

Education 5.0 Readiness: A Study on Institutional Awareness and Strategic Planning of School Heads in Secondary Education

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Abstract—This study examined the level of Education 5.0 readiness among school heads in secondary education, focusing on institutional awareness, strategic planning, and organizational readiness for implementing Education 5.0 initiatives. Using an explanatory sequential mixed-methods research design, quantitative data were first collected to assess school heads' awareness, strategic planning practices, and readiness across multiple dimensions, followed by qualitative data to enrich and explain the quantitative findings. The study evaluated awareness in terms of access to educational resources, global educational trends, cultural and societal influence, lifelong learning adaptability, teacher competence, and technological norms and ethical principles. It also assessed strategic planning through digital transformation, artificial intelligence integration, learner-centered approaches, personalized learning, future-oriented skills, and stakeholder engagement, as well as readiness in infrastructure, curriculum alignment, governance, technological support systems, digital literacy, and student readiness. Findings revealed that school heads demonstrated very high levels of awareness, strategic planning, and readiness across most indicators, reflecting strong institutional preparedness for Education 5.0 implementation. Moreover, the results indicated a significant positive relationship between Education 5.0 awareness and institutional readiness, suggesting that increased awareness contributes to improved preparedness for educational transformation. The qualitative findings further emphasized the importance of continuous professional development, digital infrastructure enhancement, collaborative leadership, and stakeholder participation in sustaining Education 5.0 initiatives. The study concludes that strengthening institutional capacity, technology integration, and strategic leadership is essential for successfully advancing Education 5.0 in secondary education.

Keywords— Education 5.0, institutional awareness, strategic planning, school heads, secondary education, digital transformation, educational leadership, organizational readiness.

I. INTRODUCTION

Education must embrace contemporary industrial and technological revolutions such as artificial intelligence, robots, machine learning, and data analytics to create an immersive and dynamic learning environment. The newest educational model, Education 5.0, focuses on individualized, technology-enhanced learning experiences to get students ready for the ever-evolving demands of the twenty-first century. This method combines AI, big data, and immersive technologies such as virtual reality (VR) and augmented reality (AR) to create dynamic and interactive learning environments.

Countries worldwide are investing in digital infrastructure and teacher training to fully leverage new technologies.

In industrialized nations, universities are pioneering adaptive learning systems that adjust information to specific student requirements, improving mastery. Countries noted for their educational prowess, such as Finland and Singapore, are implementing Education 5.0 ideas to encourage creativity, critical thinking, and problem-solving abilities (Gligorea et al., 2023). These nations use AI to deliver real-time feedback and individualized learning paths, ensuring students obtain skills necessary for the future workforce.

Developing countries are also progressing with limitations such as resources and infrastructure (UNESCO, 2023). International cooperation and investments are helping to overcome the digital gap, allowing students to use modern teaching resources. Initiatives such as the Global Partnership for Education, for example, are critical in assisting low-income nations in reforming their education systems so that they may participate in the Education 5.0 revolution.

Adapting to Education 5.0 in the Philippines entails addressing specific obstacles and possibilities. The Department of Education (DepEd) and the Commission on Higher Education (CHED) are leading the way in incorporating technology into the curriculum. Efforts include increasing access to digital materials and improving teacher abilities in technology-based education.

One notable endeavor is the "Digital Rise" program, which was started by previous DepEd Secretary Briones and is now being carried out by former Secretary Duterte. Its goal is to provide digital tools to public schools and train instructors in ICT skills. The initiative focuses on creating ICT infrastructure, increasing digital literacy among students, and incorporating e-learning materials into daily instruction. Higher education institutions in the Philippines likewise adopt Education 5.0, providing courses in data science, artificial intelligence, and other developing subjects. Partnerships with technology businesses and international institutions promote innovation and research, preparing Filipino students for global prospects.

However, issues persist, particularly in rural regions with restricted internet access. The government and private sector must work together to improve infrastructure, enabling equal access to Education 5.0 advantages. Addressing these gaps is

critical to the overall growth of the nation's educational system.

Adapting to Education 5.0 internationally and in the Philippines necessitates a coordinated effort to incorporate sophisticated technology into the educational system. Countries should prepare their citizens for the future by encouraging innovation, strengthening infrastructure, and boosting the abilities of school leaders, teachers, and students. This will ensure that education stays relevant and inclusive in an increasingly digital world.

The analysis offered and discussed established the purpose of this study: to establish the level of Education 5.0 awareness, readiness, and institutional strategies for tackling Education 5.0 in six city divisions of Laguna.

1.1 Statement of the Problem

Specifically, this study sought answers to the following questions:

1. *What is the level of awareness in Education 5.0 of school heads in secondary education in terms of:*
 - 1.1 *Access to Educational Resources;*
 - 1.2 *Global Educational Trends;*
 - 1.3 *Cultural and Societal Influence;*
 - 1.4 *Lifelong Learning Adaptability;*
 - 1.5 *Teacher Competence and;*
 - 1.6 *Technological Norms and Ethical Principles?*
2. *What is the level of strategic planning in Education 5.0 of school heads in secondary education in terms of:*
 - 2.1 *Digital Transformation;*
 - 2.2 *Use of Artificial Intelligence;*
 - 2.3 *Learner-centered Approach;*
 - 2.4 *Personalized Learning;*
 - 2.5 *Future-oriented Skills and;*
 - 2.6 *Community Linkages and Stakeholder Engagement?*
3. *What is the level of readiness in Education 5.0 of school heads in secondary education in terms of:*
 - 3.1 *Infrastructures Readiness;*
 - 3.2 *Curriculum Alignment;*
 - 3.3 *Policy and Governance Readiness;*
 - 3.4 *Technological Integration and Support Systems;*
 - 3.5 *Digital Literacy and;*
 - 3.6 *Student Readiness?*
4. *Is there a significant relationship between awareness and readiness in Education 5.0 of school heads in secondary education?*

II. METHODOLOGY

The explanatory sequential mixed-method design, which combined quantitative and qualitative methodologies, was used in this study to gain a comprehensive understanding of the research topic. The study began with the collection and analysis of quantitative data, followed by the gathering of qualitative data to supplement or expand upon the quantitative

findings. The identification of key factors and relationships was based on the quantitative phase, while the qualitative phase provided a more in-depth analysis and rationale for the findings. The combination of both approaches allowed for a more thorough and nuanced examination of the research issues (Creswell & Plano, 2018).

III. RESULTS AND DISCUSSION

This chapter presents the study's findings through a systematic analysis and interpretation of the collected data. The results are organized according to the key research questions presented, from the quantitative to the qualitative part, through themes identified from the responses of the school heads regarding the implementation of Education 5.0. The analysis aims to provide meaningful insights into the challenges, opportunities, leadership strategies, and key success factors that influence the effective adoption of Education 5.0 in schools. Through this process, the study seeks to uncover patterns, trends, and implications that can contribute to the ongoing development of educational leadership in the digital era.

Table 1 presents the level of awareness of school heads regarding access to educational resources in the context of Education 5.0. The results indicate a generally high level of awareness, with an average mean score of 6.33 (SD = 0.70). Among the indicators, the highest mean score (6.54, SD = 0.60) corresponds to awareness of available educational resources such as AR/VR applications, tablets, and digital learning materials. School heads also demonstrated substantial knowledge of the functions of online resources and databases, with a mean score of 6.19 (SD = 0.81). Additionally, regularly receiving updates about educational resources scored 6.27 (SD = 0.71), suggesting an active dissemination of information. The range of responses (Min = 4.67, Max = 7.00) implies a consistently high level of awareness among respondents.

Table 1. *School Heads' Level of Awareness of Education 5.0 in terms of Access to Educational Resources*

Statement	Mean	SD	Remarks
School heads and teachers ...			
...are aware of the current educational resources (AR/VR applications, tablets, digital learning materials like e-books and online gamification, etc.) available in the school.	6.54	0.60	Strongly Agree
... are knowledgeable of the functions of the online resources and databases (like cloud computing and robotics, etc.) available for research purposes within the school.	6.19	0.81	Strongly Agree
...regularly receiving updates or information regarding the availability of educational materials and resources in the school (via text message, messenger group chat, email, etc.).	6.27	0.71	Strongly Agree
Weighted Mean	6.21		
SD	1.0268		
Verbal Interpretation	Very High		

The results highlight that school heads and teachers exhibit a strong awareness of and engagement with digital educational resources, aligning with the principles of Education 5.0, which emphasizes technology-driven learning environments (Rane et al., 2025). The high mean scores across indicators suggest that digital transformation in education is actively integrated into

school practices, reinforcing the accessibility and utilization of advanced tools like AR/VR and cloud computing for research and instruction. Moreover, the frequent dissemination of information regarding educational resources supports the assertion that communication channels play a vital role in maintaining awareness and utilization of digital tools in schools. These findings are consistent with studies that emphasize the importance of technology-driven strategies in fostering digital competency among educators.

Table 2 presents the level of awareness of school heads regarding global educational trends within the framework of Education 5.0. The findings reveal a consistently high level of awareness, with an average mean score of 6.50 (SD = 0.58). The highest mean score (6.54, SD = 0.53) corresponds to the understanding of the alignment between strategic planning initiatives and global trends in educational innovation. School heads and teachers also reported strong engagement in workshops and conferences supporting Education 5.0 strategies (6.50, SD = 0.56). Additionally, integrating technology in educational practices to adapt to global trends had a mean score of 6.46 (SD = 0.66). The minimum and maximum values (Min = 5.00, Max = 7.00) suggest a consistently high level of awareness across all respondents.

The results indicate that school heads and teachers recognize the importance of aligning educational strategies with global trends, ensuring instructional practices evolve with technological. The high awareness levels suggest that professional development opportunities, such as workshops and conferences, are crucial in equipping educators with the necessary competencies to implement Education 5.0 (Wang et al, 2024). Moreover, the emphasis on strategic planning alignment of the school heads highlights the growing significance of data-driven decision-making and educational policy reforms (OECD, 2022). Integrating technology into pedagogical practices of the teachers reflects a proactive approach to adapting to global innovations, reinforcing the importance of digital transformation in modern learning environments. These findings support the idea that fostering digital literacy and strategic alignment with global trends can enhance the overall effectiveness of education systems.

Table 2. School Heads' Level of Awareness of Education 5.0 in terms of Global Educational Trends

Statement	Mean	SD	Remarks
The school...			
... prepare and support the implementation of strategies that align with the concepts of Education 5.0 in their classrooms through workshops or conferences.	6.50	0.56	Strongly Agree
... understand a precise alignment between strategic planning initiatives and the global trends in educational innovation within the school.	6.54	0.53	Strongly Agree
... integrate technology in educational practices to essentially adapt to global educational trends in schools.	6.46	0.66	Strongly Agree
Weighted Mean	6.38		
SD	0.9546		
Verbal Interpretation	Very High		

Table 3 presents the level of awareness of school heads

regarding cultural and societal influences within the framework of Education 5.0. The results indicate a high level of awareness, with an average mean score of 6.55 (SD = 0.61). Among the indicators, the highest mean score (6.60, SD = 0.62) corresponds to integrating technology into educational practices to adapt to global educational trends. School heads and teachers also demonstrated a strong awareness of aligning strategic planning initiatives with cultural and societal influences (6.50, SD = 0.59). Additionally, their active participation in workshops and conferences to implement Education 5.0 strategies had a mean score of 6.54 (SD = 0.61). The response range (Min = 4.67, Max = 7.00) suggests that while awareness is high overall, there is some variability in responses.

Table 3. School Heads' Level of Awareness of Education 5.0 in terms of Cultural and Societal Influence

Statement	Mean	SD	Remarks
School heads and teachers ...			
... incorporates local cultural practices into the curriculum to enhance student engagement and learning outcomes.	6.54	0.61	Strongly Agree
...adapts cultural awareness and strategies to improve school programs and projects.	6.50	0.59	Strongly Agree
...implements a curriculum that adequately reflects the diverse cultural backgrounds of our students.	6.60	0.62	Strongly Agree
Weighted Mean	6.42		
SD	0.9692		
Verbal Interpretation	Very High		

The findings suggest that school heads and teachers recognize the significance of cultural and societal influences in shaping educational strategies under Education 5.0. The strong emphasis on integrating technology into pedagogy aligns with global efforts to enhance digital learning environments while respecting local contexts. Additionally, aligning strategic planning with cultural and societal factors underscores the growing recognition of education as a driver of social transformation. The role of professional development through workshops and conferences further supports the notion that continuous learning is essential for adapting to the evolving needs of diverse educational settings (Pogosyan, 2024). These results align with recent literature emphasizing the need for culturally responsive teaching strategies incorporating digital advancements while respecting traditional educational values. Maintaining high awareness levels and ensuring equitable access to technology-driven education can contribute to a more inclusive and adaptive learning environment.

Table 4 presents the level of awareness of school heads regarding lifelong learning adaptability within the framework of Education 5.0. The findings indicate a very high level of awareness, with an average mean score of 6.68 (SD = 0.57). Among the indicators, the highest mean score (6.78, SD = 0.52) corresponds to the belief that lifelong learning is essential for adapting to the rapidly changing educational landscape. School heads also demonstrated strong confidence in utilizing technology and digital resources for professional growth, with a mean score of 6.60 (SD = 0.58). Additionally, the prioritization of acquiring new skills and knowledge for

lifelong learning scored 6.66 (SD = 0.62). The response range (Min = 5.00, Max = 7.00) suggests consistently high awareness and engagement in lifelong learning practices.

The results highlight that school heads and teachers recognize lifelong learning as a critical factor in adapting to the evolving demands of Education 5.0. This high level of awareness aligns with studies emphasizing the importance of continuous skill development in the digital era. The strong confidence in utilizing technology for professional growth reflects the increasing role of digital tools in enhancing educators' competencies and instructional effectiveness (Chen et al., 2024). Furthermore, prioritizing acquiring new knowledge and skills supports the notion that lifelong learning fosters adaptability and resilience in education. These findings reinforce the argument that professional development and ongoing learning are key to sustaining educational innovation (Okeke, 2019).

Table 4. School Heads' Level of Awareness of Education 5.0 in terms of Lifelong Learning Adaptability

Statement	Mean	SD	Remarks
School heads and teachers ...			
...believe lifelong learning is essential for adapting to the rapidly changing educational landscape.	6.78	0.52	Strongly Agree
...feel confident utilizing technology and digital resources for lifelong learning and professional growth.	6.60	0.58	Strongly Agree
...prioritize acquiring new skills and knowledge that foster lifelong learning.	6.66	0.62	Strongly Agree
Weighted Mean	6.55		
SD	0.9653		
Verbal Interpretation	Very High		

Table 5 presents the level of awareness of school heads regarding teacher competence within the framework of Education 5.0. The results indicate a very high level of awareness, with an average mean score of 6.74 (SD = 0.50). Among the indicators, the highest mean scores (6.74, SD = 0.50 and 6.74, SD = 0.45) correspond to the provision of training programs through DepEd-sponsored training, school-based INSET, and the promotion of knowledge sharing among teachers. The school's support in improving teacher competence through professional development, Learning Action Cell (LAC) sessions, and technical assistance received a mean score of 6.73 (SD = 0.54). The response range (Min = 5.00, Max = 7.00) suggests consistently high awareness levels across all respondents.

The findings indicate that school heads and teachers highly recognize the importance of continuous professional development in enhancing teacher competence, a key component of Education 5.0. The strong emphasis on training programs aligns with studies highlighting the role of structured professional development in improving teaching quality and student outcomes. Furthermore, implementing innovative practices through LAC sessions and technical assistance reflects a collaborative approach to professional growth, essential for adapting to modern educational demands. Promoting knowledge-sharing initiatives aligns with research advocating for collective teacher efficacy to improve instructional practices. These results support the view that

teacher competence is a fundamental pillar of educational transformation, emphasizing the need for sustained investment in professional learning opportunities (Okeke, 2019). Moving forward, schools should continue fostering a continuous learning and collaboration culture to sustain high levels of teacher effectiveness in Education 5.0.

Table 5. School Heads' Level of Awareness of Education 5.0 in terms of Teacher Competence

Statement	Mean	SD	Remarks
The school ...			
...provides training programs to capacitate teachers' competence through attending DepEd's sponsored trainings and school-based INSET.	6.74	0.50	Strongly Agree
...supports improving teachers' competence by implementing innovative educational practices through LAC sessions, professional development, and technical assistance.	6.73	0.54	Strongly Agree
... promotes knowledge sharing among teachers to positively impact teacher performance through collaborative expertise sessions regularly.	6.74	0.45	Strongly Agree
Weighted Mean	6.61		
SD	0.9250		
Verbal Interpretation	Very High		

Table 6 presents the level of awareness of school heads regarding technological norms and ethical standards in Education 5.0. The findings indicate a high level of awareness, with an average mean score of 6.54 (SD = 0.59). Among the indicators, the highest mean score (6.59, SD = 0.59) corresponds to the acknowledgment of ethical consequences and the accountability of schools in adopting new technologies. The emphasis on inclusivity and accessibility in technological initiatives follows closely with a mean score of 6.56 (SD = 0.57). Integrating advanced technologies to enhance educational delivery and student outcomes had a mean score of 6.46 (SD = 0.60). The response range (Min = 5.00, Max = 7.00) suggests consistently high awareness among school heads regarding the role of technology and ethical considerations in education.

Table 6. School Heads' Level of Awareness of Education 5.0 in terms of Technological Norms and Ethical Standards

Statement	Mean	SD	Remarks
The school ...			
...integrates advanced technologies to enhance educational delivery and improve student outcomes.	6.46	0.60	Strongly Agree
...emphasizes inclusivity and accessibility in its technological initiatives, guaranteeing that every student can take advantage of digital learning tools.	6.56	0.57	Strongly Agree
...acknowledges the ethical consequences of embracing new technologies and assumes accountability for their effects on the educational setting.	6.59	0.59	Strongly Agree
Weighted Mean	6.41		
SD	0.9468		
Verbal Interpretation	Very High		

The results highlight that school heads and teachers recognize the critical role of technological norms and ethical standards in modern education. The strong emphasis on

accountability in technology adoption aligns with studies emphasizing the importance of ethical considerations in digital learning environments. Additionally, the focus on inclusivity and accessibility reflects global educational policies advocating equitable access to technology-enhanced learning (Rane et al, 2025). Integrating advanced technologies to improve student outcomes supports the notion that digital transformation can drive innovation and effectiveness in education when implemented responsibly (Wang et al., 2024). These findings align with contemporary discussions on the ethical use of artificial intelligence, data privacy, and digital equity in the educational landscape (Okeke, 2019). Moving forward, continuous professional development on digital ethics and responsible technology integration will be essential to ensuring sustainable and inclusive digital education practices.

Table 7 presents the level of strategic planning for Education 5.0 among school heads in terms of digital transformation. The results show a high level of strategic planning, with an overall mean score of 6.48 (SD = 0.57). The highest-rated indicator is the development of a clear and actionable strategic plan for digital transformation (M = 6.56, SD = 0.39), highlighting the strong commitment of schools to structured technological advancement. The provision of regular training for teachers to enhance digital literacy (M = 6.45, SD = 0.64) also received a high score, emphasizing the importance of continuous professional development. Additionally, the involvement of stakeholders in digital transformation initiatives (M = 6.43, SD = 0.68) underscores the collaborative approach schools are taking to ensure the effective implementation of digital strategies. These results suggest that schools recognize the necessity of a well-planned digital transformation strategy to enhance education in the era of Education 5.0.

Table 7. School Heads' Level of Strategic Planning of Education 5.0 in terms of Digital Transformation

Statement	Mean	SD	Remarks
The school ...			
...develops a clear and actionable strategic plan that outlines steps for implementing digital transformation initiatives.	6.56	0.39	Strongly Agree
...provides regular training for teachers to improve their digital literacy and effectively integrate technology into the curriculum.	6.45	0.64	Strongly Agree
... Implement digital transformation initiatives that actively involve insights from all stakeholders, including teachers, students, and parents.	6.43	0.68	Strongly Agree
Weighted Mean	6.30		
SD	0.8845		
Verbal Interpretation	Very High		

The findings indicate that school heads are proactive in implementing digital transformation initiatives, aligning with global trends in educational innovation. Research suggests that clear strategic planning and teacher training in digital literacy significantly contribute to successful digital transformation in schools. Moreover, stakeholder engagement in digital initiatives fosters a sense of shared responsibility and enhances the effectiveness of technological integration. The

strong emphasis on structured digital strategies supports the broader goals of Education 5.0, which advocates for a technology-driven, human-centered learning environment. However, to further strengthen digital transformation efforts, schools should continuously refine their implementation strategies and provide targeted support to ensure sustained technological adaptation. As digital advancements evolve, integrating emerging technologies in a structured and inclusive manner remains crucial for achieving long-term educational success (Rane et al., 2025)

Table 8 presents the level of strategic planning for Education 5.0 among school heads concerning artificial intelligence (AI). The results indicate a high awareness and implementation of AI-related strategies, with an overall mean score of 6.10 (SD = 0.76). The highest-rated indicator is the belief that AI tools effectively enhance teaching and learning processes (M = 6.28, SD = 0.60), suggesting strong confidence in AI's role in education. The active incorporation of AI in strategic planning (M = 6.10, SD = 0.82) highlights the school heads' commitment to leveraging AI for decision-making and improved educational outcomes. However, the relatively lower mean score for promoting AI integration to foster equity and access to learning resources (M = 5.91, SD = 0.85) suggests that ensuring its equitable distribution remains a challenge while AI adoption progresses. These findings emphasize the growing role of AI in education, yet they also point to the need for further initiatives to enhance accessibility and inclusivity.

Table 8. School Heads' Level of Strategic Planning of Education 5.0 in terms of Artificial Intelligence

Statement	Mean	SD	Remarks
The school ...			
...believes that AI tools effectively enhance the teaching and learning processes.	6.28	0.60	Strongly Agree
...actively incorporates AI to improve strategic planning initiatives and educational outcomes.	6.10	0.82	Agree
...promotes the integration of AI to foster greater equity and access to learning resources for all students.	5.59	0.85	Agree
Weighted Mean		5.87	
SD		0.9922	
Verbal Interpretation		High	

The results highlight the increasing recognition of AI as a transformative tool in education. AI-driven technologies, such as adaptive learning platforms and intelligent tutoring systems, have enhanced student engagement and learning outcomes (Wang et al., 2024). Moreover, integrating AI in educational planning helps streamline administrative processes and optimize decision-making (Rane et al., 2025). Despite these advantages, challenges remain in ensuring AI-driven education is accessible to all students, particularly those from marginalized communities. Schools must adopt inclusive AI policies to bridge digital divides and promote equitable learning opportunities. Future efforts should focus on strengthening AI literacy among educators and stakeholders to maximize its potential in advancing Education 5.0 (Johnson et al., 2020).

Table 9 presents the level of strategic planning for

Education 5.0 among school heads regarding the learner-centered approach. The overall mean score of 6.34 (SD = 0.71) suggests a strong commitment to prioritizing student needs and integrating student-centered strategies. The highest-rated indicator is the provision of adequate resources and technology to support meaningful learning experiences (M = 6.66, SD = 0.61), highlighting schools' efforts in equipping classrooms with modern learning tools. Additionally, the emphasis on using advanced technologies for formative assessment (M = 6.51, SD = 0.69) indicates that schools recognize the value of personalized learning. However, while incorporating student feedback in the learning process (M = 5.84, SD = 0.82) is still relatively high, it has the lowest mean among the indicators, suggesting room for improvement in ensuring students' voices are more actively considered in educational planning and decision-making.

Table 9. School Heads' Level of Strategic Planning of Education 5.0 in terms of Learner-Centered Approach

Statement	Mean	SD	Remarks
The school ...			
...prioritizes students' needs in the learning process and actively seeks and incorporates student feedback.	5.84	0.82	Agree
...provides adequate resources and technology to support meaningful learning experiences for all students.	6.66	0.61	Strongly Agree
...reminds teachers to regularly use formative assessment using advanced technologies to tailor instruction to individual student needs.	6.51	0.69	Strongly Agree
Weighted Mean	6.51		
SD	0.9238		
Verbal Interpretation	High		

The findings underscore the growing recognition of the learner-centered approach as a key element in Education 5.0. Personalized and technology-enhanced learning experiences have improved student engagement and academic performance. Providing adequate technological resources is essential in fostering interactive and adaptive learning environments that cater to diverse student needs. Additionally, formative assessments using AI-driven and digital tools allow teachers to tailor instruction effectively, leading to improved student outcomes. However, meaningful student participation in shaping learning experiences remains challenging, emphasizing the need for more inclusive feedback mechanisms (Scherer et al., 2019). Schools should continue refining their learner-centered strategies by actively involving students in curriculum design and instructional decision-making to align with the principles of Education 5.0 fully.

Table 10 presents the level of strategic planning for Education 5.0 among school heads in terms of personalized learning. The overall mean score of 6.52 (SD = 0.70) strongly emphasizes integrating personalized learning strategies into school planning. The highest-rated indicator, "The school acknowledges the importance of personalized learning in preparing students for the future demands of Education 5.0" (M = 6.62, SD = 0.73), suggests that school leaders recognize the critical role of personalized learning in equipping students with the skills needed for the evolving educational landscape. Additionally, using data analytics to understand individual

student learning patterns (M = 6.58, SD = 0.58) highlights schools' efforts in leveraging technology to tailor instruction. However, while strategic planning for enhancing personalized learning experiences (M = 6.36, SD = 0.78) remains high, it is the lowest-rated indicator, implying that schools may still face challenges in fully integrating personalized learning strategies into their long-term planning frameworks.

The results align with recent studies emphasizing the importance of personalized learning in modern education. Research suggests that when effectively integrated, personalized learning enhances student engagement, motivation, and learning outcomes (Pane et al., 2019).

Furthermore, schools that incorporate personalized learning into their strategic planning are better equipped to meet the diverse needs of students and adapt to the rapidly evolving demands of Education 5.0. Despite these efforts, successful implementation requires continuous professional development for educators and the integration of advanced AI-driven learning technologies to ensure meaningful and scalable personalization (Schmid & Petko, 2022). Schools should strengthen their strategic planning efforts by establishing clearer policies and frameworks prioritizing long-term sustainability in personalized learning initiatives.

Table 10. School Heads' Level of Strategic Planning of Education 5.0 in terms of Personalized Learning

Statement	Mean	SD	Remarks
The school ...			
...acknowledges the importance of personalized learning in preparing students for the future demands of Education 5.0.	6.62	0.73	Strongly Agree
...uses data analytics to understand individual student learning patterns and needs.	6.58	0.58	Strongly Agree
...includes goals and strategies for enhancing personalized learning experiences for all students through strategic planning.	6.36	0.78	Strongly Agree
Weighted Mean	6.41		
SD	0.9586		
Verbal Interpretation	High		

Table 11 presents the level of strategic planning for Education 5.0 among school heads in terms of future-oriented skills. The overall mean score of 6.63 (SD = 0.61) strongly emphasizes preparing students for future challenges. Among the indicators, the highest-rated aspect was the cultivation of collaboration and communication skills (M = 6.72, SD = 0.50), indicating that schools prioritize teamwork and interpersonal skills, which are essential in the modern workforce. Similarly, promoting critical thinking skills (M = 6.62, SD = 0.50) underscores the schools' commitment to fostering problem-solving abilities necessary for complex decision-making. Meanwhile, the integration of creativity and innovation opportunities (M = 6.55, SD = 0.83) highlights the importance of developing students' capacity for innovation. However, the slightly higher standard deviation suggests variability in implementation across schools.

The findings align with the growing emphasis on future-ready education in the digital age. Research highlights that fostering critical thinking, creativity, collaboration, and communication is essential to prepare students for evolving job markets and technological advancements. Future-oriented

skills development enables students to navigate uncertainty, solve real-world problems, and engage in meaningful innovation. Furthermore, studies emphasize that integrating future-oriented skills into the curriculum enhances students' adaptability and lifelong learning capabilities, making them more resilient in an era of rapid change. To further strengthen Education 5.0, schools should continue expanding experiential learning opportunities and fostering industry-academia partnerships to equip students with practical applications of these skills

Table 11. School Heads' Level of Strategic Planning of Education 5.0 in Terms of Future-Oriented Skills

Statement	Mean	SD	Remarks
The school ...			
...integrates opportunities for students to enhance their creativity and innovation abilities.	6.55	0.83	Strongly Agree
...promotes the development of critical thinking skills among students to prepare them for complex problem-solving.	6.62	0.50	Strongly Agree
...incorporates the cultivation of collaboration and communication skills essential for success in Education 5.0.	6.72	0.59	Strongly Agree
Weighted Mean	6.58		
SD	0.8030		
Verbal Interpretation	Very High		

Table 12 presents the level of strategic planning in Education 5.0 concerning stakeholder engagement among school heads. The overall mean score of 6.52 (SD = 0.53) indicates that school heads actively involve stakeholders in the planning and executing Education 5.0 initiatives. The highest-rated item, seeking and incorporating community feedback into planning (M = 6.67, SD = 0.50), strongly emphasizes participatory decision-making. The slightly lower scores for community linkages and partnerships (M = 6.43, SD = 0.55) and stakeholder engagement in strategic planning (M = 6.45, SD = 0.55) highlight ongoing efforts to strengthen external collaborations, though room for improvement remains.

Table 12. School Heads' Level of Strategic Planning of Education 5.0 in terms of Stakeholder Engagement

Statement	Mean	SD	Remarks
The school heads and teachers...			
...seek and incorporate into the planning and development of Education 5.0 programs through community feedback and consultation.	6.67	0.50	Strongly Agree
...ensure directly contribute to enhancing students' practical skills and real-world learning experiences, aligning with the goals of Education 5.0 through community linkages extension projects and partnerships.	6.43	0.55	Strongly Agree
...engage with community stakeholders to support Education 5.0 initiatives through strategic planning.	6.45	0.55	Strongly Agree
Weighted Mean	6.33		
SD	0.8250		
Verbal Interpretation	Very High		

The findings align with contemporary research on the importance of future-ready skills and stakeholder engagement in Education 5.0. Studies emphasize that schools must equip students with critical thinking, creativity, and collaboration

skills to prepare them for the demands of an increasingly digital and interconnected world. Future-oriented education should incorporate problem-solving and innovation-driven learning to foster adaptability in rapid technological changes.

Similarly, effective stakeholder engagement is pivotal in successfully implementing education reforms. Research suggests that community involvement, industry partnerships, and shared decision-making significantly enhance educational outcomes. These collaborations provide students with practical learning experiences and ensure school initiatives align with real-world needs. Moving forward, schools should enhance collaboration with industries and communities to enrich student learning further and strengthen the overall strategic planning of Education 5.0.

Table 13 presents the level of readiness in Education 5.0 of school heads in terms of infrastructure readiness. The overall mean score of 6.37 (SD = 0.55) suggests that schools have made significant efforts to ensure technological preparedness. Among the indicators, regular updates and compatibility of the learning management system (LMS) with modern educational tools received the highest rating (M = 6.42, SD = 0.38), highlighting the importance of keeping digital platforms up to date for effective teaching and learning. Maintaining sufficient bandwidth to support online learning (M = 6.36, SD = 0.64) was also highly rated, reflecting the crucial role of stable internet connectivity in digital education.

Table 13. School Heads' Level of Readiness of Education 5.0 in terms of Infrastructure Readiness

Statement	Mean	SD	Remarks
The school...			
...maintains sufficient bandwidth to support the demands of online learning and emerging technologies.	6.36	0.64	Strongly Agree
...ensures that the learning management system (LMS) is regularly updated and compatible with the latest educational tools.	6.42	0.38	Strongly Agree
...provides faculty and students ongoing technical support and training to help them utilize the available technology infrastructure effectively.	6.32	0.63	Strongly Agree
Weighted Mean	6.24		
SD	0.9137		
Verbal Interpretation	Very High		

Meanwhile, the provision of ongoing technical support and training for faculty and students (M = 6.32, SD = 0.63) demonstrates the need for continuous capacity-building to maximize the use of technology.

The results underscore the vital role of robust digital infrastructure in facilitating Education 5.0, which emphasizes technology-driven, personalized, and immersive learning experiences. Research indicates that adequate infrastructure, including high-speed internet and well-maintained digital platforms, enhances the effectiveness of technology integration in education. Regular updates and technical support also contribute to a seamless digital learning environment, reducing technical barriers that may hinder engagement and participation. Ensuring infrastructure readiness is critical in advancing digital transformation in education, particularly in addressing equity and accessibility

challenges in the modern learning landscape. Continuous investment in technology upgrades and teacher training is essential to sustain the momentum of Education 5.0.

Table 14 presents the level of readiness in Education 5.0 of school heads in terms of curriculum alignment. The overall mean score of 6.38 (SD = 0.64) indicates a strong commitment to integrating Education 5.0 principles into the school curriculum. Among the indicators, the highest-rated item is equipping teachers to integrate competencies such as artificial intelligence, automation, and digital literacy (M = 6.42, SD = 0.64), highlighting the emphasis on teacher preparedness for digital transformation. Regularly reviewing and updating course content to align with industry demands and 21st-century learning skills received a mean score of 6.37 (SD = 0.64), suggesting an ongoing effort to ensure curriculum relevance. Additionally, establishing a clear framework for aligning the curriculum with Education 5.0 principles (M = 6.34, SD = 0.64) demonstrates a structured approach toward educational innovation.

Table 14. School Heads' Level of Readiness of Education 5.0 in terms of Curriculum Alignment

Statement	Mean	SD	Remarks
The school...			
...establishes a clear framework for aligning its curriculum with the principles and technological advancements of Education 5.0.	6.34	0.64	Strongly Agree
...reviews and updates course content to ensure alignment with emerging industry demands and 21st-century learning skills.	6.37	0.64	Strongly Agree
...equips teachers to integrate Education 5.0 competencies, such as artificial intelligence, automation, and digital literacy, into the curriculum.	6.42	0.64	Strongly Agree
Weighted Mean	6.32		
SD	0.9350		
Verbal Interpretation	Very High		

The findings reflect the increasing recognition of the need for a future-ready curriculum incorporating technological advancements and evolving workforce demands (Schwab, 2019). Studies highlight that Education 5.0 requires a dynamic curriculum integrating artificial intelligence, automation, and digital literacy to develop students' problem-solving, adaptability, and innovation skills.

Furthermore, teacher preparedness is crucial in effectively implementing Education 5.0 competencies, as educators must be equipped with technological and pedagogical expertise to foster personalized and immersive learning experiences. Aligning the curriculum with emerging industry trends and global competencies ensures students develop the necessary skills to thrive in the digital and knowledge-based economy (Wang et al., 2024). Continuous curriculum refinement, teacher training, and stakeholder collaboration will sustain a future-oriented education system.

Table 15 presents the level of readiness in Education 5.0 of school heads regarding governance readiness. The overall mean score of 6.49 (SD = 0.64) suggests a high level of preparedness in integrating Education 5.0 principles into academic and administrative operations.

The highest-rated item equips teachers with Education 5.0 competencies, including artificial intelligence, automation, and digital literacy (M = 6.61, SD = 0.58), highlighting the school heads' strong focus on teacher capacity-building. Implementing Education 5.0 innovations through well-defined regulatory guidelines, compliance measures, and certifications follows with a mean score of 6.46 (SD = 0.70), emphasizing the importance of standardized policies in ensuring successful digital transformation.

Table 15. School Heads' Level of Readiness of Education 5.0 in terms of Governance Readiness

Statement	Mean	SD	Remarks
The school...			
...supports the integration of Education 5.0 principles in academic and administrative operations by establishing clear policies and governance structures.	6.41	0.64	Strongly Agree
...ensures the successful implementation of Education 5.0 innovations through well-defined regulatory guidelines, compliance measures, and certifications.	6.46	0.70	Strongly Agree
...involves stakeholders, including faculty, students, industry partners, policy discussions, and governance decisions related to Education 5.0 initiatives.	6.61	0.58	Strongly Agree
Weighted Mean	6.45		
SD	0.9317		
Verbal Interpretation	Very High		

Additionally, establishing clear governance structures and policies supporting Education 5.0 integration (M = 6.41, SD = 0.64) reinforces the role of strategic leadership in advancing educational reforms.

The findings underscore the crucial role of governance in the effective adoption of Education 5.0, as strong leadership, well-defined policies, and regulatory frameworks are necessary for sustainable digital transformation in education. Recent studies highlight that governance readiness ensures that emerging technologies are seamlessly integrated into academic and administrative functions, thereby enhancing institutional efficiency and accountability (Escalaw, 2024).

Furthermore, teacher capacity-building in digital competencies is pivotal in facilitating innovative teaching and learning practices aligned with Education 5.0 principles. Ensuring that policies and compliance measures are in place strengthens the institutional framework needed for long-term sustainability in educational innovation.

Table 16 presents the level of readiness in Education 5.0 of school heads regarding technological engagement and support systems. The overall mean score of 6.40 (SD = 0.66) indicates a high level of preparedness in adopting Education 5.0 technologies.

The highest-rated item, establishing policies and support mechanisms for the sustainability, security, and continuous improvement of technological integration, has a mean score of 6.55 (SD = 0.61), highlighting the institutional commitment to long-term digital transformation. This is followed by providing sufficient access to digital tools, software, and learning management systems (LMS) for technology-driven education (M = 6.52, SD = 0.71), emphasizing the availability of essential resources for digital learning.

Lastly, integrating Education 5.0 technologies in teaching, learning, and administrative processes through a well-established digital infrastructure has a mean score of 6.15 (SD = 0.66), showing that further enhancement may be needed while infrastructure is in place.

Table 16. School Heads' Level of Readiness of Education 5.0 in terms of Technological Engagement and Support Systems

Statement	Mean	SD	Remarks
The school...			
...provides sufficient access to digital tools, software, and learning management systems to enhance student-centered and technology-driven education.	6.52	0.64	Strongly Agree
... Establish policies and support mechanisms to ensure the institution's sustainability, security, and continuous improvement of technological integration.	6.55	0.70	Strongly Agree
...supports the integration of Education 5.0 technologies in teaching, learning, and administrative processes through a well-established digital infrastructure.	6.15	0.58	Agree
Weighted Mean	6.14		
SD	0.9275		
Verbal Interpretation	High		

The results align with studies emphasizing that technological engagement and strong support systems are fundamental to the success of Education 5.0. Institutions prioritizing technology-driven education by ensuring access to digital tools, software, and secure learning management systems create an environment where students and teachers can effectively leverage modern learning methodologies.

Furthermore, establishing policies for sustainability and security is essential for protecting data integrity, ensuring compliance, and maintaining long-term technological advancement. Research also suggests that while schools invest in infrastructure and digital tools, successfully adopting Education 5.0 requires continuous training, stakeholder engagement, and policy reinforcement to fully optimize the benefits of technological innovations.

Table 17 presents the level of readiness in Education 5.0 of school heads in terms of digital literacy. The overall mean score of 6.30 (SD = 0.67) suggests high digital literacy readiness among school heads and teachers. The highest-rated item, incorporating digital literacy training initiatives to prepare students with skills in critical thinking, cybersecurity, and ethical technology usage, received a mean score of 6.38 (SD = 0.68), indicating strong efforts to develop future-ready learners.

This is closely followed by promoting the development of digital skills that align with Education 5.0, such as problem-solving, teamwork, and data-informed decision-making (M = 6.34, SD = 0.65). The lowest-rated but still highly scored item is possessing essential digital literacy skills for effectively utilizing online learning platforms and digital resources, with a mean score of 6.19 (SD = 0.69), suggesting that while digital competence is evident, ongoing training and professional development are still necessary.

The findings align with recent studies emphasizing that digital literacy is a foundational component of Education 5.0, equipping educators and students with the skills to navigate

the evolving digital landscape. Schools prioritizing digital literacy training enable students to develop critical thinking, cybersecurity awareness, and ethical technology use, which is essential for thriving in AI-driven and data-centric learning environments (Alharbi, 2023)

Table 17. School Heads' Level of Readiness of Education 5.0 in terms of Digital Literacy

Statement	Mean	SD	Remarks
The school heads and teachers...			
...possess the essential digital literacy skills to explore and utilize online learning platforms and digital resources effectively.	6.19	0.69	Strongly Agree
...incorporates digital literacy training initiatives to prepare students with critical thinking, cybersecurity, and ethical technology usage skills.	6.38	0.68	Strongly Agree
...promotes the development of digital skills that correspond with Education 5.0, such as problem-solving, teamwork, and data-informed decision-making.	6.34	0.65	Agree
Weighted Mean	6.25		
SD	0.8816		
Verbal Interpretation	High		

Furthermore, fostering problem-solving, teamwork, and data-informed decision-making ensures learners develop 21st-century skills required for professional and academic success. However, studies suggest that continuous upskilling of educators is crucial to sustaining digital literacy advancements, as emerging technologies, such as AI, automation, and big data, demand more adaptive and specialized training programs (Alharbi, 2023). Schools should continue investing in professional development programs and updated digital tools to enhance digital literacy competencies further and support the full implementation of Education 5.0

Table 18 presents the level of readiness in Education 5.0 of school heads in terms of student readiness. The overall mean score of 6.34 (SD = 0.60) indicates a high level of preparedness among students to engage with Education 5.0 methodologies. The highest-rated item, students demonstrating the ability to adapt to emerging educational technologies and digital learning environments, received a mean score of 6.38 (SD = 0.56), suggesting that students are highly responsive to digital innovations in education.

Table 18. School Heads' Level of Readiness of Education 5.0 of in terms of Student Readiness

Statement	Mean	SD	Remarks
The students...			
...demonstrate adapting to emerging educational technologies and digital learning environments.	6.38	0.56	Strongly Agree
...possess critical thinking, problem-solving, and collaboration skills necessary for engaging in Education 5.0 learning methodologies.	6.32	0.58	Strongly Agree
...participates in technology-enhanced learning activities and is well-prepared for self-directed and lifelong learning in a digital and interconnected world.	6.32	0.67	Strongly Agree
Weighted Mean	6.14		
SD	0.9844		
Verbal Interpretation	High		

The remaining indicators, students possessing critical thinking, problem-solving, and collaboration skills necessary for engaging in Education 5.0 learning methodologies obtained ($M = 6.32$, $SD = 0.58$) and students participating in technology-enhanced learning activities and being well-prepared for self-directed and lifelong learning ($M = 6.32$, $SD = 0.67$), show consistently strong ratings, reinforcing the notion that learners are equipped with 21st-century competencies essential for Education 5.0.

The results align with recent research highlighting that student readiness is a crucial factor in the successful integration of Education 5.0. Studies suggest that learners actively engaging with emerging technologies and digital learning environments are more likely to develop adaptive and self-directed learning behaviors, essential for the rapidly evolving educational landscape (Escalaw, 2024).

Developing critical thinking, problem-solving, and

collaboration skills is a key determinant of student success in technology-driven learning ecosystems. However, despite high readiness levels, continuous efforts are necessary to bridge potential gaps in digital equity, personalized learning, and technological accessibility. Schools must continue enhancing support systems, digital infrastructure, and adaptive learning strategies to sustain and improve student readiness in Education 5.0.

Table 19 presents the Pearson correlation coefficients between awareness factors (e.g., access to educational resources, global educational trends, cultural and societal influences, lifelong adaptability, teacher competence, and technological norms) and readiness indicators (e.g., infrastructure readiness, curriculum alignment, policy governance readiness, technological integration and support systems, digital literacy, and student readiness).

Table 19. Relationship between Awareness and Readiness in Education 5.0 of School Heads in Secondary Education

		Infrastructure Readiness	Curriculum Alignment	Policy Governance Readiness	Technological Integration and Support Systems	Digital Literacy	Student Readiness
Access to Educational Resources	Pearson Correlation	.309**	.171*	.163*	.385**	.342**	.360**
	Sig. (2-tailed)	.000	.036	.046	.000	.000	.000
	N	151	151	151	151	151	151
Global Educational Trends	Pearson Correlation	.262**	.148	.303**	.304**	.276**	.306**
	Sig. (2-tailed)	.001	.070	.000	.000	.001	.000
	N	151	151	151	151	151	151
Cultural and Societal Influence	Pearson Correlation	.388**	.367**	.466**	.291**	.409**	.492**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	151	151	151	151	151	151
Lifelong Adaptability	Pearson Correlation	.169*	.236**	.198*	.270**	.310**	.398**
	Sig. (2-tailed)	.039	.004	.015	.001	.000	.000
	N	151	151	151	151	151	151
Teacher Competence	Pearson Correlation	.273**	.335**	.477**	.105	.167*	.212**
	Sig. (2-tailed)	.001	.000	.000	.201	.041	.009
	N	151	151	151	151	151	151
Technological Norms and Ethical Principles	Pearson Correlation	.343**	.376**	.484**	.258**	.351**	.507**
	Sig. (2-tailed)	.000	.000	.000	.001	.000	.000
	N	151	151	151	151	151	151

*-Significant	**-Highly Significant	ns-Not Significant
Interval	Coefficient	Interpretation
0.80 - 1.00		Very Strong
0.60 - 0.79		Strong
0.40 - 0.59		Moderate
0.20 - 0.39		Weak
0.00 - 0.19		Very Weak

Results indicate that cultural and societal influence had the strongest correlation with student readiness ($r = .492$, $p < .01$) and policy governance readiness ($r = .466$, $p < .01$), highlighting the significant role of socio-cultural factors in shaping educational preparedness. Technological norms and ethical principles also demonstrated a strong relationship with student readiness ($r = .507$, $p < .01$) and policy governance readiness ($r = .484$, $p < .01$), suggesting that fostering ethical technology use and digital responsibility is essential for a well-prepared educational system.

Moreover, teacher competence exhibited a significant correlation with policy governance readiness ($r = .477$, $p < .01$) and curriculum alignment ($r = .335$, $p < .01$), reinforcing the idea that teacher expertise directly impacts the successful integration of Education 5.0 policies and curricular reforms. Access to educational resources was positively associated with

technological integration and support systems ($r = .385$, $p < .01$) and digital literacy ($r = .342$, $p < .01$), demonstrating the critical role of resource availability in advancing technology-driven education.

These findings align with contemporary research emphasizing the interconnectedness of awareness and readiness in digital education transformation. Studies indicate that socio-cultural awareness and technological ethics significantly influence policy formulation and student preparedness for digital learning environments.

Furthermore, teacher competence in technology-driven instruction has been shown to facilitate seamless curriculum alignment and governance strategies. The positive correlation between access to educational resources and technological readiness supports previous research asserting that infrastructure and resource availability are fundamental

enablers for digital literacy and Education 5.0 integration.

The data suggests that schools are highly ready for the governance requirements of Education 5.0, with a clear emphasis on establishing and implementing clear policies, ensuring regulatory compliance and certification processes and involving key stakeholders in governance and decision-making processes. As a result of well-established governance frameworks and procedures, school heads generally exhibit a high level of confidence in their capacity to oversee and promote Education 5.0 efforts. The high scores across all statements reflect a positive readiness among students for the advanced methodologies and digital environments of Education 5.0. This readiness is crucial for their success in a rapidly evolving educational landscape.

Given these findings, schools must strengthen socio-cultural adaptability, teacher training, and technological ethics education to enhance their readiness for Education 5.0 further. Moreover, policymakers should consider aligning governance strategies with evolving digital norms to ensure effective and sustainable implementation of educational innovations.

IV. CONCLUSION AND RECOMMENDATIONS

The following are the conclusions of the study:

1. There is significant relationship between awareness and readiness in Education 5.0 indication that school heads are knowledgeable and implementation is underway, as technology is already integrated into education.

2. There is significant relationship between strategic planning and readiness leading to rejection of the hypothesis and indicating that effective planning and available mechanism have positively supported the preparedness for the implementation of Education 5.0

On the qualitative results the findings highlight that strong community linkages and stakeholder engagement influence policy and governance readiness. Digital transformation also plays a key role in supporting governance and technological integration, emphasizing the need for clear digital strategies. A positive link between AI adoption and digital literacy indicates that AI integration enhances student preparedness for Education 5.0. Moreover, future-ready skills correlate with infrastructure readiness, stressing the importance of adaptable competencies. While school heads face challenges like limited technology, budget issues, and policy shifts, strong leadership, and strategic planning can turn these barriers into opportunities for embracing digital transformation and innovative teaching.

To successfully implement Education 5.0, school leaders must adopt a strategic and holistic approach that ensures seamless digital transformation while addressing infrastructure, curriculum, policy, and stakeholder engagement challenges. By adopting these strategic recommendations, school heads can successfully transition to Education 5.0, fostering an innovative, inclusive, and future-ready learning environment.

1. To strengthen schools' preparedness for Education 5.0, school leaders

and educators should focus on continuous professional development in emerging educational trends, innovative

teaching, and technology integration, with training in AI, adaptive learning, and digital transformation. Collaboration with stakeholders, including policymakers, industry leaders, and the community, is crucial for aligning academic learning with real-world applications. Schools should invest in up-to-date educational materials, digital tools, and infrastructure, ensuring inclusivity, diversity, and responsible digital learning practices.

2. For the strategic implementation of Education 5.0, professional

development programs should focus on AI integration and personalized learning, with partnerships with technology experts and industry leaders. Schools should invest in AI-driven tools to facilitate adaptive learning and continue emphasizing learner-centered approaches and community engagement to create collaborative environments.

3. Enhancing readiness involves prioritizing digital literacy programs for

both teachers and students, investing in infrastructure and support systems, and expanding collaborations with government and private sectors for funding and resources. Strengthening professional development in emerging technologies will bridge gaps in digital readiness and ensure smoother technology integration.

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