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Research Article

Digital Integration in School Leadership: Its Implications to School Heads' Performance in Bislig City Division

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ABSTRACT : Rapid advancements of technology and digitalization are becoming an integral part of the educational landscapes of schools across the globe. Studies about digital leadership in public schools are increasingly seen in the literature but little attention has been focused on the local scale. This study investigated the extent of integration of digital technologies in the school leadership and management of public elementary schools in Bislig City division. A descriptive correlational research design was used to appropriately collect data from all or 51 public elementary school heads in Bislig City division to investigate the correlation between digital integration to leadership and performance of school leaders. Spearman rho correlation coefficients reveal that the extent of digital leadership of the school leaders in terms of Communication, Teaching and Learning, Productivity and Professional Practice, Support, Management, and Operations, and Assessment and Evaluation positively and significantly correlates to school performance. This is evidenced by the respective correlation coefficients of 0.657, 0.552, 0.653, 0.452, and 0.467. The findings of the study provide supplemental empirical evidence to the existing body of knowledge regarding the essential role of digital integration in the current trends of digital leadership.

Keywords: Digital integration, School leadership, School performance, Technology integration in school management

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1. Introduction

The digital age, school leadership needs to be at par with technological development. The role of school administrators became more intricate due to the unique demands of technologies and innovation. Leadership framework should be inclusive of the integration of ICT and data- driven decision making to achieve the needs of the teachers and the general learners. Sharma (2021) asserted that digitization or technology integration in school leadership promotes better school performance. However, digital transformation is one of the most significant challenges for education in the 21st century (Vucaj, 2022). This goes well beyond the integration of technologies, requiring changes about school curricula and the overall culture of teaching and learning, to prepare the next generation for different job markets and societies.

The school administrators, on the other hand, also need to adopt the newest trends of the day, such as using technology and the internet; being adept at navigating particular educational platforms for online classes, conferences, and meetings with teachers; and efficiently submitting reports using various Microsoft applications. These are just a few of the prerequisites that a school administrator and instructors must overcome to impart the knowledge and skills necessary for 21st-century education (Antia & Dioso, 2023).

Moreover, school leaders must also take on the mantle of more technologically inclined leadership to help teachers and stakeholders utilize digital tools and other technological

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platforms in their educational activities (Karakose et al., 2021). They must act as digital leaders to provide the necessary skills and knowledge for a 21st-century education to harness digital transformations in schools (Veguilla-Martinez et al., 2022). This situation instigated the discussion on digital leadership, especially since education and administrative practices are increasingly technologically integrated.

Recognizing the essence of digitization in leadership, the Department of Education (DepEd) released several issuances that highly support the integration of technology and digital means in school administration and instruction. DepEd Order No. 78. S. 2010 otherwise known as the Guidelines on the Implementation of the DepEd Computerization Program (DCP), aimed to provide public schools with appropriate technologies that would enhance the teaching-learning process and meet the challenges of the 21st century. In addition, DepEd's Information System Strategic Plan (ISSP) 2012-2023 has already incorporated in the Digital Rise Program as part of its vision for ICT education. It is also emphasized in the ISSP that school heads were resistant to change and does not want to learn this equipment because they rely on most to their teachers in accomplishing ICT related task which may result to workload intensification among teachers, backlogs of projects and reports and learners will be affected as well.

Tanucan et al.(2022) stated that the field of digital leadership in the Philippines is limited, despite the country's growing regard for school digitization. Socio-demographic profile of school leaders are strong indicators of their digital leadership. In the Department of Education (DepEd), many of the school leaders are raised way behind millennials. Majority must adjust to the changing landscape of education due to rapid digitization of processes and human interactions. Antia and Dioso (2023) observed that school heads were resistant to change and do not want to learn this equipment because they rely on most to their teachers in accomplishing ICT related task which may result to workload intensification among teachers, backlogs of projects and reports and learners will be affected as well.

At the local scale, particularly in Bislig city division, data show that most of the school heads are not born in digital ages. There are public elementary schools that are managed by school heads who grapple from the use of advance technologies. Such situation may speak of the huge challenge in technological adaptation in school processes and leadership. Inspite of the evident problems on technological integration or adaptation, no comprehensive study was conducted that would describe the problems associated to technology integration in leadership.

This study describes the extent of digital leadership or technology integration in school administration among school leaders and its implications to school performance. Results will be very useful in understanding the challenges and areas needing improvements and thereby generating opportunities to improve leadership in the digital ages.School leadership is an inevitable part of instructional and overall school performance. By knowing the gaps in the integration of ICT and digitization in school leadership, decision-makers will be able to create appropriate actions and interventions.

Research Methods

The study employed quantitative and descriptive correlational research design. Complete enumeration of 51 public elementary school heads from Bislig City division was achieved in the survey. Bislig is a coastal component city in the province of Surigao del Sur. The city has a land area of 331.80 square kilometers or 128.11 square miles which constitutes 6.73% of Surigao del Sur's total area. Its population as determined by the 2020 Census was 99,290 that represented 15.46% of the total population of Surigao del Sur province, or 3.54% of the overall population of the Caraga region. Based on these figures, the population density is computed at 299 inhabitants per square kilometer or 775 inhabitants per square mile.

A researcher-madelikert-scale questionnaire was used to obtain the necessary data in measuring the extent of digital integration in school leadership in terms of communication, teaching and learning, productivity and professional practice, support, management & operations, and assessment, and evaluation were also determined using a five-point likert scale instrument. Secondary data of the school performance was obtained through the latest office ratings.To secure the reliability of the items in the liker-scale responses, a pilot survey of thirty (30) respondents was conducted. Cronbach's alpha was used to assess the internal consistency or reliability of the items. Reliability test results displayed Cronbach alphas greater than 0.70 which made the likert-scale instruments reliable.

Furthermore, descriptive statistics such as mean and standard deviation were used to describe the extent or level of digital integration in school leadership in terms of communication, teaching and learning, productivity and professional practice, support, management & operations, and assessment, and evaluation. Pie chart was employed to describe the distribution of school leaders according to their latest performance ratings. Moreover, Spearman rho correlation was used to measure correlations between variables considering the deviation from the normality of data.

Results and Discussions

Digital leadership of school leaders is a very essential skill that should be developed considering the latest trends of school. Table 1 presents the extent of digital leadership of school heads in terms of communication.

Table 1

Level of digital leadership of school leaders in terms of communication

	Communication	Mean	Extent
1.	I use emails and other applications such as viber, google space, and others in school communication.	3.24	Average
2.	I use google sheets and docs in communicating suggestions.	2.80	Average
3.	I practice the creation of websites in uploading communication reports.	2.23	Low
4.	I use social media platform such as messenger in both formal and informal communication.	4.19	High
5.	I use google meet, Zoom, and other teleconferencing platforms in meetings and discussions.	3.90	High
	Overall	**3.27**	**Average**

Note: Mean scores falling within 1.00-1.79: Very low, 1.80-2.59: Low, 2.60-3.39: Average, 3.40-4.19: High,4.20- 5.00: Very high

It can be seen from the table that the highest mean rating of 4.19 is spotted on the item *"I use of social media platform such as messenger in both formal and informal communication".* It strongly manifests that school leaders are utilizing social media platforms for efficient and fast communication channel. This is coherent to the findings of Francera (2022) who stated that almost all school personnel across the globe, regardless of age, are already using social media applications for daily conversation. However, this does not still guarantee for digital literacy which demands for the use of technological products in school operations.

As implied from the lowest mean score 2.23 to the item *"I practice the creation of websites in uploading communication reports"*, school heads rarely practice the used of websites for

document submission and tracking system. While documents are getting digital in forms, it is very essential that school leaders implement cloud storage systems that is highly protected with cybersecurity measures. The reality among school leaders however is still far from the ideal technologically-skilled school leaders of the 21st century. Such findings clearly depict for the need to train and hone future school leaders with right level of digital skills.

Moreover, the overall mean of 3.27 describes an average extent of school leaders' skills in using technological products in the communication system. Coherent to the results from the study of (Ahlquist, 2014), it was emphasized that in the Philippines, the digital skills of school leaders remain a significant challenge, particularly in the context of the country's push towards digital transformation in education. Many school leaders, particularly those in rural or under-resourced areas, lack the necessary proficiency in technology to effectively integrate digital tools into their management practices and educational strategies. The use and application of recent ICT applications is really a hurdle to many school heads particularly those of old age.

Digital skills of school leaders also play a vital role in the teaching and learning process. Table 2 shows the extent to which digital skills of leaders are manifested in the teaching and learning process.

Table 2

Level of digital leadership of school leaders in terms of teaching and learning

Teaching and Learning	Mean	Level
1. I identify, use, evaluate, and promote appropriate technologies to enhance and support instruction and standards-based curriculum leading to high levels of student achievement.	2.78	Average
2. I facilitate and support collaborative technology-enriched learning environments conducive to innovation for improved learning.	3.10	Average
3. I provide for learner-centered environments that use technology to meet the individual and diverse needs of learners.	3.01	Average
4. I facilitate the use of technologies to support and enhance instructional methods that develop higher-level thinking, decision-making and problem-solving skills.	3.52	High
5. I encourage teachers to use technology in ways that support collaborative learning environments.	3.76	High
6. I promote student use of technology that promotes analysis, synthesis and evaluation.	3.52	High
7. I employ a variety of strategies to ensure that faculty can clearly articulate how technology is to be integrated across curricular areas.	3.21	Average
8. I ensure that students have adequate access to appropriate technologies that support learning goals.	3.12	Average
9. I observe students in the classroom and then provide feedback to teachers regarding effective uses of technology in the learning environment.	3.72	High
10. I promote a better and greater use of e-teaching and learning.	3.89	High
Overall	**3.36**	**Average**

Note: Mean scores falling within 1.00-1.79: Very low, 1.80-2.59: Low, 2.60-3.39: Average, 3.40-4.19: High, 4.20- 5.00: Very high

It can be gleaned that the highest mean response of 3.89 entails for the high agreement of the respondents to the item *"I promote a better and greater use of e-teaching and learning".* At

least to the effort of promoting e-teaching and learning, school leaders encourage teachers to maximize the advantage of using e-teaching approaches to the new generation of learning. On the contrary, the lowest mean of 2.78 that falls on the item *"I identify, use, evaluate, and promote appropriate technologies to enhance and support instruction and standards-based curriculum leading to high levels of student achievement"* reflects that integration of technology to curriculum is an essential area for improvement.

Furthermore, the overall mean response of 3.36 empirically implies for the average level of digital leadership of school leaders with emphasis on the teaching and learning. Undeniably, digitalization is penetrating as a way of living in the present generation. Learners are more inclined to digital approaches and school management should be adaptive to such realities. The findings above only indicate that digitalization efforts still need to level up as it is one of the roots of the overall school performance. As mentioned in the paper of Pagani et al. (2016), without the proper digital skills, these leaders may fail to create an adaptive and future-ready learning environment, hindering the broader goals of improving educational outcomes and fostering digital literacy among students. The issue is further compounded by the rapid pace of technological change, which often outstrips the capacity of school leaders to keep up with new tools and systems.

On the productivity and professional practice aspect of digital leadership, table 3 posits the detains of the mean scores.

Table 3

Level of digital leadership of school leaders in terms of productivity and professional practice

	Productivity and Professional Practice	Mean	Level
1.	I engage in sustained, job-related professional learning using technology resources.	3.04	Average
2.	I maintain awareness of emerging technologies and their potential uses in education.	3.28	Average
3.	I use technology to advance organizational improvement.	3.35	Average
4.	I use technology to communicate with students, parents, and community members.	4.10	High
5.	I ensure that professional development is based on evaluations of staff knowledge, skill, and performance in using technology.	3.30	Average
6.	I establish programs or procedures to ensure continuous learning for all staff in the use of technology to improve productivity.	3.20	Average
7.	I encourage teachers to access online learning material to share with students in the classroom.	3.41	High
8.	I interact through various digital technologies and identify appropriate digital communication tools in context.	2.78	Average
9.	I use digital tools and technologies for collaboration.	4.01	High
10.	I organize technology-competence training among teachers, students, and parents.	3.13	Average
	Overall	**3.36**	**Average**

Note: Mean scores falling within 1.00-1.79: Very low, 1.80-2.59: Low, 2.60-3.39: Average, 3.40-4.19: High, 4.20- 5.00: Very high

Table 3 shows the level of digital leadership of school leaders in terms of productivity and professional practice. Like the findings from the preceding table 2, school leaders posit an average level of digital skills as evidenced by the overall mean of 3.36. These statistical results further speak of the need to empower more the school leaders in terms of digitalization in the practice of profession.

The largest mean rating of 4.10 indicates the high agreement of the respondents to the item *"I use technology to communicate with students, parents, and community members"*. This is consistent to the findings about the use of social media platform as an effective means of both formal and in-formal communications. On the other note, the lowest mean score of 2.78 on the item *"I interact through various digital technologies and identify appropriate digital communication tools in context"*, signifies for an average level of digital skills when it comes to interaction in the cyberworld. This must be importantly noted by the management considering that the future of interaction systems will be done through cloud spaces.

Khaw et al. (2022) stated that digital leadership in schools is crucial for enhancing productivity and improving professional practice, which in turn boosts overall school performance. School leaders with strong digital leadership skills are better equipped to integrate technology into the daily functioning of their institutions, streamlining administrative tasks, communication, and resource management. By utilizing digital tools for scheduling, data analysis, and collaboration, leaders can make more informed decisions, allocate resources more effectively, and ensure that school operations run smoothly (Zhong, 2017). In terms of professional practice, school leaders who model effective digital use create a ripple effect throughout the staff, encouraging teachers and other school personnel to embrace technology in their own teaching and administrative practices.

Table 4 contains the mean ratings of the items that measure digital leadership in terms of support, management, and operations.

Table 4

Level of digital leadership of school leaders in terms of support, management, and operations

Support, Management, and Operations	Mean	Level
1. I monitor the implementation of policies and procedures ensuring the compatibility of technologies.	3.29	Average
2. I implement and use integrated technology-based management and operations systems.	3.20	Average
3. I advocate for financial and human resources to ensure the complete and sustained implementation of the school or district technology plan.	3.20	Average
4. I integrate strategic plans, technology plans, and other improvement plans and policies to align effort and leverage resources.	3.32	Average
5. I implement procedures to drive continuous improvements of technology systems and to support technology replacement cycles	3.15	Average
6. I employ a variety of strategies to recognize or reward staff who use technology in innovative ways.	3.22	Average
7. I provide safe and healthy physical environments in which staff use technology.	3.41	Average
8. I develop guidelines and staff development to facilitate sharing of work and resources across commonly used formats and platforms.	3.15	Average
9. I use technology-based systems to manage and evaluate daily campus operations.	3.05	Average
10. I seek out new ways that technology might be used to improve the efficiency of school or district operations or to extend the capabilities of the school or district /division organization.	3.24	Average
Overall	**3.22**	**Average**

Note: Mean scores falling within 1.00-1.79: Very low, 1.80-2.59: Low, 2.60-3.39: Average, 3.40-4.19: High, 4.20- 5.00: Very high

Support, management, and operations in schools are undeniably governed by digitalization processes and mechanisms. Compliances to standards and attainment of targets demand for digital skills of school leaders. Table 4 reveals the level of digital leadership of school leaders in terms of support, management, and operations. All items are noticeably paired with mean scores that have equivalent descriptive level of average. Consequently, the overall mean of 3.22 describes the average level of digital skills of the school heads in the execution of support, management, and school operations. While school operations are heading to digital systems, findings in table 4 certainly depict for the capability enhancement needs of the school leaders.

More particularly, the largest mean rating of 3.41 that is observed in the item *"I provide safe and healthy physical environments in which staff use technology"* indicates the need to strengthen the culture of technological use in all processes in the schools. Similarly, the lowest mean rating of 3.05 to the item *"I use technology-based systems to manage and evaluate daily campus operations"* substantially provides additional evidence that school leaders are in need of more reinforcement in the digitization of school processes.

Significant findings displayed in table 4 show coherence to the study of Tanucan et al. (2022) who asserted that in the Philippines, digital leadership among school leaders faces significant challenges in terms of support, management, and operations. One major issue is the lack of comprehensive and continuous professional development programs for school leaders in digital skills. In another paper of Macatuno-Nocom(2019), it was highly noted that managing the digital transformation of schools in the Philippines presents logistical and infrastructural difficulties. While some urban schools have relatively good access to the internet and digital tools, many rural schools continue to face connectivity issues and limited access to hardware.

Table 5 posits the mean scores of the items that measure digital leadership in terms of assessment and evaluations

Table 5

Level of digital leadership of school leaders in terms of assessment and evaluation

Assessment and Evaluation	Mean	Level
1. I evaluate how effective technology is used for professional tasks.	3.32	Average
2. I use technology to communicate findings from schools or district data analyses to improve campus administrative procedures.	3.17	Average
3. I use a variety of methods to evaluate staff knowledge, skill and performance using technology.	3.17	Average
4. I use technology to collect and analyze a variety of school or district data.	3.20	Average
5. I use technology-based systems to manage and evaluate student information	3.02	Average
6. I evaluate how effective technology is used to support student learning.	3.17	Average
7. I use technology to evaluate administrative and operational systems.	3.10	Average
8. I use learning analytics to predict students' future performance.	3.02	Average
9. I use learning analytics to maintain teachers and learners' continuous improvement.	3.08	Average

10. I use technology to communicate information in a variety of formats on student learning and achievement to colleagues, parents, teachers, district/ division office personnel.	3.10	Average
Overall	**3.14**	**Average**

Note: Mean scores falling within 1.00-1.79: Very low, 1.80-2.59: Low, 2.60-3.39: Average, 3.40-4.19: High, 4.20- 5.00: Very high

The utilization of digital approaches in the assessment and evaluation is another important expectation in the whole transition to digitalization of school processes. Table 16 exposes the level of digital leadership of school leaders in terms of assessment and evaluation. Similar to the other indicators of digital leadership skills, all items in table 16 are coupled with mean scores that have equivalent descriptive level of average. This definitely implies that digital skills in the assessment and evaluation processes is another essential area for improvements.

The largest mean score of 3.32 is observed on the item *"I evaluate how effective technology is used for professional tasks"*. It further posits the current situation of school heads when dealing with technological integration to professional tasks. On the same manner of analysis, the lowest mean rating of 3.02 to the item *"I use learning analytics to predict students' future performance"* reflects of the need for the school heads to empower their data analytic skills towards better planning and decision-making.

Consistent to all the indicators of digital leadership as presented above, data strongly speak of the fact that digital skills among school heads are needing major reinforcements. Relative to school performance, digitalization is an integral part of the school operations in the recent era of educational landscape. Without the right skill and competence in leadership and administration, schools will probably be left behind easily. Tanucan et al. (2019) pointed out that school leaders with strong digital skills can harness technology to enhance administrative efficiency, improve communication, and support data-driven decision-making. These leaders are equipped to implement and manage digital tools that streamline school operations, from attendance tracking to resource allocation. In addition, Briones et al. (2023) asserted that by leveraging technology, school heads can optimize time management, allowing more focus on strategic priorities such as student achievement and staff development. Furthermore, a digitally adept leader fosters a culture of innovation within the school, encouraging staff and students to embrace technology as a tool for learning and growth.

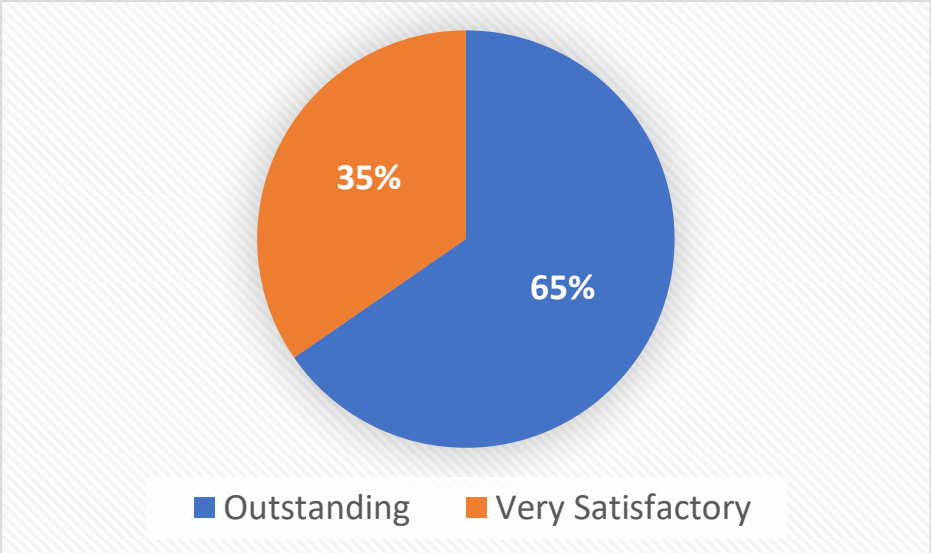

Figure 1. Pie chart representation of the distribution of school heads according to performance, S.Y. 2023-2024

The school heads have performed beyond the standards. The remarkable performance of the office is claimed to be a corporate effort of all the personnel in the school. In the literature, most of the related studies show similarities to the data presented in Figure 1. According to Tanucan et al. (2022), the performance of school heads is either very satisfactory or outstanding and is mostly explained by the dedication and positive support from the colleagues. Briones et al. (2023) also found similar findings where school heads demonstrate at least very satisfactory performance in a particular school year. While school leaders in Bislig City division continue to display remarkable level of performance, potential challenges may pull its level if not appropriately addressed.

Table 6

Spearman rho correlation results showing thecorrelation of digital integration indicators towards school heads' performance

Digital Integration Indicators	Spearman Rho Coefficient	P-value	Remarks
Communication	0.657	< .001	Significant
Teaching and Learning	0.552	< .001	Significant
Productivity and Professional Practice	0.653	< .001	Significant
Support, Management, and Operations	0.452	< .001	Significant
Assessment and Evaluation	0.467	< .001	Significant

The findings of a Spearman rho correlation analysis that looked at the relationship between school heads' performance and different digital integration indicators are shown in Table 6. Every indicator exhibits a positive correlation with the performance outcomes, suggesting that school heads' performance improves in tandem with improvements in digital integration across various domains. With respective coefficients of 0.657, 0.653, and 0.552, communication, productivity and professional practice, and teaching and learning have strong positive correlations with effective leadership performance.

Additionally, there are moderate but significant correlations (0.452 and 0.467) between the performance of school heads and the indicators pertaining to operations, management, support, and assessment. All of the indicators' p-values are less than 0.001, indicating that these correlations are statistically significant and unlikely to be the result of chance. The results emphasize the significance of incorporating digital tools into leadership practices to improve educational management and outcomes. Overall, the findings suggest that higher levels of digital integration across these areas are positively associated with better performance of school heads.

School operations in recent years are getting dependent to technological advancements which indicate for the need of school leaders to be digitally skilled. This is one of the reasons that substantiates the important contribution of school heads' digital leadership skills in the promotion of better school performance. Khaw et al. (2022) highlighted that school leaders who possess strong digital leadership skills can effectively integrate technology into the curriculum, creating a modern learning environment that enhances student engagement and academic achievement. Digital tools enable more personalized learning experiences, facilitate communication, and provide students with access to a wealth of online resources (Zhong, 2017). When school leaders understand how to leverage technology effectively, they can lead initiatives that support teaching and

learning, making education more relevant, efficient, and accessible for all students (Ahlquist, 2014).

Conclusions

Results of the study show that better school heads' performance is substantially and favorably correlated with greater degrees of digital integration across communication, teaching and learning, productivity, support, management, operations, and assessment. According to the strong correlations, leadership effectiveness and general school management can be improved by successfully integrating digital tools in these crucial areas. These findings highlight the importance of digital competency in educational leadership and imply that funding digital integration projects can result in notable enhancements to educational outcomes and school administration. This highlights the necessity of continuous assistance and training for school leaders in digital skills.

Recommendations

Relative to the findings and conclusions of the study, it is suggested that to improve school heads' performance, educational policymakers and schools should give comprehensive digital integration projects top priority. This entails investing in the required digital infrastructure and resources, cultivating a technology-enabled school culture, and offering focused training and continuous professional development in digital skills. By doing so, schools can maximize the positive impact of digital tools on leadership effectiveness, teaching and learning, and overall school management. In addition to enhancing school administrators' effectiveness, these calculated initiatives will support long-term educational growth in a world that is becoming increasingly digital.

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