws on recent research on pandemic schooling. Globally, schools in COVID-19 environments based on observations and reports from leaders from a variety of national education systems. the pandemic revealed significant gaps in the	Schools with principals who encouraged teacher teams and delegated responsibilities effectively met the challenges of distance learning and maintained continuity of learning more effectively.	A key finding was that digital leadership capability , the ability to lead digitally (both skills and organizational structures) was no longer a nice-to-have, but a must-have. The paper contended that the COVID-19 pandemic served as a “rush test” of the digital readiness of schools, and exposed significant

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	practitioners' accounts and crisis leadership literature.	traditional hierarchical approach to leadership and proved the necessity of distributed and adaptive leadership for an organization's survival during a crisis.		disparities in the resources available to well-resourced and under-resourced schools.
Pettersson (2021)	To construct an understanding of digitalization and educational change in schools based on theoretical frameworks and to use Activity Theory and the concept of levels of learning to provide an explanation for why digital transformation efforts are (not)	Theoretical analysis based on Engstrom's Activity Theory framework and Bateson's levels of learning to understand examples of digitalization of the school and develop an explanatory model of systemic	The examples of School digitalization contexts from the Swedish school environment as empirical anchors for the development of the theoretical model for other international school settings.	The theoretical framework showed that real digital transformation is a systemic multi-level learning process and not just a technology adoption. It's not just about new software or a new piece of equipment; true transformation happens when schools make

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	successful at a systemic level.	change in education.		changes to their organizational logic, cultural norms, institutional assumptions, professional identities, etc. The model has been shown to indicate that few digitalization projects reach higher levels of learning as they do not take account of the underlying activity structures that underpin how schools' function. This has direct consequences for leadership, and effective digital leaders should be facilitators of deep learning in

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				their organizations', rather than just technology champions.
Karakose, Polat & Papadakis (2021)	To examine teachers' perceptions of their school principals' role, digital behaviors and technology skills during the COVID-19 pandemic and understand how this varied by school and teacher characteristics.	Electronic quantitative survey study with a validated multi-dimensional digital leadership competencies and technology integration support questionnaire.	The teachers were selected using stratified sampling method and included a large sample (2020-2021) of teachers in Turkish schools covering different types of schools, regions, and teacher experiences.	The results showed that the principals who demonstrated high levels of digital leadership behaviors significantly contributed to their teachers' technology competency and confidence in the pandemic. Three aspects of leadership appeared to have a major impact: communicating a clear digital vision, visible personal use of technology and practical support and provision of

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				technical resources. Those principals who exemplify digital practices and are regular in their digital communication with teachers substantially lowered anxiety and resistance to technology. The study also revealed that teachers in schools that had digitally competent principals were more ready to teach online and had a higher level of digital teaching readiness than those whose principals were not digitally competent,

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				indicating a digital leadership trickle down effect.
AlAjmi (2022)	To evaluate the correlation between school principals' digital leadership behaviors and teachers' technology integration in classrooms during COVID-19 in Kuwait, and to determine which dimensions of school principals' digital leadership were most effective in predicting teachers' technology integration during COVID-19 in classrooms.	Multiple regression analysis study type: Quantitative. A Technology and Digital Leadership validated survey instrument was distributed to teachers electronically during the period of remote learning.	Primary and secondary level teachers from Government schools in Kuwait during the period of remote learning due to the COVID-19 situation.	Results of the regression analysis supported the hypothesis: Principal digital leadership was a statistically significant positive predictor of teachers' classroom technology integration. The largest effect sizes were for principals' strategic vision for digital learning and the ability to provide a safe and supportive learning environment

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				digitally. Importantly, the study found that lack of infrastructure as well as insufficient training prior to the pandemic are the strongest constraints that temper the effect of leadership and integration. The study revealed that, despite high digital competencies, the principals could not make a significant impact without relevant support structures within the system and, thus, that leading with digital competence is dependent on appropriate

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				support structures in the system.
A'mar & Eleyan (2022)	To investigate the relationship between the level of technology integration in the teaching process in Palestinian schools and the dimensions of technology leadership that principals practiced, and to find out which dimensions were most predictive of teachers' technology use.	A researcher developed and validated instrument was used in quantitative correlational study in which measured technology leadership across multiple dimensions and classroom technology integration outcomes were measured.	School teachers from various school levels and administrative districts in schools of the West Bank, Palestine	The results showed that there was a strong and statistically significant positive correlation between the principals' technology leadership and the extent of using technology in teaching. Professional development and technical resources provided by principals was the most influential leadership dimension. A significant finding was that

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				the impact of leadership support was more pronounced for teachers who initially were less confident with technology, indicating that digital leadership is a compensatory factor for less digitally experienced teachers. The study also revealed that the relational dimension of leadership, namely trust and open communication between principals and teachers on technology was an important

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				facilitating mechanism that played a mediating role in the relationship between leadership and technology-integration.
Timotheou et al. (2023)	To perform a comprehensive systematic literature review on the impacts of DTE on education and to find out the most important determinants of digital capacity of schools and the successful digital transformation process.	Systematic literature review that includes peer-reviewed international publications in the field of educational technology, digital transformation and school leadership over the last decade, followed by thematic and content analysis of the findings.	International peer-reviewed research on a variety of educational settings, school systems and national contexts at all levels of education, primary, secondary, and higher education.	Even the use of technology infrastructure was not the most important factor for successful digital transformation as the review found that it was the effective school leadership and a supportive organizational culture. The results revealed that transformational digital leaders who championed technology

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				experimentation were strongly associated with schools' ability to meaningfully and sustainably integrate technology. AI and adaptive learning was a technology that came to the fore as an increasingly important space in which to give leadership. The review also concluded that there needed to be a connection between technology use and specific learning objectives, as schools with technology that had not been specifically

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				aligned with learning objectives did not report significant changes on learning outcomes.
UNESCO (2023)	To examine the current state of technology in the world's education system and its current functions, to reflect on the conditions of technology in providing educational benefits, and to give a critical analysis of risks of uncritical use of technology including exacerbation of inequities and quality deterioration.	A global education monitoring report that draws on extensive international evidence from quantitative data, policy analysis, case studies and expert consultation, from a range of national educational systems.	Education systems at all levels and in all parts of the world, especially low- and middle-income countries and populations not served.	The report suggested that only technology that is used with purpose and that supports clear educational goals and informed pedagogically rich leadership will have a meaningful educational impact. One of the most important results was that in many contexts, the proliferation of unguided technology in schools was

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				actually detrimental and was a waste of resources and attention. The report cautioned against technology vendors making technology decisions and recommended evidence-based, learner-centered technology policies. It also noted that the digital divide is growing and the students most at risk of disadvantage are the least likely to benefit from digital tools, and that effective leadership by principals in decision-making around digital

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				tools is a key equity lever.
Reis- Andersson (2024a)	To gain a deeper understanding into the conceptualization , enactment, and sustainability of digitalization leadership processes as developed by school leaders in K-12 institutions, and to document the strategies, challenges, and contextual factors that influence digital leadership practice.	A qualitative study with semi-structured interviews with school principals was conducted which employed thematic analysis in order to grasp the lived experience of leading digitalization.	Actively involved principals in different phases of institutional digitalization in K-12 schools in Sweden	It was concluded in the study that school principals are strategic architects and cultural stewards of digitalization who play an irreplaceable central role in sustaining digital change in schools. Successful principals used a number of strategies: planned strategically for years and not based on single technology purchases; created a culture in the school that encouraged digital experimentation

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				and failure; planned for the development of collective digital competence over time in the teaching staff. Often a principal's ideal digital vision was in sharp contrast to the financial, human and time resources they had to make it happen. This is a major frustration, and sometimes caused partial or stalled implementation.
Reis- Andersson (2024b)	To examine the exercise of digital leadership at the municipal level of education governance and how system-level leadership	This qualitative investigation involved interviews with municipal education officials and	Swedish municipal education systems including individuals responsible for the digital strategy at district level and principals of	The research showed that the impact of coherent and aligned leadership at the municipal level is significantly

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	influences and supports digitalisation of individual schools within the municipal districts.	school principals and was based on three areas of analysis: governance structures, leadership coordination, and system-level support mechanisms.	schools in the district.	amplifying the impact at the school level on the digitalization of schools. Where municipalities had a clear and well-resourced digital transformation strategy, they showed significantly more uniformity in digitalization results per school, and where municipalities had inconsistent or no support, there was a significant variation in digital development per school. What emerged was that inter-school

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				coordination supported by the leadership of municipalities (such as shared resources, school to school professional learning, and digital infrastructure) could help minimize inequalities which would otherwise arise from relying on individual schools to build capacity. The study identified multi-level leadership coherence as a key structural leverage for achieving system-wide digital equity.

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
Farrell, Rice & Qualter (2024)	To understand how the collaborative learning process in an international Erasmus+ project enabled the digital transformation in the schools involved and what transferable learning mechanisms are in play when working across institutions and nations for the purposes of educational digitalization.	Case study research in participating schools and educational institutions, which is a combination of document analysis, interviews and reflective practitioner accounts.	Several schools and educational institutions taking part in a structured Erasmus+ digital transformation collaboration project from various countries in Europe	The study clearly confirmed that systematic school— international school cooperation significantly speed up digital innovation. The significant development that teachers and leaders reported is that their digital pedagogical competence grew as a result of peer learning and cross-national knowledge exchange, which was not possible within their individual institutional contexts. The Erasmus+

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				collaboration model was a safe space for experimentation, allowing participants to test new ways of doing things, to learn from failures as a whole group, and to share best practice between contexts. The critical enabling factor was strong school leadership and establishing institutional opportunities and support for teachers to work productively on collaborative innovation.
Kilcoyne (2024)	To investigate the role of school principals in Irish secondary schools in	Qualitative research that involved in-depth semi-structured	The principal's journey in Ireland in the face of rapid technological transformation in	The study identified the principal's practices as the most important

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	leading digital learning initiatives in a context of accelerating technological disruption, and the characteristics of digital learning leading practice, thinking and structure in relation to digital learning leadership.	interviews with principals at secondary schools, grounded theory informed data analysis that produced a contextually realised description of the practice of digital leadership.	the post-pandemic school.	drivers of the quality and sustainability of digital learning in their schools. Best principals were those who had strategic clarity in relation to digital learning goals and had a strong field presence, often interacting with teachers more on the challenges of digital learning in the classroom, rather than from a distance or administrative perspective. One interesting finding was that principals who had the greatest impact were highly adaptive in their approach

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				to digital learning, continually adjusting their plans to meet student needs, teacher feedback and technological advances. The study also found that relationships and trust – both between principal and teachers, and within the teacher community – served as the building blocks from which digital learning improvement was constructed.
Dasruth, Naicker & Smith (2024)	To examine how teachers perceive their principals' digital leadership in a school	Analysis of quantitative correlational data via questionnaires	School staff from schools in a South African school district in a developing	Teachers overwhelmingly reported that a digital leadership role by their

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	district in a developing country influences the practice and understanding of digital leadership and how local socio-economic and infrastructural factors influence the exercise and perception of digital leadership.	with likert scales that assess teachers' perceptions of digital leadership practices on various dimensions.	country context and in which there is a high level of infrastructure and resource limitations	principal is key in enabling their school to implement digital transformation in meaningful ways. Themes in the data that emerged were qualitative, revealing that the digital divide between leaders and teachers (whereby principals were not conforming to the digital standards of their peers) had a negative effect on the credibility of and the effectiveness of digital leadership initiatives. The factors that were found to be the strongest

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				contextual constraints that affect the relationship between leadership intent and teacher practice are weak technological infrastructure, inconsistent connectivity, and limited access to devices. The study was unique in its contribution to the field as it showed the importance of considering structural inequalities that can undermine the effectiveness of good leadership, even within the context of

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				developing countries.
Arar, Tlili & Salha (2024)	Discuss the current and potential synergies of human and artificial intelligence system leadership, theorise the consequences of AI on leadership and decision-making in education and trace the future path of human-machine co-leadership in education	Conceptual and analytical paper using theoretical frameworks found in educational leadership, human-computer interaction and the literature on AI ethics to create a forward-looking, model-driven view of human-machine symbiosis in educational governance.	Schools with a proactive approach to incorporating AI tools for decision making support, policy analysis and administrative automation.	The authors made strong points about how AI will fundamentally transform the role of educational leaders, streamlining administrative tasks, augmenting human decision-making with data, and allowing for more personalized and responsive leadership practices. Perhaps most importantly, the authors discovered that the human aspect of educational

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				leadership – the ethical thinking, interpersonal skills and cultural awareness that principals possess – cannot be automated and cannot be replaced with AI tools. One of the key recommendation s was that ethical governance structures were needed to establish the proper scope of the AI's participation in educational decision-making. AI integration could fail to address inequities in student outcomes and leadership,

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				and inadvertently perpetuate them, unless these frameworks were in place, the authors noted.
Boeskens & Meyer (2025)	To examine and examine policies at the national level for the digital transformation of school education in OECD member countries, to consider the extent to which these are implemented, to identify factors that facilitate and hinder digital transformation in school education and to explore the link between national digital transformation policies and	Policy analysis based on OECD Policy Survey on School Education in the Digital Age complemented by comparative analysis of national policy documents and implementation reports	Systems across OECD member countries with diverse policy landscapes, levels of income and levels of digital transformation.	It found that a number of policy levers need to be aligned—including a strong national policy framework, sufficient and stable funding, investment in teacher professional learning, and a systematic approach to teacher professional learning—to support successful digital transformation. One surprising discovery was

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	outcomes at school level			that the gap in digital maturity between countries was far greater than the similarity of technological infrastructure investment, that is, the capacity of the technology itself was not the key factor. The report found that overall, the gap between what devices are available and how they are meaningfully used with pedagogical technology is persistent and pervasive, largely due to inadequate leadership development and professional

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				learning investment. It found that school leaders should be viewed as key actors for digital transformation and must be specifically trained.
Wollscheid , Tomte et al. (2025)	To comprehensively sketch the time course and current status of the study of digital school leadership by bibliometric science mapping and then apply content analysis to map conceptual clusters, research gaps and emerging research trends.	Science mapping (bibliometric analysis) and systematic content analysis of peer-reviewed publications on digital school leadership using co-citation analysis, keyword clustering and temporal trend analysis.	Peer-reviewed research articles that appeared in "international academic databases," spanning the entire history of the development of the digital school leadership field.	From the bibliometric mapping, it was observed that the research interest in digital school leadership has increased significantly, and even more so after the onset of COVID-19. The most common conceptual groups were: transformational digital leadership, principal digital competency,

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				technology integration, and organizational learning. One of the gaps that was found was the relatively limited research on the link between digital school leadership and educational equity and social justice aspects. The temporal analysis revealed a shift from the early ICT infrastructure studies to more complex studies examining the culture of leadership, distributed digital leadership, and the governance of AI within schools. The

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				authors called for further studies to focus on longitudinal studies and cross-national comparative designs.
Bixler & Ceballos (2025)	Create a robust conceptual model that empowers school leaders to effectively implement and utilize AI tools for instructional leadership, while recognizing and managing the opportunities and ethical challenges of AI in school management	AI in education, instructional leadership theory and technology adoption frameworks have been systematically reviewed and summarized to develop a conceptual model that is grounded in and translated into an actionable model of principal guidance.	Leaders of schools, in general, and school principals in U.S. schools in the context of instructional leadership in the era of AI.	The conceptual model resulted in three main applications of AI for instructional leadership, which include advanced analysis of student learning and achievement data to uncover trends that would not be detected by manual analysis, structured support during classroom observation and instructional

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				feedback, and personalised instructional pathway design for teacher professional development. The model, however, noted three preconditions that need to be in place for AI to be adopted as an effective tool for principals: (1) A digital leadership competency level that would enable them to evaluate and contextualize AI output critically; (2) robust ethical governance structures that would ensure data privacy, algorithmic bias, and decision

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				accountability; and (3) institutional coordination at the district, school, and classroom levels to ensure that AI integration is coherent and purposeful rather than fragmented.
Abu-Tineh et al. (2025)	To explore the relationship between the digital leadership practices of school leaders and the digital competency of the teachers in the government schools of Qatar, and to determine the most important dimensions of digital leadership in strengthening the digital	A quantitative predictive study using multiple regression analysis, which involved data gathered from the validated survey instruments measuring digital outcomes for teachers and the digital leadership dimensions.	Government teachers and educational leaders from schools throughout Qatar (a national context in the Gulf Cooperation Council (GCC), where there is a significant investment in educational digitalization).	The regression analysis showed that the school leaders' digital leadership practices were statistically significant and practically meaningful factors that predicted digital competency of teachers. Two areas of leadership proved to be significant

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
	competency of teachers.			predictors: principals' active efforts to develop digital capacity through professional development and mentoring, and principals' capacity to create a school-wide digital culture that normalizes technology use and innovation. The study also provided regional evidence in the context of the Gulf countries, which revealed that the impact of leadership on teacher competence was greater in Qatar's government schools than in similar

Author(s) & Year	Objectives	Methodology	Sample & Context	Key Findings
				international schools, speculating that this could be attributed to the high resource investment in the digital world in Qatar.

Thematic Analysis

Theme 1: Strategic Digital Vision and Leadership Practices

The reviewed studies were consistent in identifying the development of a clear digital vision as one of the basic elements of successful technology integration in schools. School leaders who explicitly stated long-term digital goals, set a good example of using digital tools, and planned digital initiatives wisely were more effective in establishing learning cultures that supported innovation and change in education. Research by Håkansson Lindqvist (2019), Karakose et al. (2021), and Reis-Andersson (2024) showed that successful digital leaders are those who are strategic architects, influence the school culture, foster digital experimentation and continue the digital transformation process over time.

The results also showed that digital leadership is not just about the technological aspect. Effective principals were identified as enabling organizational learning, sharing a vision, and connecting technology initiatives with learning goals. Sustainable digital transformation, as

evidenced by a higher degree of teacher readiness, lower resistance to technological change, and greater institutional capacity, was found to be higher in schools led by digitally competent principals.

Theme 2: Professional Development and Teacher Capacity Building

The need for ongoing professional development to improve teachers' use of technology was a common theme throughout the literature. Leadership support via professional learning, mentoring, and technical assistance all consistently showed to boost teacher digital skills and confidence. Enabling conditions for the use of innovative teaching methods and effective implementation of classroom technologies were established by principals who actively worked to build teachers' capacity.

The studies also found that professional development programs had a higher impact on teachers who had fewer years of experience using technology. Coaching, ongoing learning, and personalized support were linked to higher teacher self-efficacy and a greater readiness to use digital instructional practices. Thus, professional development became a key pathway for school leadership to indirectly enhance educational quality.

Theme 3: Collaborative and Distributed Leadership for Digital Transformation

Collaborative and distributed leadership approaches were a key element in successful technology integration, and the literature was rich with their importance. The findings from the studies were consistently that schools that facilitated teacher involvement in decision-making and school-based professional learning communities had more sustainable digital transformation results. Distributed leadership allowed for shared responsibility, collective problem-solving and learning within the school,

which helped to improve the adaptability of schools to technological change.

The enabling factors identified were also trust and collaboration. Good relationships between principals and staff and teachers fostered dialogue about technology issues and led to staff sharing of knowledge. The results indicated that digital transformation cannot be achieved by a single leader's efforts alone but requires a collective effort and collaboration between everyone in the school, which creates a culture of continuous learning and innovation.

Theme 4: Technology Integration and the Quality of Secondary Education

The examined research papers showed a positive correlation between meaningful use of technology and education. Technology integration was linked to positive gains in instructional effectiveness, student engagement, building digital competence, and school performance. The studies did stress, however, that technology does not necessarily enhance educational outcomes.

Technology was successfully integrated when digital tools were strategically linked with learning goals, and when they were backed by knowledgeable practices in leadership. Schools that used technology in the context of all-encompassing instructional improvement programs reported more profound educational benefits than those schools that used technology without clear educational ends. Thus, technology integration became an important channel in which school leadership plays a role in promoting the quality of secondary education.

Theme 5: Barriers and Enabling Conditions for Successful Digital Transformation

Although digital leadership has benefits, the literature review indicated that there are several barriers that need to be addressed in order for successful integration to take place. Common challenges reported were the lack of technological infrastructure, a lack of funding, a lack of access to digital devices, a lack of consistent internet connection, and a lack of professional training opportunities. Even when the school leaders were very effective, they were usually constrained by these structural factors.

The results also showed that a supportive organizational and policy environment is key to successful digital transformation. Schools with cohesive national digital strategies, stable funding structures, and robust institutional support structures had more lasting and equitable technology integration results. Hence, digital transformation must be considered a systemic process that needs to involve leadership practices, organizational conditions, and wider educational policies.

Theme	Description	Supporting Studies
Theme 1: Strategic Digital Vision and Leadership Practices	School leaders establish a clear digital vision, align technology initiatives with school goals, and guide digital transformation efforts.	Håkansson Lindqvist & Pettersson (2019); Karakose et al. (2021); Reis-Andersson (2024)
Theme 2: Professional Development and Teacher Capacity Building	Continuous training, mentoring, and technical support improve teachers' digital competencies and confidence in technology integration.	A'mar & Eleyan (2022); Abu-Tineh et al. (2025); AlAjmi (2022)
Theme 3: Collaborative and Distributed Leadership	Shared decision-making and professional learning communities promote collaboration, trust, and sustainable digital transformation.	Dexter & Richardson (2020); Leithwood et al. (2020); Farrell et al. (2024)
Theme 4: Technology Integration and Educational Quality	Purposeful technology integration improves teaching effectiveness, student engagement, digital skills, and overall educational outcomes.	Timotheou et al. (2023); UNESCO (2023); Berkovich & Hassan (2023)
Theme 5: Barriers and Enabling Conditions	Infrastructure, funding, policies, and access to resources influence the success and sustainability of technology integration initiatives.	Dasruth et al. (2024); Boeskens & Meyer (2025); Okunlola (2024)

Findings

The studies analyzed identified some common trends between the support of school leaders, technology integration, and the quality of secondary education.

- 1- The school leader was identified as one of the most significant factors in successful technology integration, which was the first finding. The research has been consistent in finding that those principals who clearly expressed their digital vision, modeled their own technology use, and actively promoted innovation in their schools generally were found to create more innovation-friendly school environments (Håkansson Lindqvist & Pettersson, 2019; Karakose et al., 2021; Reis-Andersson, 2024).
- 2- Leadership support had a significant impact on teachers' readiness and confidence to use technology in the classroom. The majority of teachers reported that professional development opportunities, mentoring, and ongoing technical support were crucial mechanisms for developing teachers' digital competencies and inclusive practices in the classroom (Abu-Tineh et al., 2025; A'mar & Eleyan, 2022).
- 3- Distributed and collaborative leadership models were not found to be as effective as hierarchical leadership models. Research found that teacher involvement in decision-making, the creation of professional learning communities, and the fostering of collaborative inquiry drives organisational learning and boost the sustainability of digital initiatives (Dexter & Richardson, 2020; Leithwood et al., 2020; Farrell et al., 2024).
- 4- Technology implementation positively influenced educational quality when it was linked to pedagogical goals. Evidence from schools that intentionally use digital technologies showed that it helped to enhance

student engagement, effective teaching, digital competence building and overall educational outcomes (Timotheou et al., 2023; UNESCO, 2023).

- 5- There were some barriers to successful technology integration, even with good intentions for doing so. The challenges faced were related to technological infrastructure, financial resources, professional training, digital disparities, and policy support. The literature identified supportive organizational and systemic factors as being a critical part of effective leadership (AlAjmi, 2022; Dasruth et al., 2024; Boeskens & Meyer, 2025).

Conclusion

The present study is a narrative review that explored the importance of school leadership support for technology integration and how it impacts the quality of secondary education. The literature analysis reveals that one of the major factors of successful digital transformation in schools is good school leadership. The results clearly indicate that school leaders who have a clear direction for digital learning, who provide frequent professional development, who invest in technology, and who create collaborative campus environments have positive conditions for integrated technology.

It also found that when technology is integrated into instruction, and there is appropriate use of technology leadership, its impact on the quality of education is positive. Digital technology is used effectively in successful schools, resulting in more effective teaching, engagement, digital competence building, and in the performance of the school. The results also suggest, however, that technology is not a panacea that can transform educational outcomes. The process of digital transformation is a broad one, and it takes three things to make it a success: leadership support, teacher capacity building, organizational readiness, and policy support.

Furthermore, the literature reviewed indicated that there are a number of challenges that could impede technology integration, such as poor technological infrastructure, inadequate funding, lack of professional training, and digital inequalities among schools. In view of this, the process of sustainable digital transformation in secondary education should be considered as a systemic process which relies on the interaction of the practices and conditions of leadership, institutional and general educational policies and practices. From the results in this study, the proposed conceptual model indicates that there is a positive relationship between school leadership support and technology integration, and technology integration and the quality of secondary education.

Recommendations

The following recommendations are suggested based on the results of this review:

1. There is a need to implement comprehensive training programs in all educational authorities to reinforce the digital leadership ability of school principals and their ability to strategically manage educational technology initiatives.
2. School leaders should set clear and shared digital visions and connect technology integration efforts with long-term school improvement and educational goals.
3. Professional learning, mentoring and technical assistance should be provided consistently in schools, to enhance educators' digital skills and confidence in using educational technologies.
4. Educational institutions should embrace distributed leadership through teacher involvement in decision-making and creation of professional learning communities where teacher collaboration and innovation are promoted.

5. Governments and educational bodies must ensure that there is sustainable technological infrastructure, internet connectivity, and fair access to and use of digital resources, which can help reduce digital inequalities between schools.
6. Educational policies should support evidence-based, student-centered incorporation of technology, and ensure technology programs are planned for pedagogical purposes and not purely for technological purposes.
7. Implement monitoring and evaluation systems in schools to effectively assess the efficacy of technology integration initiatives and to constantly adapt school's digital transformation strategy.
8. Future research is needed to empirically test the proposed conceptual model using quantitative, qualitative, and mixed methods approaches and investigate these relationships in various educational and cultural contexts, especially in the secondary education context.

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