

TECHNOLOGICAL Leadership Behavior, and Attitude Towards Computer as Predictors of Computer Self-Efficacy of Public School Elementary TEACHERS

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ABSTRACT

This study determined the influence of technological leadership behavior of principals and attitude towards computer of public elementary school teachers on the computer self-efficacy of public elementary school teachers using a quantitative research approach, specifically the descriptive-correlational design. Adapted questionnaires, validated by experts and reliability tested were used to obtain information from the respondents. Mean, standard deviation, Pearson r , and multiple regression analysis were used for the data analysis. The findings revealed that the level of technological leadership behavior of principals, attitude towards computer of the public elementary teachers and computer self-efficacy of public elementary school teachers were high. Correlation analysis revealed that technological leadership behavior of principals and attitude towards computer of public elementary school teachers significantly influenced to computer self-efficacy of public elementary school teachers. Furthermore, there was a significant combined influence of technological leadership behavior of principals as perceived by the teachers and attitude towards computer of the public elementary teachers on the computer self-efficacy of public elementary school teachers.

KEYWORDS: *Education, technological leadership behavior, attitude towards computer, computer self-efficacy, descriptive-correlational, Philippines*

INTRODUCTION

Computer self-efficacy is the extent of an individual's perceived ability to use a computer (Jacinto and Samonte, 2021). Computer self-efficacy consists of three components and was designed to measure specific self-efficacy in using

computers such as basic computer skills, media-related skills and web-based skills (Teo and Koh, 2010). However, in the study of Topolovčan and Matijević (2014), the arithmetic means show that teachers assess their media-related skills ($M = 2.406$; $Sd = 1.043$; Mean Rank = 179.5; $Md = 2.25$) as below average while they consider their web-based skills ($M = 2.590$; $Sd = 0.806$; Mean Rank = 188.7; $Md = 2.67$) as below average as well which can explain the lower computer self-efficacy of teachers.

In Turkey, it was found out that teachers with 21 years or more of university teaching experience had the lowest levels of computer self-efficacy (Aktağ, 2014). Low computer self-efficacy can be caused by insufficient knowledge about computers and the internet, together with an absence of the abilities needed to make full use of computers Schlebusch (2018). Moreover, a research conducted by Gudek (2019) stated that a negative outlook on digital technologies decreases computer self-efficacy; thus, those who have personal computers at home have higher computer self-efficacy than individuals who do not have a computer at home. In the study of Elbitar (2015), Egyptian Industrial Education shows that teachers' computer self-efficacy differs according to their level of computer experience ($M=2.14$ for 5-10 years, $M=2.57$ from 10-20 years, and $M=2.72$ from more than 20 years) and it shows the levels of teachers' computer self-efficacy were low.

Meanwhile, in Angadanan, Isabela, there is a clear gap about the computer application usage status of the teachers. The data revealed that there are a number of teachers whose response stated as not available, which means only few hands are utilizing the benefit of using computer applications. The results also implied that groups having less computer self-efficacy have less enthusiasm to perform activities (Jacinto and Samonte, 2021). Moreover, in Bohol City, a research by Mula and Bucar (2023) in Bohol City, reported that in navigating file structures using Windows Explorer that is more of the web-based skills, the teachers has the lowest mean.

Consequently, Ayuyang and Valdez (2018) conducted research where all public secondary teachers in Northeastern Cagayan lack the knowledge necessary to use all of the functions of the computer applications.

Further, it has been established that technological leadership behavior of principal influences computer self-efficacy of teachers (Ismail et al., 2021). As noted by Dasmo et al. (2021), there are studies and works of literature that have underlined the significance of technological leadership of principals as an

element that affects how teachers use technology, particularly computers; claiming that teachers with principals with high levels of technological leadership behavior are more likely to do so.

Likewise, attitude towards computer also influences the computer self-efficacy of teachers (Awofala et al., 2019). It was found that if the teachers' attitudes towards computers increases, their computer self-efficacy also increases (Hong et al., 2014) Thus, in a research of Proedrou et al. (2023) it has been found out that attitude towards computer boosts the computer self-efficacy of teachers and that both is strongly linked with each other.

Despite the fact that there are previous studies conducted internationally and nationally (Aktağ, 2014; Schlebusch, 2018; Jacinto and Samonte, 2021; & Ayuyang and Valdez, 2018) there is still scarcity of information about the status of the teacher's computer self-efficacy. Although there are existing studies of computer self-efficacy but are only by variate (Omar & Ismail, 2019; Fusco, K. 2019; Awofala et al., 2017), this study is a multivariate study; thus, these findings are not reflective of the context in Region XI, particularly in Davao City, nor do they include factors like teacher's technological leadership of school principal as combined influence. According to Sarfo et al. (2017) and Escalaw (2022), to further understand the factors that influence teachers' computer self-efficacy and to uncover evidence for or against the study's conclusions, more research is recommended. However, most of the published research focused only on secondary schools, but there is minimal research focused on public elementary schools in Region XI. As a result, the researcher would want to perform a study to represent this population.

The findings of this study provide relevant information to the school's division superintendent, school heads, and teachers at the forefront of teaching and assessment. This study may also lead teachers to understand better how technological leadership and attitude towards computer affect their computer self-efficacy.

Moreover, the researcher plans to disseminate the finding of the study in district, local, national and international research presentations in response to the needs of the schools, especially the teachers and principals. In parallel, the researcher intends to publish this study in a refereed or appropriate journal for wider dissemination.

Theoretical Lens

This study was anchored on Self-Efficacy Theory by Albert Bandura's (1977). Belief in one's own skills to carry out a given task is the subject of self-efficacy theory (Bandura, 1977). The emphasis, according to Bandura, is not on the abilities themselves but on assessments of one's potential using those talents. Bandura (1977) presented four main types of influences that people take into account while forming their ideas about their own abilities.

Out of the four main types presented by Bandura (1977) this study only employs the first two types; first is the mastery of skills; where performance outcomes are the most important indicators of efficacy. Thus, belief in one's own abilities is bolstered by achievements. Second is by modelling behavior; that means looking to other individuals to do a task successfully might be seen as a social role model and having admirable people to look up to increases the likelihood that you will internalize some of their values modeled.

This study utilizes the Self-Efficacy Theory of Bandura (1977) where two of the four main types of influences were presented in this theory were all related to the independent variables of this study; the technological leadership behavior of school principals as perceived by the teachers and teachers' attitude towards computer. A person's self-perception of what they can do with their current computer abilities and knowledge, as well as the societal role models they are likely to absorb, form the basis of their computer self-efficacy. Applying this to the study, mastery of experiences may be facilitated by having school principals serve as social role models for teachers and by giving them the encouraging verbal feedback they require.

In this study, teachers' computer self-efficacy is focused on Elementary teachers' beliefs and confidence in using basic computer skills, media-related skills and web-based skills to facilitate teaching and learning in relation as how they perceive their school heads' technological leadership behavior in terms of motivation, orientation, precaution and support and their attitude towards computer in terms of affective, perceived usefulness, perceived control and behavioral intention components.

METHODS

Research Design

This quantitative study employed a descriptive correlation design in

which the researcher used correlational statistics. According to Brians et al. (2011) quantitative research designs focus on numeric and unchanging data and detailed, convergent reasoning rather than divergent reasoning. Further, Given (2008) describes quantitative research using mathematical, statistical, or computational methods to systematically examine real-world occurrences. In the study context, it will quantify the status of public elementary school teachers' technological leadership behavior attitude towards computer and computer self-efficacy. Meanwhile, in order to determine how closely related two or more sets of scores or variables are, a correlation design is used (Creswell, 2012). Additionally, it is used to determine whether two variables are correlated. This necessitates investigating the correlation between the two variables to see whether there is a relationship between their changes (Explorable, 2017). The focus is on the current state of relationships, the prevailing behaviors, the beliefs, the processes, the impacts, and the emerging trends (Calderon & Gonzales, 2013). This design was aptly used in this study because the researcher determined the levels of technological leadership behavior of school principals, the attitude toward computers and computer self-efficacy of public elementary school teachers. Also, the relationship of the independent variables, technological leadership behavior, and attitude toward computers towards the dependent variable, computer self-efficacy was also determined.

Research Locale

The study was conducted in seven elementary public schools from Matina, 1st District of Davao City, Davao Del Sur, Region XI. The seven public elementary schools which are located in the urban area of Davao City where there are ICT equipment available in these schools, particularly computers. School A is a large public elementary school with a total of 3975 currently enrolled students and 121 elementary teachers. The researcher selected this school because it is the most accessible school for the research to conduct her research and there are currently functional units of computers. School B is a medium size public elementary school with a total of 581 currently enrolled students and 20 elementary teachers and it has a distance of 1.2 kilometers from the researcher's station. School C a medium size public elementary school with a total of 699 currently enrolled students and 23 elementary teachers with a distance of 4.3 kilometers from the station of the researcher. School D a medium size public elementary school. The research locale was selected due to having recently received computer sets, tablets and other ICT equipment from the Department of Education.

Research Respondents

The respondents of this study were the 135 randomly selected teachers from public elementary schools in Matina, District 1, Division of Davao City, Region XI. Number of respondents were identified using the Raosoft sample size calculator and later randomly chosen using the cluster random sampling where the researcher divides the population into smaller groups to form a cluster then randomly selects among these clusters to form a sample. Cluster random sampling is a common technique for studying large populations, especially ones that are geographically separated. It is a kind of probability sampling (Thomas, 2020). The Inclusion criteria of this study were the grades four to six public elementary school teachers who have been teaching for at least three years with the same principal and with functional computer units. Exclusion criteria included the grades one to three teachers and the teachers who have taught for less than three years, and who is working together with a principal with less than three years.

Statistical tools

The gathered data were tallied, tabulated and subjected to descriptive analysis using appropriate statistical tools that follows: Mean was used to determine the level of school principal's technological leadership behavior and attitude towards computer. Standard Deviation was employed to measure the spread of dispersion of the data around the mean. Pearson r was used as inferential statistics to establish relationship between the principal's technological leadership behavior and teacher's attitude towards computer to teachers' computer self-efficacy. Multiple Regression was used to analyze the significant influence of technological leadership behavior, attitude towards computer (independent variables) on computer self-efficacy (dependent variable).

Ethical Statement

To ensure strict ethical compliance, this study followed the mandates of the University of the Immaculate Conception's Research Ethics Committee (UIC-REC). Participation was entirely optional, and the researchers prioritized the rights and respect of all respondents, addressing any inquiries immediately and granting individuals the total discretion to exit the study without penalty. Data management protocols strictly adhered to the statutory requirements of the Philippine Republic Act 10173 (Data Privacy Act of 2012). To maintain absolute confidentiality, all gathered data were stored in secure, encrypted digital formats

accessible only to the principal research team for academic use.

RESULTS

Level of Technological Leadership Behavior of School Principals

Table 1

Level of Technological Leadership Behavior of School Principals

Indicators	Mean	SD	Description
Motivation	4.04	.67	High
Orientation	4.11	.72	High
Support	3.87	.97	High
Precaution	4.00	.65	High
Overall Mean	4.00	.65	High

Table 1 reveals the level of technological leadership behavior of principals as perceived by the teachers. Four indicators of technological leadership behavior of principals are presented on the table with corresponding mean and standard deviation; these indicators include motivation, orientation, support and precaution. Results show that the overall mean is 4.00 which is described as high indicating that technological leadership behavior of school principal is oftentimes manifested. It implies that the teachers contributing in the study, considers their principals as knowledgeable in terms of technological leadership. Additionally, the teachers felt they are guided on how to integrate technology as their teaching tools. The overall standard deviation measures at 0.65 indicating that the principal's level of technological leadership is consistent.

The indicator with the highest mean is orientation. The means of this indicator orientation ranged from 4.07 to 4.17. The category mean is 4.00 described as high which means orientation provided by school principal is oftentimes manifested. This means that principals' technological leadership behavior is actively embracing and advocating technology in the schools. Such findings support the study of Naicker and Khumalo (2023) that principals not only impart but also implement instruction, who comprehend their function as technological leaders that will be able to help teachers to effectively integrate technology in teaching and learning. This implies that significant behavior of principals that helps the teachers is the communication where they were able to

understand more the use of technology tools. Meanwhile the indicator with lowest mean is support of principals. The means of this indicator support ranged from 3.76 to 3.97. The category mean is 3.87 described as oftentimes manifested. This finding supports the narration of Gyeltshen's (2021) study, which highlighted that support of the teachers' uses of technology specifically computers provided by the principal is high in level.

Level of Attitude Towards Computer of Teachers

Table 2

Level of Attitude Towards Computer of Teacher

Indicators	Mean	SD	Description
Affective	4.06	.66	High
Perceived Usefulness	4.57	.49	High
Perceived Control	3.95	.64	High
Behavioral Intention	2.96	.98	Moderate
Overall Mean	3.70	.52	High

Table 2 presents the level of attitude towards computer of public elementary teachers. Four indicators of attitude towards computer are depicted on the table with corresponding mean and standard deviation; these indicators include affective, perceived usefulness, perceived control and behavioral intention. Results show that the overall mean is 4.57 which is described as high indicating that attitude towards computer of the public elementary teachers is oftentimes positive. This indicates that teachers are comfortable and confident to use computers. It shows that they believe that computers allow them to make their work efficient and productive. The overall standard deviation measure at 0.52.

The indicator with the highest mean is perceived usefulness. The means of this indicator perceived usefulness ranged from 4.44 to 4.64. The category mean is 4.57 described as high which means perceived usefulness is oftentimes positive. This means that teachers' belief on the benefits of utilizing computers are relevant to their job. They believe that the continuity of using computers will likely harness their knowledge about it and make their work easy and efficient. This finding is in support of the study of Eze et al. (2021) that shows a teacher's perception of the value of technology, such as computers, in the classroom is

directly correlated with their belief in the prospective advantages of using such tools. Additionally, Cigdem and Topcu (2015) believe that using a computer will help them succeed in their profession, they are more inclined to do so. Meanwhile, the indicator with the lowest mean is behavioral intention. The means of this indicator behavioral intention ranged from 2.68 to 3.56. The category mean is 2.96 described as moderately high which means ability is sometimes positive. This means that their intention to use computers are for the potential benefits which they can integrate it into their teaching. This result is in consonance of Altawallbeh et al. (2015) who looked into the behavioral intentions of teachers toward technology and computers. Their findings indicate that teachers' behavioral intentions to use computers and their perception of behavioral control are associated. Finding is also in support of the study of Yu et al. (2021) which found that teachers' behavioral intentions when utilizing computers were influenced by their opinions about how beneficial the curriculum was.

Level of Computer Self-Efficacy of Teachers

Table 3
Level of Attitude Towards Computer of Teacher

Indicators	Mean	SD	Description
Basic Computer Skills	4.14	.57	High
Media-Related Skills	3.46	.94	High
Web-Based Skills	3.14	.99	Moderate
Overall Mean	3.58	.69	High

Table 3 presents the level of computer self-efficacy of teachers. Results show that the overall mean is 3.58 which is described as high. This shows that the teachers are certain about their computer self-efficacy and specifically they are confident in basic computer skills like using Microsoft applications such as word, PowerPoint and excel, but not that confident about their self-efficacy in Web-based skills. However, since teachers are focused on teaching the students, personal use of computer applications such as blogging are rarely demonstrated. This implies that these findings are in consonance with the study of Sarfo et al. (2016) which found that teachers possess strong proficiency with word processing software and the internet. Similarly, the results affirm from the study of Kunmari (2021), where teachers must further improve and become more proficient in the use of computers in the teaching-learning process. Meanwhile,

the indicator with the lowest mean is web-based skills. The means of this indicator web-based skills ranged from 3.14 to 4.14. The category mean is 3.58 described as moderately high which means web-based skills of teachers is sometimes observed. This implies that teachers contributed on this study are not refusing the technology as part of their profession. Their intention to use computers are for the potential benefits which they can integrate it into their teaching. Likewise, teachers are using the computers most of the time to schools especially, school reports now are already digitized. These findings are in consonance of the study of Yu et al. (2021) which found that teachers' behavioral intentions when utilizing computers were influenced by their opinions about how beneficial the curriculum was. Additionally, Rudhumbu et al. (2021) posited that the that instructors' behavioral intentions are significantly impacted by the use of computers in the classroom.

Significance of the Relationship of Technological Leadership Behavior, Attitude Towards Computer, and Computer Self-efficacy of Teachers

Table 4

Significance of the Relationship of Technological Leadership Behavior, Attitude Towards Computer, and Computer Self-efficacy of Teachers

	Computer Self-efficacy		
	r	p-value	Remarks
Technological Leadership Behavior	.31	.00	Significant
Attitude towards Computer	.36	.00	Significant

Table 4 presents the linear regression analysis to determine the significance on the combined influence of attitudes towards mathematics and academic self-concept on mathematics academic achievement of Grade 10 learners. As gleaned in the table, the overall computed r² value of 0.05 indicates that the combined influence of attitudes towards mathematics and academic self-concept have contributed significantly to the variability of students' mathematics academic achievement by 5.00 percent from the total variability. Therefore, the difference of 95.00 percent can be attributed to other variables or factors not covered in this study.

Table 4 shows that technological leadership behavior has a positive weak relationship to computer self-efficacy of teachers with R-value of .31 and

it reflects a p-value of .00 which is less than the alpha set at .05, two-tailed supporting a significant relationship. It means that as the level of technological leadership behavior increases the level of computer self-efficacy of teachers significantly increases. It corroborates with the study of Ismail et al. (2021) that technological leadership behavior of principals was correlated with teachers' computer self-efficacy. In similar manner, attitude towards computers reveals a significant positive weak relationship with computer self-efficacy of teachers ($r = .36, p < .05$). It means that as the level of attitude towards computers increases the level of computer self-efficacy of teachers significantly increases. It implies that teachers most likely use computer confidently knowing it will help them a lot to improve their self-belief in using computer. Also, it is found from the finding of the study that principals are guiding and motivating them to use technological tools such as computers. the result supports the view of Proedrou et al. (2023) where attitude towards computer boosted computer use self-efficacy. Computer attitudes and its subscales of affection and confidence were significantly and highly positively correlated with computer self-efficacy. This probably means that teachers generally use computers in their practice and feel prepared to incorporate technology into the educational process. In addition, Ikhlas and Dela Rosa (2023) affirms the findings of the study where they examined the correlation between teachers' attitude and self-efficacy in utilizing technology and predictor variables like access, training, length of computer use, computer competences, and frequency of program usage.

Significance of the Influence of Technological Leadership Behavior, and Attitude towards Compute on Computer Self-efficacy of Teachers

Table 5

Significance of the Influence of Technological Leadership Behavior, Attitude Towards Computer, and Computer Self-efficacy of Teachers

Singular Influence of the Predictors	Computer Self-efficacy of Teachers			
	Standardized Coefficients	t	p-value	Remarks
Technological Leadership Behavior	0.19	2.22	.03	Significant
Attitude towards Computer	0.28	3.24	.00	Significant

Combined Influence of the Predictors

R .40

R ²	.16	
F	12.59	
p	.00	Significant

Table 5 shows the results of the multiple regression analysis. In singular capacity, the technological leadership behavior of school principals shows p-value of .03 which is less than .05 level of significance (2-tailed) with a positive standardized beta value of 0.19. It shows that technological leadership behavior of school principals is a significant predictor of computer self-efficacy of teachers. It means that for every unit increase in the value of the level of technological leadership behavior of school principals there is a corresponding increase of 0.19 in the level of individual work performance of teachers.

Likewise, in singular capacity the independent variable, attitude towards computer reflects a positive standardized beta value of .28 and a p-value of .00 which is lesser than the .05 level of significance, 2-tailed. It means that in singular capacity, attitude towards computer is a significant predictor of the level of computer self-efficacy of teachers. This means that for every unit increase in the value of the level of attitude towards computer there is a corresponding increase of .28 in the level of computer self-efficacy of teachers.

In addition, the combined influence of the two independent variables, technological leadership behavior of school principals, and attitude towards computer on the computer self-efficacy of teachers is significant ($F = 12.59$, $p < .05$). Meanwhile, the model explains 16 percent of the variance of computer self-efficacy of teachers based on the independent variables included in this study as indicated by $R^2 = .16$. In addition, the combined influence of the two independent variables, technological leadership behavior of school principals, and attitude towards computer on the computer self-efficacy of teachers is significant ($F = 12.59$, $p < .05$). Meanwhile, the model explains 16 percent of the variance of computer self-efficacy of teachers based on the independent variables included in this study as indicated by $R^2 = .16$. This means that 84 percent of the variance in computer self-efficacy of teachers can be attributed to other factors aside from technological leadership behavior of school principals, and attitude towards computer.

This implies that teachers' computer self-efficacy is influenced by the technological leadership behavior of principals and attitude towards computer on

beliefs and confidence about what can they accomplish to their work with the skills and knowledge of computer they already have and it is also shows that the technological leadership behavior of principals carries a great impact to continuously build their self-belief in using computer by motivating and providing support for their professional development on the digital era.

This finding is in consonance with the study of Grover (2016) that there is a strong positive correlation between teachers' attitude towards computer and their computer self-efficacy. Similarly, the study conducted by Edwards (2020) is in congruence of the results where principals have the potential to become technology leaders with the right tools and knowledge.

CONCLUSION

Based on the findings of this study, the following conclusions were deduced: The level of technological leadership behavior of principals was described as high. This indicated that their technological leadership behavior was oftentimes manifested. Among the four indicators of technological leadership behavior, orientation were the indicators that were always evident among them. This means that principals' technological leadership behavior is actively embracing and advocating technology in the schools. The principals also established a vision at schools that adopts the integration of technology in the classroom. The level of attitude towards computer of public elementary school teachers was described as high. This means that teachers' attitude towards computer was oftentimes positive. This indicates that teachers are comfortable and confident to use computers. It shows that they believe that computers allow them to make their work efficient and productive. It also implies that the barriers of using the computers does not hinder them to continuously integrate this into their teaching process. The overall level of computer self-efficacy of public elementary school teachers was described as high. This means that the computer self-efficacy of the teachers was oftentimes observed. In other words, this implies that teachers are certain about their computer self-efficacy and specifically they are confident in basic computer skills.

Moreover, they scored moderate about their self-efficacy in web-based skills, which indicates that they only observed it sometimes. However, since teachers are focused on teaching the students, personal use of computer applications such as blogging are rarely demonstrated. There is significant

relationship between technological leadership behavior of principals and computer self-efficacy of teachers. Technological leadership behavior showed a positive association with computer self-efficacy. This means that the more positive technological leadership behavior the principal has, the better the individual performance of teachers will be. Likewise, the relationship of attitude towards computer of teachers and their computer self-efficacy are significant. Attitude towards computer showed a positive association with computer self-efficacy.

Furthermore, it implies that teachers who have positive attitude towards computer will also exhibit higher levels of work performance. The data showed that the independent variables technological leadership behavior of principals, and attitude towards computer together significantly influenced the computer self-efficacy of public elementary school teachers. In the context of this study, it implies that teachers' computer self-efficacy is based on their views and confidence about what can they accomplish to their work with the skills and knowledge of computer they already have and it is also shows that the technological leadership behavior of principals carries a great impact to continuously build their confidence in using computer by motivating and providing support for their professional development. Meanwhile, there are other combined factors that could significantly influence the computer self-efficacy of teachers that are not covered in this study.

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