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TECHNOLOGY STEWARDSHIP OF SCHOOL HEADS AND DIGITAL COMPETENCY OF PUBLIC SECONDARY TEACHERS OF PANABO CITY DIVISION

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ABSTRACT
The study explored the relationship of technology stewardship of school heads and digital competency of teachers in public secondary schools of Panabo City Division. Also, it investigated the association of the involved variables and the domains of technology stewardship of school heads that significantly influence the digital competency of teachers. With the use of probability sampling, 150 secondary teachers in the public schools were selected as the respondents. Utilizing the descriptive-correlational survey method, the data collated were analyzed through the use of Mean, Product-Moment correlation and Regression Analysis. Results revealed that there was an extensive technology stewardship of school heads and an extensive digital competency of teachers. Furthermore, there was a significant relationship between the two variables. Moreover, all domains of technology stewardship of school heads were found to have significantly influenced on the digital competency of teachers. Based on the findings, it was further suggested that higher officials in the Department of Education may identify means on how to help the school heads in strengthening their technology stewardship to ensure that teachers' digital competency is empowered.
KEYWORDS: *Technology stewardship, digital competency, descriptive correlation, Panabo City Division, Philippines*

INTRODUCTION
Digital competence has gained a strong prominence in the educational context in recent times (Tejada & Pozos, 2018). On the one hand, because the use of technology has become an everyday occurrence; on the other hand, because the professional development of many citizens depends largely (and increasingly) on an efficient and appropriate use of ICT. In this regard, Cabero et al., (2020) point out that digital competence is one of the key competencies that citizens in general, and teachers specifically, must master in the society of the future. The teacher is key in such process of integrating technologies and plays a crucial role in the adoption and implementation of ICT in the classroom, since the transformation and improvement of education will depend, among other aspects, on educational action, which implies that teachers must have effective digital competencies that allow them to integrate and use technologies in a pedagogical way. However, teachers have difficulty in strengthening their digital competency due to limited opportunity given to them.

During pandemic time, many teachers were virtually replicating face-to-face lessons, thus losing additional possibilities offered by technology for carrying out virtual activities and working with different types of resources (Cabero, 2020; Casado-Aranda et al., 2021; Usher et al., 2021). Along this line, the study by Trust and Whalen (2020) critically revealed that teachers felt overwhelmed and unprepared to use online or remote teaching strategies and methods and they found it challenging to adapt their pedagogy to problematics such as students' unreliable Internet access, changing personal needs, and unclear or shifting educational or governmental directives. In Spain, it was revealed that teachers recognize that they have a low or medium–low digital competence, as well as the absence of certain competencies, especially those related to the evaluation of educational practice (Basilotta-Gómez-Pablos et al., 2022).

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In the Philippines, teachers' digital competency is confronted with many challenges. Teachers encountered poor internet connection, students' lack of support system, limited electronic materials and equipment, and lack of technological support from the school experts. These circumstances lead teachers to be resistant in showcasing their digital competency (Del Mundo, 2022). In the study of De Vera et al. (2021), novice teachers must undergo additional professional development on the integration of technology in instructional designing, assessment and managing online learning environments. Teacher education institutions must intensify in equipping teachers with knowledge on integrating technology in lesson preparations.

In the Division of Panabo City, it was observed that teachers showcased only their digital competency during classroom observations. However, during ordinary classes, they went back to traditional means of teaching. This situation existed due to lack of administrative support and technological support from the school. More so, teachers lose interest in preparing lessons where they could showcase their digital competency due to the limited technological facilities. Hence, the effort of sending teachers to professional development in the use of technology was futile since teachers were not given the enough opportunity to practice what they learned.

However, it was noted that the assessment on the status of the digital competency of teachers in the Division of Panabo City primarily relied on observations and had not been comprehensively investigated through research. Hence, the researcher explored the extent of the digital competency of teachers considering the technology stewardship of the school heads. Additionally, it examined the correlations between the variables in question and the facets of technology stewardship of school heads that exerted a significant influence on the digital competency of teachers.

This endeavor also offered valuable insights to policymakers, aiding them in the formulation of policies, programs, interventions, projects, and activities geared towards enhancing both the technology stewardship of school heads and the digital competency of teachers. Furthermore, this academic pursuit was designed to be beneficial to the broader school community. Additionally, the researcher had intentions to present the findings of this study in international forums and publish it in a Scopus-Indexed journal.

METHODOLOGY

Research Design

This study adopted a quantitative research approach, specifically utilizing a descriptive correlational method. Quantitative research involves investigating a specific group, known as the sample population. Employing scientific inquiry, quantitative research relies on observed or measured data to explore inquiries about this sample population. Social scientists, including communication researchers, frequently utilize quantitative research to observe and analyze phenomena or events influencing individuals. The primary objective of quantitative research is to generate knowledge and enhance comprehension of the social world (Allen, 2017). Furthermore, a descriptive correlation study is characterized by a researcher's focus on elucidating relationships between variables without attempting to establish a causal connection (Noah, 2021).

In descriptive research, the variables are not manipulated by the researcher; instead, the primary aim is to depict the characteristics and features of the variables in the study (Fox, 2007; Korrapati, 2016). Conversely, a correlational research design investigates and assesses the relationship between the study's variables without any attempts to manipulate them. Correlation analysis also evaluates the strength and direction of the variables, determining whether the relationship is positive or negative, as well as assessing if it is strong or weak.

This study was categorized as quantitative since it relied on numerical data for analysis and interpretation. It adopted a descriptive approach as its primary goal was to assess the extent of technology stewardship of school heads and digital competency of teachers. Furthermore, it was considered correlational since it measured the relationship between technology stewardship of school heads and digital competency of teachers within the public secondary schools of Panabo City Division.

Respondents and Sampling

This study focused on 150 public secondary teachers within the Division of Panabo City. Research suggested that a minimum of 50 samples was needed for simple regression analysis, and generally, about 100 samples were sufficient

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for most research scenarios (Hair et al., 2018). Therefore, the inclusion of 150 respondents was more than adequate to fulfill the objectives of this study.

For this study, the sample was determined using a probability sampling approach, specifically employing two-staged cluster sampling. This method ensures that each element within the population has a defined probability of being included in the sample, guaranteeing equal and independent chances for every member (Ragab & Arisha, 2018). Cluster sampling, a prevalent research technique, involves dividing the population into distinct clusters, each consisting of unique units that represent comprehensive and distinct subsets (Thomas, 2020). In this study, it utilized a two-staged cluster sampling approach, where elements were randomly selected from the clusters or divisions chosen in the initial selection. The target population included all secondary teachers within the public schools of the Panabo City Division.

The inclusion and exclusion criteria for this study entailed the selection of secondary teachers with a minimum of 2 years of teaching experience. This criterion was based on the understanding that their 2-year tenure within the public school system enabled them to effectively evaluate the technology stewardship of their school head and their digital competency. Additionally, it was essential to emphasize that participants had the autonomy to withdraw from the study if they felt uncomfortable or uneasy about responding to the survey questionnaire. Their decision to withdraw was fully respected, highlighting the paramount importance placed on the welfare and well-being of the respondents throughout the research process.

Research Instruments

To collect data, this study utilized a modified survey questionnaire, specifically tailored for this research. The questionnaire was divided into two distinct sets to comprehensively address the research objectives. The first set centered on assessing the technology stewardship of school heads, while the second set was dedicated to evaluating the digital competency of teachers.

Technology Stewardship. The technology stewardship questionnaire was adapted from Duncan (2011). The instrument consisted of 30 items. It composed of six indicators, namely: leadership and vision (1-5), learning and teaching (1-5), productivity and professional practice (1-5), support management and operations (1-5), assessment and evaluation (1-5), and social, legal and ethical issues (1-5). The questionnaire was subjected to a pilot testing having a result of .73 suggesting that the items have relatively high internal consistency.

Digital Competency. The digital competency questionnaire was adapted from Al Khateeb (2017). The instrument consisted of 15 items. It had the following indicators, namely: information processing (1-5), communication (1-5), content creation (1-5), safety (1-5), and problem solving (1-5). The questionnaire was subjected to a pilot testing having a result of .74 suggesting that the items have relatively high internal consistency.

The research instrument for this study was modified to align with the study's objectives and goals. The researcher carefully incorporated and integrated feedback, suggestions, and comments from the adviser, panel members, and expert validators. This iterative process was crucial for refining the tools and ensuring construct validity, enhancing the accuracy and relevance of the instrument to effectively measure the intended constructs.

Data Analysis

For more comprehensive interpretation and analysis of the data, the following statistical tools were utilized.

Mean. This was used to measure the extent of technology stewardship of school heads and digital competency of teachers.

Pearson r. This was utilized to determine the relationships between technology stewardship of school heads and digital competency of teachers.

Regression Analysis. This was used to determine the significant influence of technology stewardship on the digital competency of teachers.

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RESULTS AND DISCUSSION

Presented in this chapter are the findings based on the results of data gathered, the conclusions drawn from the findings and the recommendations for consideration.

Findings

The main focus of the study was to determine the significance of the relationship between technology stewardship of school heads and digital competency of teachers in public secondary schools. The study was conducted in the selected secondary schools in Panabo City Division. There were one hundred fifty (150) secondary teachers who participated in this study. Descriptive correlational method of research was used in this study utilizing adopted research instruments. The said instruments were validated by the panel of experts and subjected to pilot testing before it was made ready for administration. Mean, Pearson Product Correlation of Coefficient, and Regression Analysis were the statistical tools used in analyzing the data. The hypotheses raised in this study were tested at 0.05 level of significance.

The extent of technology stewardship of school heads is extensive which means that technology stewardship leadership is oftentimes evident among school heads. This signifies a consistent and prevalent demonstration of technology stewardship leadership within educational institutions. Furthermore, this suggests a proactive engagement by school leaders in leveraging and promoting technology to enhance various facets of school management and instructional practices, emphasizing the importance of technological leadership in contemporary educational settings.

Meanwhile, the extent of digital competency of teachers is extensive which means that it is oftentimes evident. This emphasizes the readiness of educators to integrate technology into their teaching practices, suggesting a technologically capable teaching staff capable of navigating the digital landscape effectively.

It was found out that there is a significant relationship between technology stewardship of school heads and digital competency of teachers. The discovery of a significant relationship between technology stewardship of school heads and the digital competency of teachers emphasizes the interconnectedness of effective leadership in technology integration and the proficiency of teachers in utilizing digital tools. This underscores the importance of school leaders actively fostering a conducive technological environment, as it correlates positively with the digital competency of teachers, ultimately influencing the overall technological landscape within educational institutions.

More so, it was revealed that all the domains of technology stewardship of school heads significantly influence the digital competency of teachers. The revelation that all domains of technology stewardship among school heads significantly influence the digital competency of teachers emphasizes the collective impact of leadership, vision, learning and teaching, productivity, support, management, operations, assessment, evaluations, and social, legal, and ethical considerations on enhancing teacher digital competency. This underscores the multifaceted nature of technology stewardship, suggesting that a holistic approach to leadership in these domains is crucial for effectively shaping the digital capabilities of the teaching staff within educational institutions.

Conclusions

Based on the findings of this study, the following conclusions were offered:

The extent of technology stewardship of school heads means that it is oftentimes evident in the school. In fact, all dimensions are extensive, namely, leadership and vision, learning and teaching, productivity and professional practice, support, management, and operations, assessment and evaluation, and social, legal, and ethical issues.

Meanwhile, the extent of digital competency is extensive. Apparently, all indicators are found to be oftentimes evident specifically on information processing, communication, content creation, safety, and problem solving.

Based on the findings, technology stewardship of school heads and digital competency of teachers are related. All domains of technology stewardship of school heads are linked to the digital competency of teachers.

Also, technology stewardship of school heads significantly influenced the digital competency of teachers. In fact, all domains of technology stewardship of school heads, namely, leadership and vision, learning and teaching, productivity and professional practice, support, management, and operations, assessment and evaluation, and social, legal, and

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ethical issues significantly influence digital competency of teachers by registering a p-value of .000 which is less than .05 in the level of significance. This leads to the rejection of the null hypothesis. Further, the result indicates that for every unit increase in the six domains of technology stewardship of school heads, the digital competency of teachers will also increase.

The significant and moderate positive correlation between the technological stewardship provided by school principals and the digital proficiency of teachers reinforces the principles outlined in House's Path-Goal Leadership Theory (1971). This theory underscores a leader's role in augmenting follower performance and satisfaction by prioritizing follower motivation. As per Northouse (2016), this theory applied to technology stewardship suggests leaders guide their subordinates towards ICT objectives, clarifying paths and eliminating obstacles hindering goal achievement.

Moreover, Speedy and Brown (2014) underscored a key facet of technology stewardship: motivating educators to embrace, utilize, and integrate technology within their teaching practices. School leadership is predominantly concerned with leveraging technology to facilitate teaching and learning processes, especially in managing ICT for instructional purposes and related aspects. Furthermore, effective ICT leadership is crucial for educators to implement and cultivate innovations associated with technology. Thus, a school leader embodies both a catalyst for technological advancement within the school and an authority in technology leadership.

Recommendations

The following suggestions were offered based on the conclusions of the study:

In light of the extensive technology stewardship observed among school heads and the concurrent high digital competency levels of teachers within the Department of Education (DepEd), it is recommended that DepEd officials continue to prioritize and invest in professional development programs that further enhance technology leadership skills among school leaders. This may include targeted training sessions, workshops, and mentorship programs focusing on emerging technologies, effective integration strategies, and leadership in the digital age. Collaboration between school heads and teachers in creating a shared vision for technology integration, aligned with the goals and values of DepEd, may contribute to a more seamless and impactful integration of technology in the educational landscape. Furthermore, periodic assessments and feedback mechanisms may be implemented to gauge the effectiveness of these initiatives, ensuring ongoing improvement and alignment with the ever-changing landscape of educational technology.

Moreover, school heads may continue to provide targeted professional development opportunities that cater to the diverse digital competency levels of teachers, ensuring that educators are equipped with the necessary skills to effectively utilize technology in their teaching practices. Creating a supportive and innovative learning environment, where teachers feel empowered to experiment with new technologies, can further enhance the impact of technology leadership. School heads may actively engage in ongoing communication and collaboration with teachers to understand their evolving needs and challenges, fostering a culture of continuous improvement and adaptability to emerging technologies.

Furthermore, teachers may actively engage with the leadership initiatives and capitalize on the available resources. They may proactively participate in professional development opportunities provided by school leaders, leveraging these experiences to enhance their digital skills and embrace innovative teaching practices. Establishing a collaborative relationship with school heads and peers will allow for a more holistic integration of technology in the classroom, fostering a dynamic and enriching learning environment. Embracing a growth mindset and being open to continuous learning in the realm of digital tools and educational technologies will enable teachers to adapt to evolving educational landscapes and better serve the needs of their students.

Lastly, future researchers may explore qualitative aspects such as leadership styles, communication strategies, and the collaborative initiatives between school leaders and teachers would provide nuanced insights into the dynamics of successful technology integration. Additionally, longitudinal studies tracking the evolution of technology leadership and digital competency over time may shed light on the sustainability and long-term effects of these initiatives. Employing mixed-methods research approaches may enable a holistic examination, combining quantitative data on competency levels with qualitative narratives capturing the subjective experiences of both school leaders and teachers.

This multifaceted exploration may offer valuable guidance for refining educational policies and practices aimed at enhancing technology stewardship and digital competency within schools.

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