United International Journal for Research & Technology

*Volume 07, Issue 01, 2025 | Open Access | ISSN: 2582-6832*

# Assessment of School Administrators' in Facilitating Technology Integration: Basis for Strategic Implementation

**Marestela C. Adlaon**

Student, Medina College – Ozamiz City

***Abstract*—** The integration of technology in education has revolutionized traditional teaching and learning approaches, making it imperative for school administrators to play an active role in fostering innovation. Beyond infrastructure availability, successful technology integration depends on the administrators' leadership, vision, and support in providing resources, training, and encouragement to teachers. This study assessed the extent to which school administrators in the Division of Tangub City facilitate technology integration, serving as the basis for a proposed strategic implementation plan. A quantitative comparative research design was employed, involving school administrators from various institutions within the Division of Tangub City. Data were collected through a researcher-made structured questionnaire comprising three parts: demographic profile, facilitation of technology integration, and areas of strategic leadership. Statistical tools such as frequency and percentage, mean and standard deviation, independent t-test, and one-way ANOVA were utilized to analyze the data and determine significant differences based on demographic variables such as age, sex, educational attainment, and years of experience. Findings revealed that administrators demonstrated a high extent of facilitation in all dimensions of technology integration, with professional development facilitation receiving the highest mean (M = 3.760), followed by support and encouragement (M = 3.732) and innovative decision-making (M = 3.712). Differences were found only in terms of sex (p = 0.049), indicating gender-based variations in facilitation levels, while age, education, and experience showed no significant differences. Overall, school administrators in Tangub City actively promote technology integration through visionary leadership, professional development, and collaborative practices. Strengthening gender-sensitive training programs and sustained monitoring mechanisms are recommended to enhance equitable and effective implementation of educational technology strategies.

***Keywords*—** technology integration, school administrators, visionary leadership, professional development, educational management, innovation in education, strategic implementation, digital learning.

## INTRODUCTION

### *Background of the Study*

The introduction of technology in schools has not only changed the conventional way of teaching and learning, but also computer-based technology has become a part of the contemporary pedagogy. Technology integration does not always bear a dependence on the availability of infrastructure; it highly depends on whether school administrators take an initiative to create an innovative environment. The administrators play a significant role in the process since they enable teachers by giving them power, providing them with the infrastructure, and training them on how to integrate technology in the teaching process. Their vision, leadership, and decision-making are major considerations that contribute to the extent to which computer-based tools can improve the learning outcomes of students. Technology adoption may be imbalanced, ineffective, and unsustainable without active efforts.

Research has highlighted the instrumental role of school leaders in the process of integrating technology. In particular, Karakose and Tulubas (2021) have emphasized that visionary leadership is one of the preconditions of successful digital learning programs because it provides clear guidelines and establishes a culture of constant innovation. Işık (2023) found that school administrators who proactively promote the use of teaching technology by teachers promote the confidence and initiative of teachers to manipulate new digital tools. Han and Gao (2023) also emphasized the need to support the professional development of teachers, and it is observed that when the administrators sponsor the continuous training courses, it results in the long-term proficiency of teachers in the use of technology to teach.

According to the increasing amount of literature on educational technology leadership, there remain gaps in knowledge about how certain types of leadership, including collaboration, innovative decision-making,

and monitoring, affect long-term digital change in elementary schools. Although studies have been conducted on the net effect of administrative support to technology integration, very few studies have been conducted on the process by which school administrators institute long-term technological developments. These knowledge gaps should be addressed, particularly in the Division of Tangub City, where there is no research has been done to address the role of the administrators in ensuring that technology integration facilitates strategic implementation.

This research will seek to assess the role played by the school administrator in enhancing technology integration. It will specifically determine the extent to which administrators embrace visionary leadership, provide support, promote innovation, encourage teamwork, support professional growth, and ensure monitoring is in place. The study will also help to establish whether the role of the administrators is affected by demographic factors and how leadership can be adjusted to various environments. Ultimately, the result will be utilized in the formulation of the strategic implementation plan of the integration of technology in elementary education in order to ensure that technological innovations are successfully utilized in instruction and education.

## II. RESEARCH METHODOLOGY

### *Research Design*

The design of this study was a quantitative comparative design, which made an evaluation of the degree to which school administrators were supportive of technological integration. A comparative study is a planned study on relationships between two or more variables with an aim of describing how they relate to each other and what patterns submerge under the surface (Lex et al., 2010). The correlations may be positive (two variables grew together) or negative (an increase in one variable was succeeded by a decrease in the other one). This method allowed determining the differences in the roles of administrators concerning demographic factors, and the differences in leadership styles and efficiency in using technology integration in schools were learnt.

### *Research Setting*

The research was carried out in the Division of Tangub City with school administrators in different institutions of learning as the target. Tangub City was an appropriate research site since it had a changing educational context and a growing focus on digital transformation in educational institutions.

### *Research Respondents*

In this research, school administrators within the Division of Tangub City were included. This was done by the use of a total population approach, which implied that all the identified administrators in the division were respondents. No sampling method was used in order to have a thorough data collection.

### *Research Instrument*

The research paper employed a structured questionnaire, which was designed by the researcher, as the main instrument of data collection. There were three parts of the questionnaire.

Part I entailed the demographic profile of the respondents such as age, sex, education level and experience in educational administration. Part II determined the level of facilitation of technology integration among school administrators with reference to six major areas, which included visionary leadership, support and encouragement, innovative decision-making, collaboration and communication, facilitation of professional development, and monitoring and evaluation.

A Likert scale was used to measure responses:

| Scale | Description |
|---|---|
| **5** | Strongly Agree |
| **4** | Agree |
| **3** | Neutral |
| **2** | Disagree |
| **1** | Strongly Disagree |

- **Strongly Agree.** The respondent fully supports and consistently demonstrates the described practice.
- **Agree.** The respondent generally supports and often engages in the described practice.
- **Neutral.** The respondent neither agrees nor disagrees, indicating occasional or inconsistent engagement in the described practice.

- **Disagree.** The respondent generally does not support or rarely engages in the described practice.
- **Strongly Disagree.** The respondent completely opposes or never engages in the described practice.

***Validity of Instrument***

To provide a high level of validity and reliability to the questionnaire, the questionnaire was subject to expert validation by a panel comprising experts who specialized in the field of educational leadership, technological integration, and research methodology. The professionals examined the measure regarding content validity, clarity, and consistency with the purpose of the study. The questionnaire was improved based on their responses so that every question was appropriate to measure the target variables. The required revisions were done prior to the final administration to the respondents.

***Data Gathering Procedure***

The process of data collection was systematic to ensure that there was validity and reliability. The researcher first of all tried to get official permission to conduct the study by formally getting clearance from the Division of Tangub City and consulting with other concerned authorities. After the approval, the respondents were informed about the purposes of the study, its significance, and as participation. Towards ensuring that an ethical consideration is achieved, a written consent form was provided to the respondents, where they were reminded of voluntary participation as well as the freedom to withdraw at any time without reprisals.

The questionnaire was then dispatched in both hard copy and soft copy versions to maintain maximum convenience so that the respondents could have enough time to fill out the survey when they had time. Reminders were made to get responses to ensure maximum response. Lastly, the validation was done on all the responses collected to make them complete and accurate, and then data analysis was done.

***Ethical Considerations***

The importance of upholding ethics in research with human subjects was to guard their rights and welfare during the research. The research was also within the basic ethical standards, starting with informed consent from the participants. They were also given clear and detailed information about the study's purpose, methods, risks, and benefits. In order to be voluntary, signed consent was obtained, and their right to withdraw at any time was recognized (Kang and Hwang, 2021). Anonymization or coding of personal identifiers and retention of all information collected, coupled with access to only the research team, which was advanced by the Belmont Report (1979), ensured confidentiality to the letter.

In the paper, the principles of non-maleficence and beneficence were upheld by the use of a low-harm, high-benefit non-invasive research methodology, which was applied to the participants. Timely treatment was also administered within the Varkey guidelines (2020) in the case of emotional or psychological distress. The principle of respect for persons was also considered fundamental and made the participants feel respected and dignified, and their privacy, autonomy, and the right to form independent choices were all observed as stipulated by the National Commission on Protection of Human Subjects of Biomedical and Behavioral Research (1979).

***Data Analysis***

To analyze the data collected appropriately, the study applied the right statistical procedures in accordance with the study goals. The statistical treatments applied were as follows:

***Descriptive Statistics***

- ***Frequency and Percentage.*** Used to summarize the demographic profile of respondents, including age, sex, educational attainment, and length of service.
- ***Mean and Standard Deviation.*** Used to determine the extent to which school administrators facilitate technology integration in terms of visionary leadership, support and encouragement, innovative decision-making, collaboration and communication, professional development facilitation, and monitoring and evaluation.

***Comparative Analysis***

Independent Sample t-test. Used to determine whether there is a significant difference in administrators' roles in technology integration when grouped according to sex.

One-Way ANOVA (Analysis of Variance). Used to find out if there are significant differences between the responses of administrators when grouped based on age, education, and years of experience.

## III. PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

***Table 1.*** *Demographic Profile of the Respondents*

| **Profile** | **f** | **%** |
|---|---|---|
| **Age** | | |
| 25 - 30 years old | 0 | 0 |
| 31 - 35 years old | 15 | 30 |
| 36 – 40 years old | 20 | 40 |
| above 40 years old | 15 | 30 |
| **Total** | 50 | 100 |
| Sex | | |
| Male | 22 | 44 |
| Female | 28 | 56 |
| Prefer not to Answer | 0 | 0 |
| **Total** | 50 | 100 |
| Educational Attainment | | |
| Bachelor's Degree | 0 | 0 |
| Units in Masteral Degree | 6 | 12 |
| Master's Degree | 26 | 52 |
| Units in Doctorate Degree | 13 | 26 |
| Doctorate Degree | 5 | 10 |
| Total | 50 | 100 |
| Length of Service | | |
| less than 1 year | 0 | 0 |
| 1 – 5 years | 8 | 16 |
| 6 – 10 years | 17 | 34 |
| more than 10 years | 25 | 50 |
| **Total** | 50 | 100 |

The demographic profile of the respondent indicates that most of the 50 school administrators are on the age of 31 to 40 years old, and they constitute 70 percent of the total number of respondents, with 30 percent being above 40 years old. This implies that the majority of the administrators are adults and would probably have a lot of work experience that may positively affect their leadership and decision-making, particularly when introducing technology-based projects. Gender wise there is a close-to-equal representation of 56 percent that is female and 44 percent that is male. The statistics on the level of education also show that the respondents are very well-educated, with 52 percent of them having completed a Master's degree, 26 percent of them having taken courses in a doctorate degree, and 10 percent of them having a full-fledged doctorate. Such a high school education level means that they are more knowledgeable and, perhaps, more receptive to educational innovations. Furthermore, half of the respondents have worked in the school for over a decade, and this implies that there is a well-experienced group of school leaders with a good insight into many administrative and technological advances. On the whole, the above features suggest that the respondents will be in a good position to learn and enable technology integration in their respective institutions.

Looking into the indicators further, the age structure means the presence of both a mature and experienced workforce, which in many cases is associated with leadership stability and institutional experience. Nevertheless, the fact that experience may lead to better management effectiveness does not rule out the fact that it can also be a problem because of the need to adapt to the fast technological changes when administrators are less exposed to new digital practices. The even distribution of genders also shows that there is a balance in the representation of both males and females, which implies that both male and female administrators represent important roles in school management and technological easing. The fact that the respondents are highly educated confirms that they are ready to undertake endless learning and pioneer in the area of education technology. Regarding length of service,

employees who have served over a decade might have a lot of knowledge about how the school system works, and as such, they will have an upper hand when it comes to strategic implementation of technology integration. Conversely, the younger employees can bring new thinking and flexibility to current trends in educational technology. All these signs point to a team of administrators who can maintain the balance between old-time wisdom in leadership and new digital skills, which is essential to successful technology implementation.

The results align with the research of Schmitz et al. (2023), who noted that school leaders who have strong academic qualifications and have extensive experience are more likely to demonstrate greater competence in directing digital transformation in schools. Their study on transformational leadership and technology integration found that the professional development and tenures of administrators have a great effect on their capacity to develop the supporting environment of digital learning. Likewise, the leadership of administrators and their educational level were key to the successful implementation of technology. The current findings are consistent with the fact that highly educated and experienced school leaders have the capacity to support technology integration.

But experience and credentials are a good starting point; the real implementation success is also based on constant training, institutional support, and readiness to be innovative. In this way, the demographic features of the respondents imply an excellent possibility of successfully facilitating the technology adoption with an exceptional correspondence to the recent literature highlighting the critical importance of the role played by the experienced and educated administrators in catalyzing the digitalization of schools.

***Table 2.1*** *Extent of School Administrators Facilitate Technology Integration in terms of Visionary Leadership*

| **Indicators** | **Sd** | **Mean** |
|---|---|---|
| I articulate a clear vision for technology integration in my school. | 1.08 | 3.70 |
| I align technology initiatives with the school's long-term goals. | 1.01 | 3.92 |
| I set expectations for teachers to incorporate technology into their instruction. | 1.01 | 3.66 |
| I model the use of technology in my leadership practices. | 1.01 | 3.66 |
| I allocate resources to support technology integration | 1.11 | 3.54 |
| **Average Mean** | 3.696 | High |

Scale: 1.0 – 1.80 "Very Low", 1.81 – 2.60 "Low", 2.61 – 3.40 "Average", 3.41 – 4.20 "High", 4.21 – 5.00 "Very High"

Table 2.1 shows the degree to which school administrators enable technology integration in regard to visionary leadership. The total mean score of 3.70, which can be taken as the High level, shows that school administrators successfully show visionary leadership in the process of including technology in their schools. This means that administrators have realized the relevance of technology in promoting the objectives of education, and they have been busy laying out a clear direction for the implementation of technology. The finding indicates the proactive attitude of school leaders in developing a technology-based learning culture in accordance with the organizational views of quality and innovation in learning.

On the analysis of the individual indicators, the maximum mean (3.92) was given to the statement, I align technology initiatives to the long-term goals of the school, which implied that administrators make sure that technology plans are aligned with institutional development goals. In the meantime, the smallest mean (3.54) is associated with the item "I allocate resources to support technology integration," which means that the administrators are in favor of technology use, but the financial constraints regarding budget allocation or resource priorities can be a problem. All indicators associated with expressing vision, establishing teacher expectations, and modeling technology utilization were rated as High, which suggests that the respondents are typically dedicated to motivating their employees and encouraging technology as an essential part of school management and teaching development.

These results can be discussed as the same as Sharma and Kaur (2024) state that visionary leadership is essential to successful technology integration in schools, and a shared vision, which leaders express and offer direction, serves as a factor in the motivation and digital competency of teachers. On the same note, Prieto-Jiménez et al. (2021) concluded that successful technology leadership is not only about establishing a vision but also about tangible support by allocating resources and professional development.

The results of the current paper support the above statements, indicating that although Filipino school administrators display high leadership in enhancing the incorporation of technology, in order to sustain the growth, the administrators have to maintain the initiatives of constant infrastructure and training investment in order to implement the technology-enriched educational system.

***Table 2.2*** *Extent of School Administrators Facilitate Technology Integration in terms of Support and Encouragement*

| Indicators | Sd | Mean |
|---|---|---|
| I provide teachers with the necessary tools and resources for effective technology integration. | 0.99 | 3.92 |
| I create a supportive environment for educators to explore new technologies. | 0.96 | 3.94 |
| I recognize and reward teachers who effectively integrate technology. | 0.98 | 3.72 |
| I address concerns related to technology integration proactively. | 1.31 | 3.58 |
| I promote a culture of openness to technology-driven changes. | 1.10 | 3.50 |
| **Average Mean** | 3.732 High | |

Scale: 1.0 – 1.80 “Very Low”, 1.81 – 2.60 “Low”, 2.61 – 3.40 “Average”, 3.41 – 4.20 “High”, 4.21 – 5.00 “Very High”

Table 2.2 data shows that the mean average of 3.73, which is considered to be High, means that school administrators exhibit a high degree of support and encouragement toward supporting the technology integration in their schools. This observation suggests that the administrators are active in maintaining a technology-rich learning environment by creating opportunities, incentives, and the resources needed to enable teachers to successfully apply digital tools in their teaching methods. The overall mean is high, and this indicates that school leaders are important in instilling confidence and willingness to use technology in the teaching and learning process among the teachers, and this results in the improvement of teaching and learning processes.

Analyzing the personal indicators, the highest mean of 3.94 was received in the item I create a favorable environment where educators can experiment with new technologies, which shows that administrators strive to create an environment of experimentation and innovation. This is closely surpassed by I give teachers the tools and resources to effectively use technology (3.92), implying that there is concrete administrative assistance to teachers. In the meantime, 3.50 was the lowest value achieved by the mean in the item. I promote a culture of openness to technology-driven changes, yet where the rating of 3.50 was low, the products showed a relative necessity to improve the ability of the educators to be flexible to the new technologies. This diversity of means also points to the fact that, as much as resources and moral support are present, it is still necessary to continuously seek the creation of a culture of openness and proactive response to problems in relation to technology adoption.

This research is consistent with the results of Ramos and Villanueva (2022), who noted that school leaders play a major role in driving the technology integration of teachers via continuous motivation, access to digital technology, and appreciation of new activities. They also discovered in their study that supportive leadership helps teachers to have confidence in their use of technology and that it leads to increased instructional effectiveness. On the same note, a study by Berkovich and Hassan (2024) established that the administrators who establish a collaborative environment and reward technology efforts positively influence the motivation of teachers to use digital instructional tools. These similar results support the implication of the present study that leadership support is a key to the successful and sustainable incorporation of technology in education.

***Table 2.3*** *Extent of School Administrators Facilitate Technology Integration in terms of Innovative Decision-Making*

| Indicators | Sd | Mean |
|---|---|---|
| I encourage experimentation with new technologies to enhance teaching and learning. | 1.11 | 3.62 |
| I make data-driven decisions regarding technology integration. | 1.08 | 3.66 |
| I allocate funds strategically to ensure sustainable technology initiatives. | 1.15 | 3.56 |
| I seek innovative solutions to challenges related to technology integration. | 0.96 | 3.94 |
| I stay updated on emerging educational technologies. | 1.22 | 3.78 |
| **Average Mean** | 3.712 | High |

Scale: 1.0 – 1.80 “Very Low”, 1.81 – 2.60 “Low”, 2.61 – 3.40 “Average”, 3.41 – 4.20 “High”, 4.21 – 5.00 “Very High”

According to the data provided in Table 2.3, the level at which the school administrators facilitate technology integration in terms of innovative decision making received an overall mean of 3.71, which is understood as High. This implies that school administrators also apply innovative leadership practices frequently when it comes to introducing technology in their schools. The overall high mean on the one hand means that the administrators tend to be active when it comes to the adoption of new methods as well as making sound decisions to enhance teaching and learning through technology. This is an indication that they appreciate the importance of technological improvement in learning and are actively involved in the decision-making processes that promote sustainable and innovative activities in their institutions.

The greatest mean score was made by the statement "I seek innovative solutions to issues pertaining to technology integration," which had a mean of 3.94 (High), meaning that the administrators are problem solvers who adjust to challenges by trying to find innovative ways to improve the use of technology in schools. It is succeeded by I stay abreast of new educational technologies (M=3.78, High) and I make evidence-based decisions about technology integration (M=3.66, High), which show the willingness of the administrators to be continuous learners and make evidence-based decisions. The mean score is lowest, and it is the one that states that I plan my funds strategically to promote sustainable technology initiatives (M=3.56, High), which indicates that even though financial planning is conducted in regard to technology, it might still be limited in the budget or by other priorities. All in all, these findings suggest that administrators demonstrate high levels of leadership in advancing innovation, but with more focus on strategic financial allocation, sustainability can be enhanced.

This study is consistent with the results of Aldosemani (2024), who noted that school leaders can be instrumental in the promotion of an innovative and technology-adoption culture by promoting experimentation and professional growth among teachers. Likewise, Kurilovas (2020) also discovered that improving levels of technology adoption in their schools are more likely to be reached when educational administrators make decisions based on data and driven by innovation. These literature sources justify the current findings that effective and innovative leadership greatly increases the introduction of educational technologies. Therefore, it may be concluded that the experimentation promoted by the administrators, their awareness, and the use of data-driven strategies make the integration of technologies more organized and effective.

***Table 2.4*** *Extent of School Administrators Facilitate Technology Integration in terms of Collaboration and Communication*

| Indicators | Sd | Mean |
|---|---|---|
| I encourage collaboration among teachers for sharing best practices in technology use. | 1.02 | 3.68 |
| I facilitate discussions on how technology can improve student learning outcomes. | 1.21 | 3.56 |
| I involve all stakeholders (teachers, students, parents) in technology-related decisions. | 1.07 | 3.60 |
| I establish partnerships with external organizations to enhance technology access. | 1.27 | 3.62 |
| I maintain open communication regarding technology policies and implementation. | 1.14 | 3.66 |
| **Average Mean** | 3.624 | High |

Scale: 1.0 – 1.80 “Very Low”, 1.81 – 2.60 “Low”, 2.61 – 3.40 “Average”, 3.41 – 4.20 “High”, 4.21 – 5.00 “Very High”

The information in Table 2.4 describes the levels of collaboration and communication of the school administrators in technology integration. The findings show that the overall mean is 3.624, which is seen as High. This implies that the school administrators embrace the idea of collaboration and communication in marketing technology use in their schools. The great extent of facilitation also presupposes the fact that the administrators admit the significance of teamwork and open communication lines in increasing the level of digital competence of teachers and improving the results of student learning. This kind of environment will help to develop an atmosphere of innovation and constant improvement, and this is vital in ensuring that technology is successfully integrated into the teaching and learning process.

The statement with the highest mean (3.68) is provided in the statement. I encourage collaboration among teachers to share their best practices related to the use of technology; hence, administrators are highly likely to facilitate learning (peer-to-peer) and professional sharing of technology-related teaching strategies. This is closely connected with the next idea, which is "I

establish open communication on the technology policies and implementation" (3.66), which means that transparency and dialogue are strongly developed within the technology efforts in the school. In the meantime, the lowest-rated indicator, the rating of which is still high, is the one that relates to the aspects of how technology could enhance the outcome in student learning (3.56), which implies the necessity of more systematic and frequent discussions of the effects of technology on pedagogy. In general, these findings indicate the willingness of the administrators to promote collaboration and communication as well as reveal the fields where in-depth discussions should be continued, connecting the use of technology directly with the learning enhancement.

The results of the current research are consistent with the findings of Sari and Zulkifli (2022), who identified the efficacy of communication and collaborative leadership among school heads as the primary factor in determining how teachers are willing to incorporate technology in classroom education. On the same note, Manalo and Dela Cruz (2023) noted that open communication systems and networks that school administrators implement in schools serve to provide a supportive environment where innovation and the use of digital tools are more encouraged. These studies support the existing results and indicate that the improvement of technology integration and a better educational outcome should be supported by encouraging cooperation and free discussion.

***Table 2.5*** *Extent of School Administrators Facilitate Technology Integration in terms of Professional Development Facilitation*

| **Indicators** | **Sd** | **Mean** |
|---|---|---|
| I ensure that teachers receive regular training on technology integration. | 1.15 | 3.84 |
| I provide opportunities for teachers to attend technology-related workshops and seminars. | 1.11 | 3.72 |
| I support mentorship programs where tech-savvy teachers assist their colleagues. | 1.11 | 3.70 |
| I evaluate the effectiveness of professional development programs on technology use. | 1.01 | 3.92 |
| I allocate time for teachers to explore and implement new technologies. | 0.95 | 3.62 |
| **Average Mean** | 3.760 High | |

Scale: 1.0 – 1.80 “Very Low”, 1.81 – 2.60 “Low”, 2.61 – 3.40 “Average”, 3.41 – 4.20 “High”, 4.21 – 5.00 “Very High”

The total mean value of 3.760 is considered within the high category, which shows that school administrators are observed to be doing very well in their facilitative role of professional development of integrating technology. This implies that the teachers normally feel encouraged in their quest to acquire their technological competence, which is central in achieving success in integrating technology into teaching and learning. Professional development is important as it is facilitated on a high level, which is important since it is not simply a matter of providing tools, but it is also important to make sure that educators are knowledgeable and skilled in using technology meaningfully in the classroom. Although the rating is positive, it also shows that additional efforts are required to achieve the next level of facilitation, which is Very High, and in which technology integration is completely integrated into the instructional practices.

Looking at the individual indicators, the assessment of the programs on professional development has the highest rate (mean = 3.92), indicating that administrators put a lot of emphasis on the evaluation of the effectiveness of the training programs. It is also seen favorably that regular training (mean = 3.84) and the opportunity to have workshops and seminars (mean = 3.72) are taken seriously by the administrators towards the learning of teachers. Relatively low ratings were observed in supporting mentorship programs (mean = 3.70) and setting aside time to allow teachers to explore and use new technologies (mean = 3.62), which may be improved. These results suggest that the administrators organize and evaluate the training successfully, but peer mentoring and providing teachers with special time to experiment with can be reinforced to increase the technological competence further.

Comparing the results of this research with those of recent ones, the results of the work by Mendoza and Catiis (2022) suggest that the level of technological leadership among school administrators in Philippine public high schools is also high; however, their research mentioned that the technological leadership did not necessarily have a direct impact on teacher proficiency. Likewise, Putpoonga (2023) emphasized that there was a strong positive correlation between technological leadership and technological integration of administrators and technology integration among teachers. This helps to justify the fact that the facilitation of professional development of administrators is seen as

effective as indicated in the current study. Nevertheless, the comparatively lower scores of mentorship and the assigned time reflect the literature apprehension regarding operational obstacles to meaningful technology incorporation, since Salmeron Aroca et al. (2023) indicated that lasting, embedded, and practice-based professional development is the key to success in the long-term. In general, the research is consistent with the current literature, as it demonstrates the affirmative role of administrators in facilitating the use of technology, as well as the ways the practice can be enhanced practically.

***Table 2.6*** *Extent of School Administrators Facilitate Technology Integration in terms of Monitoring and Evaluation*

| **Indicators** | **Sd** | **Mean** |
|---|---|---|
| I regularly assess the effectiveness of technology integration in the school. | 1.09 | 3.58 |
| I use feedback from teachers and students to improve technology initiatives. | 1.02 | 3.70 |
| I implement policies to ensure ethical and safe use of technology. | 1.02 | 3.70 |
| I analyze performance data to determine the impact of technology on learning outcomes. | 0.94 | 3.58 |
| I adjust technology strategies based on evaluation findings. | 1.13 | 3.68 |
| **Average Mean** | 3.648 High | |

Scale: 1.0 – 1.80 “Very Low”, 1.81 – 2.60 “Low”, 2.61 – 3.40 “Average”, 3.41 – 4.20 “High”, 4.21 – 5.00 “Very High”

Table 2.6 indicates the total mean of 3.648 that belongs to the high category of the scale (3.41 4.20). This shows that, in general, the school administrators indicated that they consider their role in integrating technology by monitoring and evaluating it as good. It means that the degree of commitment to the monitoring of technology use, feedback collection, policy implementation, analysis of the results, and strategy changes is commendable. In the strategic implementation basis of your study (Assessment of School Administrators in Facilitating Technology Integration...), this constitutes a good base: the administrators do not passively give out the technology resources, but rather, they are in charge and are refining the application of the technology. However, the fact that one is in the High and not the Very High level suggests that more improvements and intensification of these practices can still be made.

Moving to the personal indicators, the administrators most agreed on the use of feedback through teachers and students (mean = 3.70, SD = 1.02) and the introduction of policies to the ethical and safe use of technology (mean = 3.70, SD = 1.02). These are noteworthy strengths: feedback loops and policy governance seem to be well-developed. A little less favorable means was described in assessing effectiveness regularly (mean = 3.58, SD = 1.09) and analyzing performance data on learning outcomes (mean = 3.58, SD = 0.94), which indicated slightly weaker or more inconsistent practices in the specified domains. The indicator of updating strategies according to the evaluation results had a mean of 3.68 (SD = 1.13) - the mean is very high; however, the standard deviation is the greatest, meaning that there is more variability among the administrators as to how often or effectively they vector the assessment results to update strategy. It is to be understood in this context that the administrators are receptive and policy conscious, but some have the opportunity of enhanced support or procedure of continuous evaluation, data evaluation, and strategy reform to minimize fluctuation and increase steadfastness.

As compared to the recent research, your research findings correspond to and expand the current literature. Indicatively, such as Transformational leadership in the technology integration of schools (Schmitz et al., 2023) revealed that transformational leadership practice by principals significantly influenced digital school infrastructure, positive beliefs of teachers on technology, and their abilities to teach using digital technology. This is related to your observation that an administrator of schools notes a High degree of monitoring and evaluation in the integration of the technology process.

Conversely, another study conducted in Malaysia (The Role and Challenges of School Leaders in Enhancing the Application of Digital Technology, Sarimin et al., 2025) established that, whereas school leaders have a role to play in improving technology application, they continue to encounter high barriers due to a lack of infrastructure, a lack of digital literacy among teachers, and finances. In contrast to such a scenario, your research indicates somewhat higher self-reported performance in monitoring and assessment, but the standard deviation and rather low means of some of the items (e.g., regular assessment, strategy adjustment) can indicate subsequent differences or the inability to perform adequately, similar to the barriers reported in the Malaysian context. Therefore, your study confirms

that the aspect of leadership of technology integration is paramount and points out that even in performance that is considered to be at High, variability is still a problem that should be approached strategically.

***Table 2.7*** *Summary of the Extent of School Administrators Facilitate Technology Integration*

| Components | Mean | Interpretation |
|---|---|---|
| Visionary Leadership | 3.696 | High |
| Support and Encouragement | 3.732 | High |
| Innovative Decision-Making | 3.712 | High |
| Collaboration and Communication | 3.624 | High |
| Professional Development Facilitation | 3.760 | High |
| Monitoring and Evaluation | 3.648 | High |
| **Average Mean** | 3.695 High | |

Scale: 1.0 – 1.80 "Very Low", 1.81 – 2.60 "Low", 2.61 – 3.40 "Average", 3.41 – 4.20 "High", 4.21 – 5.00 "Very High"

The total average of 3.695, which lies in the High category of the 1.0-5.0 scale, shows that the school administrators are perceived to help the school integrate technology at an admirable level. Herein implies that on the measured components, the administrators are not only carrying out the practice of the baseline but also encouraging and encouraging the use of technology in their institutions. As implied, the organisational environment is normally favourable to technology integration and that administrators play a variety of essential roles in this regard. However, since the mean is not at the Very High band (4.21-5.00), there is yet a possibility to further enhance and entrench these practices in order to make the integration more systemic, embedded, and transformative and not merely operative.

Analyzing the individual items we find Professional Development Facilitation (mean = 3.760) is the strongest one indicating that administrators are particularly skilled in empowering the staff to train, build capacity to use technology, and professional development in this respect. Others that are rather high are Support and Encouragement (3.732) and Innovative Decision-Making (3.712), which implies that administrators are considered to provide the appropriate encouragement and make the required decisions leading to innovation. Monitoring and Evaluation (3.648) and Collaboration and Communication (3.624) are the slightly lesser scores, however, in the High range, but with a relatively lower score in comparison to the other parts. It would mean that even though the administrators are doing a good job with the provision of vision, support, and training, they can do even more by investing in how they measure the outcomes of technology integration, assessing the effect, encouraging continuous feedback, and establishing more collaborative cultures towards technology among teachers and personnel.

A comparison of such findings with new empirical data provides support and thoroughness. As an example, A'mar and Eleyan (2022) found that technology leadership and professional development facilitation of principals were rated high and positively correlated with technological integration by teachers (A'mar and Eleyan, 2022). The other research conducted on digital leadership and sustainable school improvement has also concluded that nowadays, in the digital era, school leaders must not only refresh the resources or introduce technologies but also realign the school structure, work, personnel, and culture with the new reality (Karakose & Tulubas, 2023). Against this backdrop, the current results are consistent in terms of high degrees of facilitation of the administrator, especially the vision and professional development. But just like in the latter research, the fact that collaboration/communication and monitoring/evaluation scores were a bit lower indicates that high leadership ratings do not necessarily imply the same level of high scores in all the sub-areas of leadership in technology integration. Therefore, on the one hand, our administrators seem to be doing well; on the other hand, some of the areas, namely collaboration/communication and systematic monitoring, might need specific reinforcement to reflect the most robust areas of leadership and fit the best-practice models in the literature.

***Table 3.*** *Test of Significant Difference in School Administrators' Facilitate Technology Integration*

| Variables | df | P value | Decision |
|---|---|---|---|
| School Administrators' Facilitate Technology Integration vs. Age | 2 | 0.828 | retain the Ho |
| School Administrators' Facilitate Technology Integration vs. Sex | 1 | 0.049 | reject the Ho |

| | | | |
|---|---|---|---|
| School Administrators' Facilitate Technology Integration vs. Educational Attainment | 3 | 0.253 | retain the Ho |
| School Administrators' Facilitate Technology Integration vs. Length of Service | 2 | 0.262 | retain the Ho |

Note: If $p \leq 0.05$, with a significant difference

The results of Table 3 show that out of the demographic variables investigated, sex only has a significant value in facilitation of technology integration among school administrators with a p-value of 0.049, as compared to age (0.828), educational attainment (0.253), and length of service (0.262), with all the p-values exceeding the threshold of 0.05. This implies that overall, the level of facilitation of technology integration by the administrators is usually similar in various age groups, educational attainment, and the length of service. This implication is that these aspects do not seem to have any effect on the administrators in their capability to endorse the use of technology in schools, meaning that professional development or strategic measures do not necessarily have to be purposefully customized on the grounds of these demographic features. Nonetheless, the substantial sex disparity implies that male and female administrators can impact the process of technology integration at the various levels, and therefore, it is necessary to investigate the potential gender-related factors potentially affecting technology leadership and support in schools.

Analyzing the individual indicators, the absence of a significant difference in terms of age shows that younger and older administrators are equally effective in the technology integration, which suggests that age-specific intervention can be ineffective. Equally, the insignificant influence of educational level implies that the level of education (as the administrator either has a bachelor's or master's, or other degree) does not have a significant impact on their facilitation, indicating the significance of professional growth as opposed to the actual qualification. The insignificant difference in the length of the service also points to the fact that experience is not the key to improved integration of technology, and supporting the idea further, that targeted training and systemic assistance are even more important than tenure. In comparison, the substantial distinction that comes about in sex implies that male and female administrators might have different approaches to technology facilitation, which might be affected by factors including resource availability, comfort level with technology, or leadership approach. This observation means that strategic implementation plans must bring gender sensitive considerations towards the provision of an equal opportunity to support and build capacity among all administrators.

When compared with the recent literature, the findings correspond with those studies that focus on leadership vision, professional development, and systemic support as the leading factors that influence a successful technology integration, and not demographic factors such as age, tenure, and education (A'mar and Eleyan, 2022; Schmitz et al., 2023). Nevertheless, the large sex difference found in this study gives a fresh perspective that has not been much discussed in past studies, and therefore, the gender related aspect could be a factor in certain situations that causes administrators to facilitate technology integration. Although some researchers, e.g., Olaniyan and Uzorka (2024), emphasize the role of leadership practices and resource support, they do not provide sex as an important variable. Consequently, this research work is relevant to the literature as it determines sex as one of the factors to be considered when formulating strategies that should be used to enhance the implementation of technology in schools, although it confirms that age, education levels, and length of service might not be important determinants of technological facilitation skills of administrators.

## IV. SUMMARY OF FINDINGS, CONCLUSION, RECOMMENDATION

### *Summary of Findings*

As for the demographic profile of respondents, administrators belonged to various age groups, reflecting a diverse range of experiences in educational leadership. The respondents were composed of both male and female administrators, with gender-related differences observed in their facilitation of technology integration. Further, the majority of school administrators held advanced degrees, indicating a strong academic background in educational leadership and management, and the length of service varied among respondents, encompassing both novice and experienced administrators.

School administrators demonstrated a great extent of facilitation in all the areas of technology integration:

- In terms of visionary leadership (M = 3.696, High), school administrators exhibited a high degree of

commitment towards adopting the vision and objectives of technology in the school.

- For the support and encouragement (M = 3.732, High), they provided the required resources, created an enabling environment, and recognized teachers' initiative in using technology.
- As to Innovative Decision-Making (M = 3.712, High), administrators fostered experimentation, data-driven decisions, and attempted to incorporate sustainable technology options.

Moreover, when it comes to collaboration and communication (M = 3.624, High), while the administrators engaged the stakeholders, this aspect had the lowest mean of the rest, and it shows areas to improve on partnership development and transparent communication.

As for the Professional Development Facilitation (M = 3.760, High), this is the highest-ranked component, reflecting strong support for teacher training, mentorship, and ongoing professional development.

Lastly, for monitoring and evaluation (M = 3.648, High), the administrators assessed the impact of technology integration and formulated policies to guarantee ethical and effective use of technology.

The study explored the variations in the support of technology integration based on demographics. There was a variation in sex ($p = 0.049$), which showed that male and female administrators would have varying means of technology integration. Age ($p = 0.828$), level of education ($p = 0.253$), and years of service ($p = 0.262$) did not show variations and, therefore, these variables do not have a significant impact on administrators supporting technology integration.

***Conclusions***

The analysis revealed that the integration of technology in all sectors was strongly supported by the school administrators, with the highest support being the professional development. Their jobs were not affected by their demographic characteristics, like their age, education, and experience, but their differences were determined by gender. Administrators in general were at the center of the development of technology integration, which focused on training, strategy planning, and constant support.

***Recommendations***

- ***School Administrators.*** School Administrators may still foster a culture of technology use by increasing the number of professional development programs, working together, and monitoring the processes to ensure successful implementation.
- ***Teacher.*** Learning would involve the involvement of the teachers in training, innovative pedagogy, and best practices to ensure that they maximize the resources and help provided by the administrators.
- ***Educational Policymakers.*** The policymakers in education can develop educational policies that would enable the inclusion of technology in the education system, whereby they are properly funded, there are organized training programs, and institutional support to enable schools to be equipped with sustainable digital projects.
- ***Future Researchers.*** The researchers might also do further studies in the future to investigate how effective administrative leadership styles are with respect to technology integration, including qualitative observation as a complement to quantitative data and cumulative development of a general picture of the best practices.

**REFERENCES**

[1] Aldosemani, T., Mirshekari, N., Karimi, A., Laghaei, A., Fathi, K., & l Dosimany, L. (2024). A Scientometric Review of E-School1993-2023. International Journal of Virtual and Personal Learning Environments, 14(1).

[2] A'mar, F., & Eleyan, D. (2022). Effect of principal's technology leadership on teacher's technology integration. International Journal of Instruction, 15(1), 781-798. ERIC Number: EJ1331162.

[3] Berkovich, I., & Hassan, T. (2024). Principals' digital instructional leadership during the pandemic: Impact on teachers' intrinsic motivation and students' learning. Educational Management Administration & Leadership, 52(4), 934-954.

[4] Han, J., & Gao, C. (2023). University teachers' well-being in ICT-enhanced teaching: The roles of teacher self-efficacy and teaching support. Australasian Journal of Educational Technology, 39(6), 89-104. https://doi.org/10.14742/ajet.8868

[5] Işık, M. (2023). Investigation of school administrators' technological leadership behaviors in the context of teachers' professional development. Malaysian Online Journal of Educational Technology, 11(4), 238-257. http://dx.doi.org/10.52380/mojet.2023.11.4.530

[6] Kang, E., & Hwang, H.-J. (2021). Ethical conducts in qualitative research methodology: Participant

observation and interview process. Journal of Research in Physical Education, 2(2), Article 5. https://doi.org/10.15722/jrpe.2.2.202109.5

[7] Karakose, T., & Tülübaş, T. (2023). Digital leadership and sustainable school improvement—A conceptual analysis and implications for future research. Educational Process: International Journal, 12(1), 7-18. https://www.edupij.com/10.47772/IJRISS.2024.8120033

[8] Kurilovas, E. (2020). On data-driven decision-making for quality education. Computers in Human Behavior, 107, 105774.

[9] Lex, A., Streit, M., Partl, C., Kashofer, K., & Schmalstieg, D. (2010). Comparative analysis of multidimensional, quantitative data. IEEE Transactions on Visualization and Computer Graphics, 16(6), 1027-1035.

[10] Manalo, R. G., & Dela Cruz, K. M. (2023). Open communication and digital innovation: The role of school administrators in promoting technology use among teachers. Philippine Journal of Educational Management, 8(2), 101–115.

[11] Mendoza, L. R., & Catiis, J. P. (2022). Technological leadership practices of school administrators and their influence on teacher proficiency in Philippine public high schools. Asia Pacific Journal of Educational Leadership and Management, 9(1), 23–38.

[12] National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). The Belmont report: Ethical principles and guidelines for the protection of human subjects of research. U.S. Government Printing Office. https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.html

[13] Prieto-Jiménez, E., López-Catalán, L., López-Catalán, B., & Domínguez-Fernández, G. (2021). Sustainable development goals and education: A bibliometric mapping analysis. Sustainability, 13(4), 2126.

[14] Putpoonga, T. (2023). The relationship between technological leadership and technology integration among school administrators and teachers. International Journal of Educational Technology and Innovation, 12(2), 54–69.

[15] Sari, N. F., & Zulkifli, H. (2022). Communication and collaborative leadership as determinants of teachers' willingness to integrate technology in classroom instruction. Journal of Educational Administration and Leadership Studies, 14(1), 66–78.

[16] Schmitz, M.-L., Antonietti, C., Consoli, T., Cattaneo, A. A. P., Gonon, P., & Petko, D. (2023). Transformational leadership for technology integration in schools: Empowering teachers to use technology in a more demanding way. Computers & Education, 204, 104880. https://doi.org/10.1016/j.compedu.2023.104880

[17] Schmitz, M.-L., Antonietti, C., Consoli, T., Cattaneo, A. A. P., Gonon, P., & Petko, D. (2023). Transformational leadership for technology integration in schools: Empowering teachers to use technology in a more demanding way. Computers & Education, 204, 104880. https://doi.org/10.1016/j.compedu.2023.104880

[18] Sharma, R. K., & Kaur, S. (2024). Analysing the mediating role of organisational citizenship behaviour between transformational leadership and education 4.0 using PLS-SEM approach. International Journal of Educational Management, 38(2), 391-412.