Technological Leadership of 21st Century Principals of Private Secondary Schools

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Abstract: The role of school principals has evolved from that of a curriculum leader to that of a technological leader. Technological leadership is deemed necessary to effectively lead technological reforms and innovations in schools. It is in this context that the study assessed the extent to which the principals manifest technological leadership relative to the following constructs: visionary leadership; digital age learning culture; excellence in professional practice; systemic improvement; and digital citizenship. Moreover, the study explored the utilization of information technology along decision-making, policy-making, and initiating actions. Further, the study aimed to identify some issues and challenges in the practice of technological leadership. Ultimately, the study aimed to propose a capability-building program for the school principals. The study made use of the descriptive research design. Results revealed that principals manifest technological leadership relative to the five constructs to a moderate extent. They also utilize IT along decision-making, policy-making, and initiating actions to a moderate extent. Some of the issues and challenges identified include teachers' appreciation of ICT education, training of teachers, and assessment of the impact of technology.

Keywords: Capability-building program, information technology, school principals, technological leadership

1. Introduction

With the demand to integrate technology into the teaching – learning environment, educational leadership has become more complex. In particular, the role of school principal has evolved from being a curriculum leader to that of a technology leader. As the term implies, technological leadership emphasizes the duty of leaders to manage and utilize technology in the different functions of an institution with the end – goal of improving organizational performance. In the case of educational institutions, technological leadership pertains to the school's use of information technology in making sound decisions and initiating changes. It focuses on collaboratively developing and implementing a vision of technological reforms and changes; creating a digital culture; providing professional development opportunities to teachers to better utilize technology in the school; and promoting the safe, legal, and ethical use of technology. In the Philippines, there is a need for schools to pay a considerable attention to technological leadership. The Implementing Rules and Regulations of RA 10533 or The Enhanced Basic Education Act of 2013 stipulated that the curriculum shall be relevant, responsive, and research – based. With a particular focus on relevance and responsiveness, it can be said that the Philippine government also recognizes the necessity to integrate technology in the development and implementation of the K to 12 curriculum to give Filipino learners more meaningful learning experiences. Further, the Department of Education upholds the development of the 21st Century Lifelong Skills which includes computing which pertains to the effective use of electronic information and knowledge tools.

2. Objectives

Primarily, this study aimed to
1. describe the extent to which principals manifest technological leadership relative to the following constructs:
   1.1. visionary leadership;
   1.2. digital age learning culture;
   1.3. excellence in professional practice;
   1.4. systemic improvement; and
   1.5. digital citizenship
2. determine the extent of utilization of information technology along
   2.1. decision-making;
   2.2. policy-making; and
   2.3. initiating actions
3. identify some issues and challenges in technological leadership
4. propose a capability-building program for school principals

3. Methodology

The descriptive type of research was utilized with the use of self-constructed questionnaire to gather data. In order to validate the responses, interviews and focus group discussion were also conducted. Respondents were 110 principals of private secondary schools in Batangas Province. Statistical tools utilized include weighted and composite mean.

4. Results and Discussion

4.1. Technological Leadership. Technological leadership refers to the act of commitment to the provision of technology facilities and enabling environment that can support their application in classroom instruction to promote learning among students [1]. It pertains to the ability of the school principals to meet the standards under

the five dimensions: visionary leadership, digital age learning culture, excellence in professional practice, systemic improvement, and digital citizenship. As shown in table 1, principals manifest technological leadership in terms of visionary leadership to a moderate extent with a composite mean of 3.08.

Table 1. Technological Leadership of Principals

Constructs	Composite Mean	Verbal Interpretation
Visionary Leadership	3.08	ME
Digital Age learning culture	3.09	ME
Excellence in professional practice	2.96	ME
Systemic Improvement	3.21	ME
Digital Citizenship	2.91	ME

This finding echoes the idea that principals are least prepared for visionary leadership [2]. A number of factors may contribute to this. For one, with the inevitable evolution of the educational landscape, it has become challenging to derive at a vision in which the role of technology in the different domains of the teaching and learning process is clearly understood. Another is the increasing demands from the school principals to effectively respond to the challenges brought about by new legislations which can either directly or indirectly affect how educational institutions carry out its functions. Likewise, principals manifest the practices under digital age learning culture to a moderate extent with composite mean value of 3.09. In the process of moving towards using ICT in various activities at the school, headmasters, equivalent of principals in other schools, face many challenges, majority of which are related to digital age learning culture. One of these challenges is the constraints in having a strong internet connection for official school business and in teaching and learning [3]. This is also true in the Province of Batangas where some schools have slow internet connection which makes it difficult to implement technological reforms and initiatives. In terms of excellence in professional practice, principals manifest technological leadership to a moderate extent with a composite mean of 2.96. This suggests that principals exert efforts in keeping abreast of the various trends in technology in education. They also evaluate what forms of educational technologies are applicable in the context of their schools. They also include in their planning the allocation of resources for school technological reforms either for the skills development of teachers or for the acquisition of technology facilities and infrastructure. Further, they also try to use ICT to communicate with the different members of the community. The findings, however, suggest that principals acknowledge that there are areas they need to improve on to uphold excellence in professional practice to better function as technology leaders. Similarly, with a composite mean of 3.21, principals manifest technological leadership relative to systemic improvement to a moderate extent. This finding indicates that principals are involved in activities that support technological reforms. These include allocating financial and human resources to ensure complete and sustained implementation of the technology plan. The successful implementation of any technology plan calls

for both financial and human resources. Not only do schools need to invest in robust infrastructure for the use of ICT, but they are also expected to equip teachers and staff with relevant knowledge and skills to make use of these infrastructures. Given that schools, even private schools, do not have the luxury of resources to invest in new forms of educational technologies, many establish strategic partnerships to support systemic improvement. The findings, however, also suggest that principals are challenged in leading purposeful change in their schools to maximize learning goals through the use of ICT resources. They are also quite challenged when it comes to implementing procedures to drive continuous improvements of technology systems and to support technology replacement cycles and providing robust infrastructure for the use of ICT in the different facets of school operation. Lastly, with a composite mean of 2.91, principals manifest technological leadership relative to digital citizenship to a moderate extent. This means that principals are aware of the technological behaviors under digital citizenship – those that pertain to digital access, digital communication, digital literacy, digital law, digital rights and responsibilities, and digital etiquette. Principals understand the need for everyone as digital citizens to respect others in the online world and protect themselves and others when engaging in online activities. However, principals also recognize that there are still room for improvements when dealing with this relatively new concept.

4.2. Utilization of Information Technology.

Technology use has been multi-sectoral and multi-dimensional. Not only does technology penetrate the teaching and learning process but it has also begun to offer solutions to the problems the school face in other areas of its operations. Technological leadership obliges principals to have a deeper understanding of how information technology can be utilized in the different facets of school operation. More than understanding, technological leadership entails application and utilization of technology to improve the day to day routines in the school. Interestingly enough, technology has also influenced the dynamics in key areas of educational leadership: decision-making, policymaking, and initiating action. As can be gleaned from table 2, principals use information technology along decision-making to a moderate extent with a composite mean of 2.77.

Table 2. Utilization of Information Technology

	Composite Mean	Verbal Interpretation
Decision-making	2.77	ME
Policy making	2.91	ME
Initiating Actions	2.99	ME

It can be said that many principals are still not that acquainted with the utilization of information technology in the decision – making process. Decision-making itself is already a complex process. Utilizing technology in this process makes it even complicated. Hence, principals need more time to better understand how information technology fits in the stages and phases of decision-

making process. Likewise, with a composite mean of 2.91, the principals utilize information technology along policy-making to a moderate extent. With this, it can be said that principals utilize information technology to acquire information to analyze existing situation and identify problems in school. Moreover, the principals use IT to facilitate communication between and among stakeholders to evaluate the desirability and feasibility of policy options and access online school's historical records to evaluate current performance. Principals recognize the need to involve stakeholders in fine tuning policy options in schools. Since many parents are also now using technology for open communication, it is suggested to make use of online platforms and mobile applications to communicate with them. Lastly, as expressed in the table, principals use IT to initiate actions to a moderate extent with a composite mean of 2.99. This means that principals perform teacher evaluations in a holistic approach using information technology. They also communicate with students via email, forum or social networks. Furthermore, principals, access valuable online resources of data and tools that can be useful for students and teachers.

4.3. Issues and Challenges in Technological Leadership. Technological leadership is very challenging for it demands from the school principals a keen understanding of the various issues and challenges that may go along with it. Table 3 presents some issues and challenges in technological leadership. As can be seen, the principals agree that teachers' appreciation of ICT in education is an issue or challenge in technological leadership with a computed mean of 3.49. Indeed, one challenge in technological leadership is the resistance from the school community especially from the teachers [4]. There is then a need for teachers to constantly learn and practice new technology skills and improve in technology proficiency. They are also to participate in technologically-rich environments. Technology integration in schools can only become successful if teachers themselves accept technology and its impact to the achievement of educational goals. Technological reforms and innovations will put to waste if teachers who are considered implementers of innovations do not recognize the need for technology [5]. Meanwhile, principals agree that training of teachers on the use of technology is one of the challenges in the practice of technological leadership with a mean value of 3.46. Lack of training in the use of technology is a major challenge for technology leaders primarily because it is a key element in making technological innovation in school possible. Technology ushers fundamental structural changes that can be integral in school improvements.

Table 3. Some Issues and Challenges in Technological Leadership

Items	Principals	
	WM	VI
1. Teachers' appreciation of ICT in education	3.49	A
2. Training of teachers on the use of technology	3.46	A
3. Assessment of the impact of technology to school operation	3.40	A
4. Acceptance to changes brought about by technology	3.35	A
5. Evaluation of teachers in the aspects	3.26	A
of ICT integration and application		
6. Professional development opportunities on technology integration and design	3.20	A
7. Maintenance and technical issues		
8. Utilization of technology in instructional supervision	3.14	A
9. Awareness on latest development in information technology	3.10	A
10. Availability of skilled technology coordinators	3.09	A
11. Stakeholders' participation in technology-related initiatives	3.05	A
12. Budget for technological innovations for school	3.04	A
13. Process of acquisition of technological infrastructure	3.02	A
14. Access to computers and digital devices	3.02	A
15. Availability of policy on technology integration	2.94	A
16. Availability of technological infrastructure	2.93	A
	2.84	A
Composite Mean	3.15	A

Technology supports both teaching and learning as it infuses classrooms with digital learning tools which can lead to providing students with 21st century learning experiences. However, learning to use these tools is not an easy feat. Hands –on activities and actual learning experiences must be provided to the teachers so they can better utilize these tools. The principals also agree, as indicated by the computed mean of 3.40, that assessment of the impact of technology to school operation is a major challenge in technological leadership. Evaluation of the impact of technology in teaching and learning should be done to ensure that the goals of technology integration are achieved. Technologies promise to increase educational productivity [6]. The effectiveness of these technologies, however, primarily depend on the context of the school. There are factors that can either facilitate or impede the effective use of these technologies in the school. This calls for the evaluation of these technologies and the extent to which they can contribute to the realization of institutional goals and objectives. Further, even with the lower mean values ranging from 2.84-2.94, principals agree that all the other items listed are issues and challenges in technological leadership. This suggests that principals agree that access to computers and digital devices is indeed an issue and or a challenge. Training the teachers to use technology is key to successful technology integration. However, teachers' training will mean nothing if there are no available computers and digital devices in the school. Hence, it is necessary for schools who aim for effective integration of technology to invest on technological devices and facilities. Similarly, principals also agree that availability of policy on technology integration is also a factor that can hinder the effective integration of technology. There are schools which do not have policy on technology integration. Consequently, there are no well-structured procedures that guide teachers in the implementation of technology integration. Policies communicate expectations and responsibilities. With policies in place, both teachers and students understand

how the school intends to make technological reforms and changes work for the school [7] Lastly, principals agree that the availability of technological infrastructure is an issue or challenge with computed mean value of 2.84. As mentioned by Sincar (2013), lack of technological facilities or infrastructure may result from lack of resources. In the context of this study, since the item got the lowest mean value, it can be said that this is one of the least concerns of the principals in relation to technological leadership. However, they still acknowledge the need to give paramount attention to this item. Overall, principals agree that the items listed are issues and challenges in technological leadership with a composite mean value of 3.15.

4.4. Proposed capability-building program
As pressure has increased for principals to manifest and practice technological leadership, a capability – building program then is deemed necessary. In today's expectations of delivering 21st century education along the implementation of the K to 12 curriculum, private schools are in focus to improve teaching and learning. School principals' roles have changed from that of instructional leaders to that of technological leaders. The program aims to improve principals' practice of technological leadership in the five constructs of technological leadership. The program is outcome and output based to guarantee that principals acquire a deeper understanding of technological leadership including its vital role in the delivery of 21st century education. It also highlights leadership that leads to the effective utilization and integration of technology in the different aspects of teaching and learning and educational management.

5. Conclusion and Recommendations
Based from foregoing discussions, principals in the private secondary schools manifest technological leadership relative to the five constructs to a moderate extent. They also utilize information technology along decision-making, policy making, and initiating actions to a moderate extent. Some of the issues surfaced include teachers' appreciation of technology in education, training of teachers, and assessment of the impact of technology in the operation of the school. It is recommended that principals practice of technological leadership be improved which can be done through the development and implementation of a capability-building program that is output and outcome based. The issues and challenges identified can be addressed with the participation and involvement of key stakeholders. Similar studies may be conducted in other schools to strengthen technological leadership of principals to ensure effective and efficient implementation of technology integration to improve classroom instruction.

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