EDUCATORS' INFORMATION AND COMMUNICATION TECHNOLOGY KNOWLEDGE, ATTITUDES, AND USE: THEIR EFFECT ON SCHOOL PERFORMANCE

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Abstract

The study aimed to determine the level of Department of Education, Division of Laguna secondary school educators' information and communication technology (ICT) knowledge, attitudes, and use and its effects on schools' performance. The respondents were the sixteen schools and 32 teachers from Laguna SBM Level III public secondary schools.

The researcher used the descriptive research design to gather the necessary data and information about the relationship between the independent variable, i.e., teachers' ICT knowledge, attitude, and use, and the dependent variable, i.e., the schools' performance and SBM assessment. The primary data gathering instrument was the survey questionnaire which the ICT coordinators in the Division of Laguna validated. Statistical data treatments of the descriptive part were frequency count, mean, and standard deviation, whereas, for the inferential part, the Pearson product-moment of correlation was used.

The study revealed that the teachers' ICT knowledge was high based on the five sub-variables - cultural, cognitive, constructive, communication, and creative. Their ICT attitudes based on three aspects - emotional effect, personal interest, and subjective satisfaction, as well as their ICT utilization based on four aspects - personal development, professional development, other educational stakeholders' aspect, and the aspect of advocacy, were also high, which conveyed positive.

The schools' performance based on performance improvement consisting of enrolment increase rate, promotion rate, and high achievement rate was high. All the

No significant relationship was found between the teachers' ICT knowledge, attitude, and use and school performance improvement; therefore, the hypothesis was accepted. Relatively, no significant relationship between the teachers' ICT knowledge, attitude, and use and the school performance based on the SBM assessment was recorded except for the cognitive aspect in ICT knowledge which the hypothesis was partially accepted.

Keywords: ICT, School performance, Attitudes

Introduction

In this 21st century, the term "technology" is a critical issue in many fields, including education. It is a fact that technology has become the knowledge transfer highway across the world between and among countries. This heightened awareness of the fundamental role played by these new 'Information and Communication Technologies (ICTs) challenged the status quo of educational institutions. Thus, the choice is to embrace its existence and align educational processes and practices based on the findings afforded by theoretical and empirical studies. Educators have to consider the importance of ICTs in the process of teaching and learning

Technology integration has gone through innovations and transformed world societies that have changed the way people think, work, and live. According to Ghavifekr, Afshari and Amla Salleh (2012), this socio-technological development necessitates schools and other educational institutions to assume tough responsibility since they are supposed to prepare students to live in "a knowledge society." Therefore, they need to consider ICT integration in their curriculum.

Integrating Information, Communication, and Technology (ICT) in education refers to the use of computer-based communication that incorporates into the daily classroom instructional process. In conjunction with preparing students for the current digital era, teachers are the key players in using ICT in their daily classroom activities. This is justified further by Arnseth and Hatlevik (2012), who believed that ICT could provide a dynamic and proactive teaching-learning environment. While ICT integration aims to improve and increase the quality, accessibility, and cost-efficiency of the delivery of instruction to students, it also provides benefits from networking across the learning communities to face the challenges of current globalization. The significance of ICT's role in education is a springboard towards serious consideration and urgent action which should be undertaken so that education can render its students fit the demands of the new millennium.

ICT integration in education generally means technology-based teaching and learning process closely related to the utilization of learning technologies in schools. Since students are familiar with technology as they could learn better within a technology-based environment, the issue of ICT integration in schools, specifically in the classroom, is vital. This is because technology in education contributes a lot to the pedagogical aspects in which the application of ICT could lead to effective learning with the help and support of ICT elements and components (Procter et al., 2013).

It is right to say that almost all ranges of subjects start from mathematics, science, languages, arts and humanistic and other major fields can be learned more effectively through technology-based tools and equipment. In addition, ICT provides the help and complementary support for both teachers and students where it involves effective learning with the help of the computers to serve the purpose of learning aids (Abdullahi & Mukaddas, 2022). These identified advantages in the use of ICT in education call for immediate action. However, as argued earlier, the process of ICT adoption in education is not a single step but an ongoing and continuous step that fully supports teaching and learning and information resources. This reminder makes sense to understand better how to start the step-by-step adoption of ICT course wares. We should first establish where we are in the integration process. Having that knowledge and familiarity as a starting point, it is easier to plan how to pursue ICT integration in our educational processes.

The preceding arguments guided the researcher to investigate the educators' ICT knowledge, attitudes, and use in the teaching-learning process to determine its impact on the school performance in the Division of Laguna.

Theoretical Framework

The following theories may serve as anchors through which the study is based. Connectivism Learning theory (2021) was introduced as a learning theory based on the premise that knowledge exists in the world rather than in an individual's head. It proposes a perspective similar to the activity theory of Vygotsky as it regards knowledge to exist within systems that are accessed through people participating in activities. It also bears some similarities with the social learning theory of A. Bandura, which proposes that people learn through contact. The add-on "a learning theory for the digital age" indicates the special importance given to the effect digital technology has on how people live, communicate, and learn.

According to Mechlova and Malcek (2012), the central metaphor for learning that denotes one aspect of connectivism is using a network with nodes and connections. In this metaphor, a node is anything that can be connected to another node within a network, such as an organization, such as information, data, feelings, and images. Connectivism sees learning as the process of creating connections and developing a network. Not all connections are of equal strength in this metaphor. Many connections may be quite weak. The idea of organizations being cognitive systems where knowledge is distributed across a network of nodes can be traced back to work on perception. This metaphor is directly borrowed from connectionism, "a paradigm in cognitive sciences that sees mental or behavioral phenomena as the emergent processes of interconnected networks of simple units." This network metaphor allows for a notion of "know-where" (the understanding of where to find the knowledge when it is needed) to supplement the ones of "know-how" and "know-what" that make the cornerstones of many theories of learning. With this description and processes of connectionism, this theory is not at all new because it is an offshoot taken from the principles of previously practiced theories like Piaget's constructivism.

As explained, connectivism is the integration of principles explored by theories of chaos, network, complexity, and self-organization. Learning is a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database) and is focused on connecting specialized information sets and the connections that enable us to learn more and are more important than our current state of knowing.

Connectivism is driven by the understanding that decisions are based on rapidly altering foundations. New information is continually being acquired. The ability to draw distinctions between important and unimportant information is vital. The ability to recognize when new information alters the landscape based on yesterday's decisions is also critical (Mechlova & Malcek (2012). The principles of connective are: 1.) Learning and knowledge rest in diversity of opinions; 2.) Learning is connecting specialized nodes or information sources; 3.) Learning may reside in non-human appliances; 4.) The capacity to know more is more critical than currently known; 5.) Nurturing and maintaining connections are needed to facilitate continual learning; 6.) The ability to see connections between fields, ideas, and concepts is a core skill; and 7.) Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.

Accordingly, decision-making is a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a correct answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision. Based on the preceding principles, it is

evident that 21st-century learners should develop skills needed in life to survive the challenges of the fast-changing world. Partnership21 (P21, 2014) laid down the framework for learners to develop three skills categories: learning, literacy, and life skills. Learning skills are the 4Cs which include: Critical thinking- finding solutions to problems; Creativity- thinking outside the box; Collaboration - working with others; and Communication - Talking to others. On literacy skills, we have the IMT, which includes: Information literacy- understanding facts, figures, statistics, and data; Media literacy- understanding the methods and outlets in which information is published; and Technology literacy - understanding the machines that make the Information Age possible.

As regards the life skills, we have the FLIPS, which are: Flexibility - deviating from plans as needed; Leadership - motivating a team to accomplish a goal; Initiative-: starting projects, strategies, and plans on one's own; Productivity- maintaining efficiency in an age of distractions; and Social skills- meeting and networking with others for mutual benefit. Educational institutions should address the foregoing skills by setting the learning environment through the principles of connectivism. Connectivism learning theory (2014) further discusses another feature of connectivism: addressing the challenges of organizational knowledge and transference. Information flow within an organization is an important element of organizational effectiveness. In a knowledge economy, the flow of information is the equivalent of the oil pipe in an industrial economy. A key organizational activity should be creating, preserving, and utilizing information flow. Knowledge flow can be likened to a river that meanders through the ecology of an organization.

The river pools in certain areas, and others, it ebbs. The health of the learning ecology of the organization depends on the effective nurturing of information flow. This feature cannot be observed in behaviorism, constructivism, and cognitivism. This makes connectivism a new theory known as the 'digital age theory.'

Social network analysis is an additional element in understanding learning models in a digital era. For example, the quantum theory of trust" (2011) "explains not just how to recognize the collective cognitive capability of an organization, but how to cultivate and increase it." Within social networks, hubs are well-connected where people can foster and maintain knowledge flow—their interdependence results in effective knowledge flow, enabling the personal understanding of the state of activities organizationally.

The starting point of connectivism is the individual. Personal knowledge is comprised of a network, which feeds into organizations and institutions, feeds back into the network, and then continues to provide learning to individuals. This cycle of knowledge development (personal to network to organization) allows learners to remain current in their field through the connections they have formed (Mechlova and Malcik, 2012).

Another theory that can be used as the foundation of this study is constructivism. Constructivism is a meta-concept. It is not just another way of knowing, but a way of thinking about knowing. It is a theory of communication and suggests that each listener or reader will potentially use the content and process of the communication differently. There are numerous constructivist learning theories. The common core that unites them is that learning is an active process, unique to the individual, and consists of constructing conceptual relationships and meaning from information and experiences already in the learner's repertoire.

John Dewey mentioned the core ideas, so it is not new. Constructivism claims that each learner constructs knowledge individually and socially. The "glue" that holds the constructs together is meaning. Knowledge is not "out there," but knowledge is always an interpretation of reality, not a "true" representation of it. Relevance, curiosity, fun, accomplishment, achievement, external rewards, and other motivators facilitate ease of learning. The preceding principles are still applicable today; therefore, the constructivist theory is still relevant in organizing the learning environment in the 21st century. The learning environment can be enhanced by integrating both the principles of the digital age theory or connectionism by integrating ICT in the teaching-learning process, as well as linking them by adopting the principles of constructivism to enable learners to construct knowledge and its related meaning. When teachers possess updated ICT knowledge and positive attitudes towards ICT, they can successfully build an effective learning environment where learners are productive and happy.

Statement of the Problem

The study aimed to determine the level of secondary school educators' information and communication technology (ICT) knowledge, attitudes, and use and its impact on the school performance in the Department of Education, Division of Laguna. Specifically, it attempted to answer the following research problems:

1. What is the level of ICT knowledge of the teachers with regards to:
   1.1 Cultural aspect;
   1.2 Cognitive;
   1.3 Constructive;
   1.4 Communicative; and
   1.5 Creative?

2. What is the level of attitudes towards ICT of the teachers relative to:
   2.1 Emotional Effect;
   2.2 Personal Interest; and
   2.3 Subjective Satisfaction?
3. What is the level extent of use of ICT by the teachers:
   3.1 personal development;
   3.2 professional development;
   3.3 other educational stakeholders; and
   3.4 Advocacy?
4. What is the level of school performance in terms of improvement with regards to:
   4.1 enrollment increase rate;
   4.2 promotion rate; and
   4.3 achievement rate?
5. What is the level of School-Based Management Assessment with regards to:
   5.1 Leadership and Governance;
   5.2 Curriculum and Instruction;
   5.3 Continuous Improvement and Accountability; and
   5.4 Management of Resources?
6. Do knowledge, attitudes, and ICT use significantly affect the school performance improvement?
7. Do knowledge, attitudes, and ICT use significantly affect School-Based Management Assessment?

Research Methodology

This study used the descriptive–quantitative research method, the most commonly used method in educational research. This was the preferred method because it is objective data collection, quantifies variables, and describes phenomena using numbers to characterize them. Saunders et al. (2008) assert that concepts, variables, and hypotheses are chosen before the study begins and remain fixed throughout the study in a static design. McMillan and Schumacher (2011) explain that quantitative methodology uses a deductive form of logic where theories and hypotheses are tested for cause and effect.

Respondents of the Study

The respondents of this study were the ICT coordinators in public high schools and senior high schools in the Division of Laguna. To determine the population, the researcher will seek the master's list of schools from the Department of Education (DepEd), Division of Laguna. Due to the bulk number of educators in secondary education in the Division of Laguna, the researcher consulted the opinion of the university statistician on whether it is appropriate to apply Sloven's approach to determining the total respondents for this particular study. So, the researcher first determined the number of secondary schools in the Division and the number of teachers in a particular school. Then, from the total number of teachers, Sloven was applied to determine the number of the sample population in the study. The sample population was then divided into the number of schools to determine the number of respondents per school without prejudice to whether the school is small or big.

The title of the research "Educators Information and communication technology knowledge, attitudes, and use: their effect on school performance". The researcher drafted a request letter addressed to the Schools Division Superintendent, noted by the researcher's adviser and endorsed by the Dean of the Graduate School and Applied Research, Laguna State Polytechnic University, Sta. Cruz, Laguna. Upon securing permission from the DepEd authorities, the researcher provided a copy for each public school's District Supervisor in the district. When the letter was endorsed by the supervisor, the researcher brought the letter to the school principal for assistance. With the help of the school principal, the research now administered the survey questionnaire to the target respondents.

The data gathering instrument was the survey questionnaire the researcher constructed based on the related literature survey. The constructed questionnaire underwent validation and reliability test by processing the questionnaire through Cronbach's reliability test available in SPSS. The researcher will retain the item if an item earns a Cronbach's alpha coefficient of .60 and above. All items whose coefficient was lower than .60 were discarded. The statement in every item is written in the first person for the study respondents. Part 1 is about the respondent's socio-demographic profile, which includes the basic information about the respondents. Part ll of the questionnaire contains items designed to survey the technology knowledge, attitudes, and utilization of the respondents in the teaching processes. It was presented to the respondents using the Likert Scale. ,

The researcher used descriptive and inferential statistics to highlight the respondents' technology knowledge, attitudes, and utilization and its impact on school performance. The descriptive statistics include the frequency count, standard deviation, and weighted mean. The inferential statistics were done using the Spearman

rho to determine the impact of technology knowledge, attitudes, and utilization on school performance. Also, the same inferential statistics were used to determine the relationship between socio-demographic characteristics and the educators' ICT knowledge, attitudes, and use.

Results and Discussion

Table 1. Level of ICT Knowledge of the Teacher with regards to the Cultural Aspect

Indicative Statement	Mean (x)	SD	Remarks	
When using digital media, I need to protect my privacy and that of others.	3.97	0.177	SA	
I know the legal issues in digital media; thus, I behave lawfully.	3.84	0.369	SA	
I recognize my rights and responsibilities when using digital media.	3.94	0.246	SA	
I think about my online activities and their effect on other people in the wider online community.	3.72	0.457	SA	
The culture of sharing helps an individual feel connected to a larger global community.	3.47	0.507	SA	
I explore how to take action on issues affecting my personal and professional well–being.	3.75	0.440	SA	
I turn to the internet to understand myself and the world.	3.38	0.554	SA	
Grand Mean	3.72		SA	

Legend:

Point	Range	Remark
4	3.26-4.00	Strongly Agree
3	2.51-3.25	Agree
2	1.76-2.50	Disagree
1	1.00-1.75	Strongly Disagree

This means that teachers have a high level of knowledge and awareness of the proper behavior and ethical duties and responsibilities concerning ICT use. As further illustrated in the table, out of 7 indicators, Indicator 1 – 'When using digital media, I need to protect my privacy and that of others, gained the highest mean (M= 3.97; SD= 0.177); and Indicator 7- 'I turn to the internet to understand myself and the world' (M= 3.38; SD= 0.554), though it registered the lowest mean still the interpretation is 'high' level of knowledge. On the other hand, other indicators ea rned means between (M=3.47; SD= 0.507 to M= 3.94; SD=0.246) all have interpretations of a 'high' level of knowledge.

This finding is a positive indication that the respondents in this study are knowledgeable about ICT, which is now broadly used in the educational world. This is a clear manifestation that this is supported in the words of Bhattacharcjee and Deb (2016), who said that teachers, students, administrators, and every people related to education are popularly using ICT.

Further, the authors reiterated that in modern science and technological society, education demands more teachers' knowledge regarding ICT and skills to use ICT in the teaching-learning process.

Table 2 summarizes the level of teachers' ICT knowledge with regard to the cognitive aspect of ICT.

Table 2. Level of ICT Knowledge of the Teacher with regards to the Cognitive Aspect

Indicative Statement	Mean(x)	SD	Remarks	
I can quickly turn on and off a computer monitor and printer.	3.81	0.397	SA	
I can connect and use a modem.	3.66	0.483	SA	
I have explicit knowledge and practice in the maintenance of a computer system.	3.75	0.508	SA	
I have the ability to associate file types with applications.	3.66	0.483	SA	
I know information is stored in a binary numbering system.	3.53	0.718	SA	
I know digital acronyms such as CPU, RAM, and MB.	3.50	0.508	SA	
I recognize common features across digital tools such as navigation, menus, settings, and profiles.	3.50	0.508	SA	

Grand Mean	3.63	SA

As projected in the above table, the respondents' ICT knowledge based on the cognitive aspect is reported to be 'High' (M=3.63). This simply means that teacher-respondents have high knowledge and understanding of the various operating procedures involving the ICT operation.

This is clearly illustrated in the seven indicators under this category, where Indicator 1-'I can quickly turn on and off a computer' gained the highest mean (M=3.81; SD= 0.397), but the rest of the indicators generally registered means not far from one another (M=3.50; SD= 0.508 to M= 3.74; SD- 0.508). This reveals the cognitive characteristics of the respondents that they are familiar with and can independently operate the ICT gadgets by themselves.

According to Vijayalakshmi (2021), the changing digitalized knowledge-based economy anticipates a shift and transition from teacher-centered instruction to the learner-centered model of instruction. This is desirable to acquire the new 21st-century knowledge, skills, and attitudes such as communication, critical thinking and Problem solving, leadership, teamwork, learning to learn skills, etc. So, the role of the teacher will change from knowledge transmitter to learning facilitator, collaborator, guide, coach, and mentor. In assuming these responsibilities, one should also be equipped with technological knowledge, skills, and competence to be at par with their techno-savvy students.

Further, students in the learning process will have greater responsibility for their own learning in this environment as they search for, discover, create and collaborate and communicate the knowledge with others for solving problems. Accordingly, the 21st-century teacher must use multimodal content, hands-on training, and personal and techno-savvy in an interactive, collaborative, and nonlinear teaching method. 21st-century learners who are more info-driven get information from various ICT resources. It also enables the use of innovative resources and the renewal of learning methods, establishing a more active collaboration of students and simultaneous acquisition of technological knowledge.

Since students are expected to utilize and develop higher-order cognitive skills, which are vital to finding solutions for complex real-world problems, ICT is regarded as an effective tool for this emerging learning paradigm, making the learner in the active role of self-directed learning, providing flexibility and interactivity in the teaching and learning process.

Table 3. Level of Teachers' ICT Knowledge with regards to the Constructive Aspect

Indicative Statement	Mean (x)	SD	Remarks
I know what it means to construct something in a digital environment.	3.44	0.504	SA
I am familiar with the existing laws governing digital use and reuse.	3.28	0.634	SA
I am familiar with copyright law and its application in digital documents.	3.81	0.471	SA
I am careful in adopting ideas and concepts from digital sources.	3.50	0.508	SA
I am always sensitive in citing my digital sources.	3.56	0.504	SA
I uphold the practices related to responsible digital knowledge sourcing.	3.41	0.499	SA
I uphold the laws covering the digital environment.	3.59	0.499	SA
Grand Mean	3.51		SA

As illustrated in the above table, the respondents' ICT knowledge, based on constructive aspect is also reported to be 'high' (M-3.51). This means that the teacher-respondents have knowledge of existing laws governing the use and reuse of data and all other pertinent policies governing responsible digital knowledge sourcing and the ethical responsibility and use of the digital environment. The seven indicators under this category registered the highest mean (M=3.81; SD= 0.471) in Indicator 3 – 'I am familiar with copyright law and its application in digital document,' and the lowest mean in Indicator 2 - 'I am familiar with the existing laws governing digital use and reuse' (M=3.28; SD= 0.634). All other indicators generated means between (M= 3.41; SD 0.499 to M= 3.59; SD=0. 4.99) which are all interpreted as a 'high level of knowledge.

This finding confirms the belief of the Irish Computer Society (2016), which said that IT security and identity theft are all areas in which teachers should have good knowledge to be able to help students deal with issues if they arise and to encourage them to be responsible Web users.

Table 4. Level of ICT Knowledge of the Teachers with regards to the Communicative

Indicative Statement	Mean (x)	SD	Remarks	
I support the proper and responsible ways of communicating in the digital environment.	3.75	0.440	SA	
I am familiar with the communication norms of various online tools.	3.53	0.567	SA	
I know the meaning of identity in digital space.	3.38	0.554	SA	
I understand the meaning of sharing in digital space.	3.53	0.507	SA	
I know the meaning of influence and trust in digital space.	3.50	0.508	SA	
I can communicate with utmost responsibility using digital tools.	3.34	0.483	SA	
I support reliable communication in a digital environment.	3.50	0.508	SA	
Grand Mean	3.50		SA	

A preliminary appreciation of the data in the above table reveals that the respondents' ICT knowledge as regards communicative aspect is reported as 'high' (M=3.50). This means that the respondents believed they were responsible consumers and providers of digital products and services.

The mean of every indicator supports the preceding report, where Indicator 1 – 'I support the proper and responsible ways of communicating the digital environment' gained the highest mean (M= 3.75; SD = 0.440), and Indicator 6- 'I can communicate with utmost responsibility using digital tools' registered the lowest mean (M=3.34; Sd= 0.483. Both were described as 'high level of knowledge. All other indicators generated means between (M= 3.38; SD 0.554 to M= 3.53; SD = 0. 567) which are all interpreted as a 'high level of knowledge. This finding reveals that the respondents can handle digital communication with utmost responsibility since they are also aware of the existing laws governing digital space and environment.

According to the Australian Parenting Website (2021), responsible digital citizenship includes: behaving lawfully – that is, believing that it's a crime to hack, steal, illegally download, or cause damage to other people's work, identity or property online; protecting your privacy and that of others; recognizing your rights and responsibilities when using digital media; and thinking about how your online activities affect yourself, other people you know, and the wider online community.

The initial ideas were further enriched by Ribble (2008; 20011), who categorized the elements of digital citizenship into three, namely: (a) respect for self and other people, (b) self-education and connecting with other people, and (c) protecting self and other people. Under the respect for self and others category, there are three elements: digital access, digital etiquette, and digital law. The second category – self-education and connecting with other people- has three elements: digital communication, digital literacy, and digital commerce. Lastly, in the third category on protecting self and others, there are three elements: digital rights and responsibilities, digital security, and digital health and wellness.

Table 5. Level of ICT Knowledge of the Teachers with regards to the Creative

Indicative Statement	Mean (x)	SD	Remarks	
I learn how to do new things in new ways using online tools.	3.56	0.504	SA	
I have a working knowledge of computer terminology.	3.44	0.504	SA	
I enjoy new ways of conceptualizing things in a digital environment.	3.53	0.507	SA	
I convey new ways of doing things through digital tools.	3.56	0.504	SA	
I encourage my students to make new concepts through the imaginative use of the digital environment.	3.66	0.483	SA	
I learn how to curate digital content to create value for teachers	3.34	0.545	SA	

I can share new knowledge by using digital technologies.	3.59	0.499	SA
Grand Mean	3.53		SA

This means that the respondents are knowledgeable in manipulating digital tools and sharing new knowledge they have learned using ICT technologies.

Initial observation of the seven indicators suggests that Indicator 5 – 'I encourage my students to make new concepts through the imaginative use of the digital environment' (M= 3.66; SD = 0.483) registered the highest mean, and Indicator 6 -'I learn how to curate digital content to create value for teachers' (M= 3.34; SD= 0.545) earned the lowest mean. Both means were interpreted as 'high level of knowledge. All other indicators registered (from M-3.44; SD= 0.504 to M= 3.59; SD = 0.499) were all reported 'high level of knowledge. This confirms the previous findings that the teacher–respondents possess a high level of ICT knowledge across the five elements identified in this study.

The preceding results are supported by Nikolopoulou (2018) who is in the opinion that ICT under appropriate pedagogical conditions may be one of the most important tools for teachers and students to develop cognitive, social, and technological skills. Accordingly, the characteristics of digital technologies that allow students to be creative: interactivity, multiple types/forms of information, range, speed, and automatic functions, characteristics that allow users to do things that could not be done as effectively or at all, by using other tools

Likewise, ICT tools enable users to make changes, try out alternatives, and keep the traces of the development of their ideas. Interactivity engages teachers and students-users at different levels, from playing games that provide feedback on users' decisions to monitoring and recording the results of an experiment which again provides immediate and dynamic feedback. Additionally, the speed and automatic functions allow the ICT operations of storage, transformation, and display of information, so that students can engage in higher cognitive levels. Recognizing the specific characteristics of digital technologies (ICT tools) allows students and teachers to decide when and how to use them. One of the key affordances of digital technologies is that content or knowledge can be created, shared, and discovered much more quickly and easily (Henriksen, Mishra, & Fisser, 2016).

Level of Attitudes towards ICT of the Teachers

In this study, the teachers' level of attitudes towards ICT refers to the emotional effect, personal interest, and subjective satisfaction.

Table 6. Teachers' Level of Attitudes towards ICT relative to the Emotional Effect Aspect

Indicative Statement	Mean (x)	SD	Remarks
I feel comfortable with the idea of the computer as a tool in teaching and learning.	3.41	0.499	SA
If something goes wrong, I will not know how to fix it.	3.03	0.933	SA
The idea of using a computer in teaching and learning makes me skeptical.	3.13	0.670	SA
The use of digital tools increases the quality of the teaching and learning process quality.	3.38	0.707	SA
Digital tools offer various teaching and learning opportunities.	3.44	0.504	SA
Digital tools make it easy for me to plan my teaching.	3.63	0.492	SA
Using digital tools makes teaching easier for teachers.	3.50	0.508	SA
Grand Mean	3.36		SA

Initial appreciation of the data suggests that the teachers' ICT attitudes based on emotional effect earned a mean of 3.36, interpreted as 'high', which means that teachers possess positive regard for ICT tools and gadgets and can manipulate it to help them in their work and personal life.

As further illustrated, Indicator 6 - Digital tools make it easy for me to plan my teaching (M=3.63; SD 0.492) gained the highest mean. This is followed by Indicator 7 - Using digital tools makes teaching easier for teachers (M= 3.50; SD = 0.508). Which was also reported to register a mean interpreted as high. These claims were supplemented by Indicator 5 - Digital tools offer various teaching and learning opportunities (M= 3.44; SD= 0.504); Indicator 1- I feel comfortable with the idea of the computer as a tool in teaching and learning (M= 3.41; SD = 0.499), and Indicator 4- The use of digital tools increases the teaching and learning process quality (M= 3.38; SD –

0.707) which were equally rated as high. These simply support the fact that the respondents have positive trust in the use of ICT tools in the teaching and learning process and that it contributes to the increase in students' achievement.

Despite the fact that Indicator 3- The idea of using a computer in teaching and learning makes me skeptical. (M= 3.13; SD = 0.670) and Indicator 2. If something goes wrong, I will not know how to fix it M= 3.03; SD – 0.933) gained a slightly lower means. Still, the overall perspective showed a positive stance. This finding can be explained by Liu (2011), who conducted an analysis of teachers' beliefs, attitudes, and practices with ICT among 1139 primary school teachers in Taiwan. The study concludes that although most teachers hold learner-centered beliefs, the way in which they integrate technology in the classroom diverges from constructivist practices. Likewise, de Aldama and Pozo (2016) report a positive relationship between constructivist conceptions and the active use of technology. The authors analyzed teachers' perceptions of ICT during the teaching process based on the instructional/constructivist model and concluded that constructivist stances favored using ICT in the classroom. In the same vein, Sang, Valcke, van Braak and Tondeur (2010) found that teachers who held strong constructivist pedagogical beliefs and attitudes were more receptive to integrating ICT in the classroom than teachers who did not hold these beliefs.

Table 7. Teachers' Level of Attitudes towards ICT relative to the Personal Interest Aspect

Indicative Statement	Mean (x)	SD	Remarks
Using computers in teaching and learning enhances my subject content.	3.63	0.492	SA
ICT assists students in accessing digital information efficiently and effectively.	3.66	0.483	SA
ICT tools allow students to discover learning topics.	3.50	0.508	SA
ICT tools help students solve problems and provide solutions to problems encountered in the learning process.	3.38	0.554	SA
Knowledge acquisition is more accessible through the use of ICT tools.	3.63	0.492	SA
ICT support student-centered learning.	3.41	0.499	SA
The digital environment produces a creative learning environment.	3.38	0.492	SA
Grand Mean	3.51		SA

This finding is supported by the means generated by the seven indicators under this category. It can be noted that three indicators almost earned the same means. Indicator 2 - ICT assists students in accessing digital information efficiently and effectively (M= 3.66; SD= 0.483), Indicator 1 - Using computers in teaching and learning enhances my subject content (M = 3.63; SD = 0.492), and Indicator 5 - Knowledge acquisition is more accessible through the use of ICT tools (M=3.63; SD=0.492). This finding is teachers' testimony on their positive outlook regarding their personal experiences using ICT tools and gadgets.

The preceding data is complemented by the means earned in Indicator 3- ICT tools allow students to discover learning topics (M=3.50; SD = 0.508), Indicator 6 - ICT supports student-centered learning (M= 3.41; SD= 0.499), Indicator 4 - ICT tools help students solve problems and provide solutions to problems encountered in the learning process (M=3.38; SD = 0.554), and Indicator 7- Digital environment produces a creative learning environment (M=3.38; SD = 0.492). In support of this finding, Sanchez et al. (2012) believe that they first establish its application to understand teachers' beliefs and attitudes. Donelly (2010) shares a similar idea and highlights how teaching attitudes play an essential role when teaching curricular content through ICT.

Table 8. Teachers' Level of Attitudes towards ICT relative to the Subjective Satisfaction Aspect

Indicative Statement	Mean (x)	SD	Remarks
The computer is conducive to student learning because it is easy to use.	3.38	0.492	SA
The computer helps students learn because it allows them to express their thinking better and differently.	3.44	0.504	SA
The computer helps teachers to teach in more effective ways.	3.47	0.507	SA
The computer is conducive to good teaching habits because it creates a smooth transition from one topic to the next.	3.38	0.492	SA

ICT applications enable students to learn concepts through active engagement with ICT tools.	3.44	0.504	SA
ICT tools enable students to determine the quality of learning materials.	3.47	0.507	SA
Students build new knowledge by selecting, accessing, collecting, and interpreting information and data using ICT tools.	3.59	0.798	SA
Grand Mean	3.45		SA

In support of the claim that ICT is beneficial to the teaching-learning process, the respondents reported in Indicator 7 - Students build new knowledge by selecting, accessing, collecting, and interpreting information and data using ICT tools (M= 3.59; SD= 0798) the highest mean. The remaining six indicators were rated high, such as Indicator 3 - The computer helps teachers to teach more effectively (M=3.47; SD= 0.507) and Indicator 6 - ICT tools enable students to determine the quality of learning materials (M=3.47; SD = 0.507. Other indicators such as Indicator 2 -The computer helps students learn because it allows them to express their thinking in better ways (M=3.44; SD= 0.504) and Indicator 5 - 5. ICT applications enable students to learn concepts through active engagement with ICT tools (M=3.44; SD = 0.504). Both were interpreted as 'high.' Though, Indicator 1 – The computer is conducive to student learning because it is easy to use (M= 3.38; SD = 0.492), and Indicator 4- The computer is conducive to good teaching habits because it creates a smooth transition from one topic to the next (M=3.38; Sd = 0.492) generated the lowest means. Still, the interpretation is 'High'. These findings attest to the teachers' satisfaction based on experience with the positive results of using ICT tools and gadgets.

These findings are in consonance with the report of Semerci and Aydin (2018), whose results illustrated that teachers have a high level of a positive attitude toward ICT use in their classes. Yet, there is no significant difference between teachers' ICT willingness based on their gender, age, teaching experience, ICT experience, ICT skills, and ICT training. The above idea is expounded by Awan (2011) based on his earlier work, which proposed a Technology Acceptance Model and emphasizes individuals' psychological tendencies and social influences. It assumes that people's actions are mostly rational and that they process the information available to them and act based on its evaluation. In strengthening and sustaining the current teachers' knowledge

The extent of Teachers' ICT Utilization

In this study, the teachers' extent of ICT use includes personal development, professional development, use for other educational stakeholders, and advocacy.

Table 9. Teachers' Extent of ICT use based on Personal Development Aspect

Indicative Statement	Mean (x)	SD	Remarks
I use digital tools to browse/search the internet to prepare my lessons.	3.53	0.507	SA
I use ICT tools to browse/search the internet to collect resources during lessons.	3.63	0.492	SA
I use ICT applications to prepare presentations for lessons.	3.56	0.504	SA
ICT tools expand my academic knowledge through networking and linkages with other teachers and educators in a broader world.	3.63	0.492	SA
I can enrich my lesson contents by navigating the net.	3.63	0.492	SA
I can choose better and more appropriate learning tools through digital linkages.	3.63	0.492	SA
I am better equipped with the latest trends in teaching processes through the use of ICT tools.	3.38	0.492	SA
Grand Mean	3.57		SA

Table 9 showcases the teachers' extent of ICT use based on personal development. Preliminary appreciation of the data in Table 9 showed that teachers' extent of ICT use based on personal development gained M= 3.57, which is interpreted as 'high.'

Considering the seven indicators under this aspect of the inquiry, four indicators registered similar means. Indicator 2 - I use ICT tools to browse/search the internet to collect resources during lessons (M=3.63; SD=0.492). Indicator 4- ICT tools expand my academic knowledge through networking and linkages with 5 - I can enrich my lesson contents by navigating the net (M=3.63; SD = 0. 492), and Indicator 6- I can choose better and appropriate

learning tools through digital linkages (M= 3.63; SD= 0.492). From the four indicators, which share similar means and standard deviation and are interpreted as 'high,' it is pretty obvious that the respondents are claiming that they are using ICT tools and platforms to enhance and improve their lesson contents, enrich their lesson presentation and connect to the outside world to learn more about the lessons they use in their classes.

The preceding report is supplemented by Indicator 3 - I use ICT applications to prepare presentations for lessons (M= 3.56; SD = 0.504), Indicator 1 - I use digital tools to browse/search the internet to prepare my lessons (M=3.53; SD = 0.507), and Indicator 7- I am better equipped with the latest trends in teaching processes through the use of ICT tools (M= 3.38; SD = 0.492). The respondents admit the confidence in using ICT tools and gadgets that they are using for personal development.

This finding is reinforced in the words of Ratheeswari (2018), who asserts that information and communication technologies (ICT) at present are influencing every aspect of human life. They are playing salient roles in workplaces, business, education, and entertainment. Moreover, many people recognize ICTs as catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and accessing information communication technologies. In this digital era, ICT use in the classroom is important for giving students opportunities to learn and apply the its importance for teachers in performing their role as creators of pedagogical environments.

Table 10. Teachers' Extent of ICT use in relation to the Professional Development Aspect.

Indicative Statement	Mean (x)	SD	Remarks
I use ICT tools to post homework for students on the school website.	3.38	0.793	SA
ICT tools help teachers to provide feedback and assess *students'* learning.	3.53	0.507	SA
ICT tools facilitate evaluating digital learning resources in the subject(s) you teach.	3.50	0.508	SA
Students build new knowledge through proper use of navigation, selection, and interpretation of data and information.	3.50	0.508	SA
ICT tools increase *students'* access to quality information through navigation.	3.38	0.492	SA
ICT offers alternative learning opportunities such as mobile learning.	3.69	0.471	SA
ICT tools make my students competitive in the 21st – century environment.	3.69	0.471	SA
Grand Mean	3.52	SA	

Initial observation of the data in Table 10 manifests that the teachers' extent of ICT use based on the professional development aspect earned a mean of 3.52, which is interpreted as 'high.' This means that the respondents are confident in admitting that their ICT use is meant to develop them professionally, especially in enhancing their connections with their students in the forms of feedback and assessment of student learning.

The preceding idea is supported by Indicator 6- ICT offers alternative learning opportunities such as mobile learning (M=3.69; SD=0.471) and Indicator (M=3.69; SD 0.471) which are interpreted as 'high.' Likewise, Indicator 2- ICT tools help teachers provide feedback and/or assess students' learning (M= 3.53; SD= 0.507) strengthens the respondents' claim regarding the previous statement.

Indicator 3- ICT tools facilitate to the evaluation of digital learning resources in the subject(s) you teach (M=3.50; SD = 508) and Indicator 4 - Students build new knowledge through proper use of navigation, selection, and interpretation of data and information (M-3.50; SD = 0. 508) also contribute to making a strong statement that ICT use tools for improving students' performance and thereby contributory to the professional development of teachers.

However, two indicators under the professional development aspect registered lower means compared to other indicators. Indicator 3- ICT tools facilitate the evaluation of digital learning resources in the subject(s) you teach (M=3.50; SD= 0. 508), and Indicator 4-Students build new knowledge through proper use of navigation, selection, and interpretation of data and information (M= 3.50; SD= 0. 508). Despite the lower means still, these are interpreted as 'high.' This means that the respondents are firmly confident in saying that using ICT tools and gadgets contributes to their professional development.

The preceding results are consistent with previous research findings by Sanchez et al. (2012), which suggest that their participants have a positive attitude toward the ICT use as a teaching tool. It further elaborates its findings that the respondents' positive attitudes manifest both in the emotional and personal development aspects.

Table 11. Teachers' Extent of ICT use as to the Other Educational Stakeholders' Aspect

Indicative Statement	Mean (x)	SD	Remarks
I look for online professional development opportunities and share them with my colleagues.	3.41	0.499	SA
I use ICT tools to communicate online with parents.	3.56	0.504	SA
I use ICT tools to connect to my students, colleagues, and other education stakeholders.	3.63	0.492	SA
ICT tools are potential ways of building connections among other local domestic or international professionals.	3.56	0.504	SA
ICT catalyzes education *stakeholders'* active participation in service delivery to its constituents.	3.31	0.471	SA
ICT support learning through the help of other education stakeholders.	3.44	0.504	SA
ICT boost student confidence when there is the presence of total participation among education stakeholders.	3.50	0.622	SA
Grand Mean	3.49	SA	

This finding means that the respondents are also utilizing their ICT skills and competencies in communicating with other members of the educational system. Initial observation of the data from the seven indicators showed that in Indicator 3 - I use ICT tools to connect to my students, colleagues, and other education stakeholders (M=3.63; SD = 0. 492) gained the highest mean, which confirms that the respondents are using ICT tools and gadgets at the maximum level to connect to other education stakeholders. This is (M=3.56; SD = 0.504) reinforced by Indicator 2 - I use ICT tools to communicate online with parents and Indicator 4 - ICT tools are potential ways of building connections among other local, domestic, or international professionals (3.56; SD = 0. 504) which are all

Indicator 7 - ICT boosts student confidence when there is the presence of total participation among education stakeholders (M=3.50; SD= 0.622), also interpreted as 'high' and supports the previous statements. Indicator 6 - ICT supports learning through the help of other education stakeholders (M= 3.44; SD= 0.504) also earned 'high' interpretation, and the last two indicators – Indicator 1 - I look for online professional development opportunities and share them with my colleagues (M=3.41; SD= 0.499) and Indicator 5 - ICT catalyzes education stakeholders' active participation in service delivery to its constituents (M=3.31; SD= 0.471) though their means are not similar, both means are interpreted as 'High'. This finding is supported by the British Educational Communication and Technology Agency (BECTSA, 2014), which states that a very significant determinant of teachers' levels of engagement in ICT is their confidence in using the technology. Teachers with little or no confidence in using computers in their work will try to avoid them altogether.

Table 12. Teachers' Extent of ICT use as to the Advocacy Aspect

Indicative Statement	Mean (x)	SD	Remarks
I believe that digital tools enable equality in education.	3.38	0.609	SA
I believe that ICT tools support development in education.	3.44	0.504	SA
I support the use of ICT tools to improve curiosity.	3.50	0.508	SA
I believe ICT tools excite me to reach home and school.	3.38	0.707	SA
ICT tools offer new opportunities like distance learning.	3.50	0.508	SA
ICT tools help me learn about different cultures.	3.44	0.504	SA
ICT tools give me the opportunity to follow daily events.	3.63	0.492	SA
Grand Mean	3.46	SA	

This means that the teacher-respondents are not only utilizing ICT for their personal development and professional development, to connect with other education stakeholders and use them for advocacy purposes.

Preliminary appreciation of data from Table 12 suggests that out of 7 indicators, Indicator 7 - ICT tools give me the opportunity to follow daily events (M=3.63; SD = 0.492) gained the highest mean, which suggests that respondents can now be updated with daily news, through the use of ICT tools. Indicator 3 - I support the use of ICT tools to improve curiosity (M=3.50; SD=0.508) and Indicator 5 -.ICT tools offer new opportunities like distance learning (M=3.50; SD= 0.508). Both share similar means and SDs, and both are interpreted as 'high'. These 2 indicators confirm the first statement on one's opportunity to follow daily events since it also offers new opportunities such as distance learning, and therefore it improves one's curiosity to know more.

In the next two indicators, Indicator 2 - I believe that ICT tools support development in education (M=3.44; SD= 0.0.504) and Indicator 6-ICT tools help me learn about different cultures (M=3.44; SD= 0.504) are both interpreted as 'high' and are also complementary with each other since when one learns about a different culture, it automatically supports the development of education. Finally, the last two indicators, Indicator 1 - I believe that digital tools enable equality in education (M = 3.38; SD= 707) and Indicator 4-I believe ICT tools excite me to reach the world from home and school (3.38; SD =0.707) both gained similar means and SDs and are interpreted as 'high.' These indicators are also interrelated with one another since it advocates equality in education which you can have available whether you are at home or in school. This perspective proves that using ICT tools is truly beneficial and advantageous to anyone engaged in it, as the preceding data advocates. This finding supports the work of Bosamia (2018), who believes that as human beings, we are always connected with many essential things in our everyday life. With the use of ICT gadgets in our lifestyle, many time-consuming calculations and tough tasks have become easier and social contacts have been increased.

School Performance Based on Performance Improvement

In this study, school performance is measured according to performance improvement made up of enrolment increase, promotion rate, and achievement rate.

Table 13. Summary of School Performance according to Performance Improvement based on Enrolment Increase Rate

Respondent School	Combined Enrolment Rate in 3 Academic Years (%)	Interpretation
School 1	8.45	High
School 2	9.50	High
School 3	11.14	High
School 4	7.18	High
School 5	15.54	High
School 6	9.47	High
School 7	8.54	High
School 8	8.42	High
School 9	10.29	High
School 10	6.24	Average
School 11	6.89	Average
School 12	5.40	Average
School 13	9.63	High
School 14	5.30	Average
School 15	9.00	High
School 16	7.25	High

Table 13 showcases the summary of respondent schools' school performance according to performance improvement based on enrollment increase rate. Initial observation of the reported data in Table 13 from the respondent Schools suggest that 12 schools (75%) of the 16 respondent - schools have a High enrollment rate increase and only 4 schools (25%) have average enrolment rate increase.

Citing the ideas of Mwirigi and Muthaa (2015) the increasing enrolment rate is proof that participation and access to education are implemented to address educational problems besetting countries, especially the developing ones. Other factors cited from a survey conducted by Sharma and Tripathi (2020) which contributed to the

increasing rate of enrolment in government schools are financial distress caused by the Covid-19 pandemic; free facilities available at government schools; the rising cost of private schools' education; and migration during lockdowns as the main reason behind the switch over.

Table 14. Summary of Respondent Schools' School Performance According to Performance Improvement based on Promotion Rate

Respondent Schools	Promotion Rate (%)	Interpretation
School 1	90	High
School 2	94	High
School 3	95	High
School 4	97.28	High
School 5	96.92	High
School 6	97.18	High
School 7	97.88	High
School 8	100.00	High
School 9	94.11	High
School 10	99.17	High
School 11	91.00	High
School 12	98.54	High
School 13	100.00	High
School 14	89.00	High
School 15	97.20	High
School 16	96.26	High

Preliminary appreciation of the data in Table 14 illustrates that two respondent schools – School 8 and School 13, reported a 100% promotion rate. This means that the total number of students/enrollees was consistently the same number of students who get promoted to the next level. It can be observed that the lowest promotion rate is 89%, yet still within the range of 'high.'

The current practice of Philippine schools as regard promotion rate is based on the American school model. Reville (2020) said that social promotion (the practice of sending a student to the next grade regardless of whether they meet grade-level expectations in order to keep them with their peers) became the norm because the character of schooling began to change.

Table 15. Summary of Respondent Schools' School Performance According to Performance Improvement based on Achievement Rate

Respondent Schools	Achievement Rate	Interpretation
School 1	78	High
School 2	75	High
School 3	54.43	Average
School 4	64.62	Average
School 5	72.15	Average
School 6	59.94	Average
School 7	66.26	Average
School 8	68.26	Average
School 9	63.79	Average
School 10	75.77	High
School 11	76.20	High
School 12	40.46	Marginal
School 13	54.35	Average
School 14	52.45	Average
School 15	59.65	Average
School 16	64.2	Average

Preliminary appreciation of the data in Table 15 suggests that the majority of the respondent- schools (68.75%) registered achievement rates between 51% - 74%, which are interpreted as 'Average.' Only four respondent schools, or 25%, claimed they have a 'high' achievement rate that is between 75% - 100%. However, one respondent school (6.25%) - School 12 - admitted they have a 'Marginal achievement rate," meaning between 26% - 50%. This finding means that students' achievements truly vary from school to school, and this particular finding is supported in the report by Hale (2015), who believed that students' achievements are usually affected by

certain factors such as high absenteeism and lack of a two-parent family structure and low socio-economic status. These are manifested in lower achievement test scores and end-of-course exams. It was also hypothesized that groups, whose members lacked the negative characteristics would have higher scores on these tests.

The author further explained that students' academic performance in his study groups was tested to see if there were statistical differences in the mean scores of each group. When it was found that the groups were significantly different regarding their test results, the study hypothesis was confirmed that the groups could be different due to the factors they possessed.

The preceding statement could attest to the result of the present study. Although the majority of the respondent schools claimed average performance in achievement rate, the mean score each school registered varies from school to school. Reiger (2011) further extended the discussion related to academic achievement when she said that academic success is important because it is strongly linked to the positive outcomes we value. Academically successful adolescents have higher self-esteem, have lower levels of depression and anxiety, are socially inclined, and are less likely to abuse alcohol and engage in substance abuse. It also helps in measuring how good learning program is working. Also high achievement rate indicate that a level of mastery of grade – level of mastery of grade – level material has been reached, and that the students is prepared for advanced instruction.

Respondent – Schools' School Performance Based on School-Based Management (SBM) Assessment

In this study, the level of a school's performance is based on the SBM Assessment, which consists of Leadership and Governance, Curriculum and Instruction, Continuous Improvement and Accountability, and Management of Resources.

Table 16. Summary of Respondent- Schools' School Performance-based on SBM Assessment encompassing the 4 Sub- Variables (Leadership and Governance, Curriculum and Instruction, Continuous Improvement and Accountability and Management Resources

Respondent Schools	Leadership and Governance (30%)	Curriculum and Instruction (30%)	Accountability and Continuous Improvement (25%)	Management of Resources (15%)	Composite Total	Interpretation
School 1	0.84	0.87	0.70	0.45	2.86	Advanced
School 2	0.90	0.90	0.75	0.45	3.00	Advanced
School 3	0.76	0.90	0.60	0.40	2.66	Advanced
School 4	0.90	0.90	0.77	0.45	3.02	Advanced
School 5	0.90	0.84	0.75	0.45	2.94	Advanced
School 6	0.90	0.78	0.75	0.30	2.73	Advanced
School 7	0.90	0.90	0.75	0.40	2.95	Advanced
School 8	0.90	0.90	0.75	0.36	2.91	Advanced
School9	0.90	0.90	0.75	0.45	3.00	Advanced
School 10	0.90	0.94	0.75	0.45	3.04	Advanced
School 11	0.84	0.78	0.60	0.42	2.64	Advanced
School 12	0.72	0.69	0.65	0.45	2.51	Advanced
School 13	0.60	0.67	0.80	0.45	2.52	Advanced
School 14	0.90	0.90	0.79	0.40	2.99	Advanced
School 15	0.60	0.90	0.75	0.45	2.70	Advanced
School 16	0.60	0.66	0.80	0.45	2.51	Advanced

Initial observation of Table 16 shows that the 16 respondent schools exhibit varied performances in the 4 areas included in the SBM assessment. But to further appreciate the varied data, one should understand that each area in the SBM Assessment Tool carries a definite weight. The composite total when all scores are taken together after assigning each corresponding percentage defines the school performance.

Based on the registered composite total, it can be observed further that all the 16 respondent schools can be labeled as Level 3 according to SBM standards since the earned composite total is within the range between 2.50 – 3.00, interpreted as 'advanced.' This means that all respondent schools have advanced SBM practices.

Looking at the sub-variable 'Leadership and Governance,' the table shows that the highest score of 0.90 is shared by ten respondent schools (Schools 2, 4, 5, 6, 7, 8, 9, 10, and 14). Three respondent schools obtained the

lowest score of 0.60 (Schools 13, 15, and 16). Schools 1 and 11 registered a score of 0.84, School 3 earned a score of 0.76, and School 12 earned a score of 0.72. Overall performance of respondent schools based on leadership and governance can be described as above average. The leaders in these 16 schools knew the importance of their role as school leaders.

The preceding finding is supported by the study of Innovations for Educational Transformation (2020), which found that among its school respondents, not one school of 180 surveyed was able to improve student achievement records without effective school leadership. This suggests that effective school leadership is an antecedent to improving student achievement. Moreover, in the case of 16 respondent schools, it is clearly manifested from the data that the schools are practicing effective school leadership.

Further, the report connects skilled school leadership and positive student learning outcomes. Its proof that good leadership in schools directly impacts students' experience and performance is supported by Chen (2020), who believes that leaders who looked for help and were willing to collaborate with others were most successful in helping their schools adjust and succeed. Again, though, knowing what to do is not enough. The best school leaders can use that data and information to coach and empower their teaching staff to improve their own pedagogy and student learning.

The same author emphasizes the skills of an effective school leader: leading through teaching and learning; developing self and others; promoting positive change in the school environment; driving school management; and engaging and working with the community (Chen, 2020).

In the column 'Curriculum and Instruction, the highest score of 0.94 was earned by School 10, but the majority of the respondent schools gained a score of 0.90 (Schools 2, 3, 4, 7, 8, 9, 14, and 15) where eight schools registered such score. School 1 earned a score of 0.87, while School 5 registered a score of 0. 84. The rest of the schools registered a score between 0.66 – 0.69. This finding means that the respondent schools have properly implemented curriculum and instruction which is the heart and soul of school education, according to their relevance, responsiveness, and effectiveness.

Accordingly, curriculum and Instruction (C&I) is a field within education that seeks to research, develop, and implement curriculum changes that increase learner achievement in educational settings and strives to transform the educational landscape through improved curriculum design and best practices. This area focuses on how people learn and the best ways to educate the learners (Western Governors University, 2020)

Following the ideas forwarded by Flakes (2017), he said that curriculum provides direction for instruction since instruction is the method of delivering an academic curriculum. Instruction may exist without a curriculum but would serve no direct purpose. Curriculum and instruction must be compatible and maintain a close relationship in order to maximize student learning. The design of the curriculum influences student learning. The curriculum is a vessel that helps learners gain knowledge, develop skills and broaden understanding, and has outcomes that may be measured.

Flake (2017) further claimed that curriculum and instructional design alter according to society and is influenced by new technology and information. The relationship between curriculum and instruction suggests an opportunity for growth. Knowledge of the relationship between curriculum and instruction may help educators strive to provide quality education to students. The case of the respondent schools, as manifested in the reported data, perfectly illustrates that the knowledge of the relationship between curriculum and instruction has been deeply embedded among the educators and stakeholders of the said schools.

The third sub- variable in the SBM assessment is about continuous improvement and accountability. Observing the data under this column suggests that the highest take is 0.80 earned by Schools 13 and 15. However, it can also be noted that the majority of the schools registered a score of 0.75 (Schools 2, 5, 6, 7, 8, 9, 10, and 15). All other schools earned a score between 0.60 – 0.79. This finding means that all the 16 respondent schools are engaged dynamically in a continuous improvement process at different levels.

Accountability and Continuous Improvement is a clear, transparent, inclusive, and responsive accountability system in place, collaboratively developed by community stakeholders, which monitors expected and actual performance and continually addresses the gaps and ensures a venue for feedback and redress (DepEd Website).

The preceding statement finds support in the thoughts of Skhimot (2017) who opined that a continuous improvement culture has been shown to boost teachers' or employees' (as in the case of a company) engagement and reduce turnover rates. In addition, individuals who actively participate in the betterment of the company (in this case, the schools) gain a sense of pride and accomplishment, leading to a greater sense of belonging and fewer reasons to leave the organization.

It was further stated that continuous improvement could be activities carried out by any school or instructional improvement process that unfolds progressively, does not have a fixed or pre-determined endpoint, and

how is sustained over an extended period. Skhimot (2017) identified five benefits of continuous improvement practices: 1.) more engaged employees; 2.) lower employee turnover; 3.) more competitive services; 4.) better customer services, and having a proactive learning culture.

On accountability, Hutt and Polikoff (2020) argued that public accountability through information disclosure is a pillar of modern education reform efforts. The authors proposed a framework for thinking about the design of public accountability systems in education to guide policymakers in considering new efforts at improving schools through producing and disseminating educational data. Integrating the findings of the present study, it is suggested in the finding that the continuous management and accountability process necessitates vibrant efforts among educational leaders to practice transparency in implementing reform initiatives and efforts to achieve the established educational goals.

The last sub-variables in the SBM assessment are on the management of resources. Though the data varies among schools, the highest score gained by the majority of respondent schools is 0.45 (Schools 1, 2, 4, 5, 9, 10, 12, 13, 15, and 16). The lowest score is 0.30 earned by School 6. Other respondent schools registered scores between 0.36 – 0. 42. This means that the 16 schools have sound and effective practices in resource management.

According to the School of Education Online Program (2020), effective resource management is one of the most important responsibilities of school administrators. After public schools receive funding from the government, they must allocate those resources to fund programs and other school necessities. Therefore, managing human and capital resources effectively is a critically important responsibility. School administrators need to make the most of potentially scarce resources and align their resource management strategy with the mission and vision of the whole school community.

Likewise, the school administrator should have decision-making skills to make decisions that prioritize educational goals, teacher needs, and student outcomes; Budgeting skills: Create budgets and oversee spending to ensure the long-term sustainability of programs; Creativity: Be innovative in presenting and utilizing limited resources for maximum potential; and Administrative support: Serve as a support system for teachers, tutors, and specialists. Ensure the quality of education in the school, and cultivate a safe and positive learning environment (School of Education, 2020).

Effect of Knowledge, Attitudes, And Use of ICT on the School Performance based on Performance Improvement

Table 17 shows the effect of knowledge, attitudes, and use of ICT on school performance based on performance improvement.

Table 17. Effect of Knowledge, Attitudes, and Use of ICT on the School Performance as to Performance Improvement

Knowledge, Attitudes, and Use of ICT Vs Performance Improvement		Beta Coefficient	t-value	p-value	Interpretation
Knowledge on ICT	Cultural Aspect	0.364563	0.990468	0.338756	Not Significant
	Cognitive	-0.48279	-1.9086	0.077031	Not Significant
	Constructive	-0.01309	-0.06813	0.946642	Not Significant
	Communicative	-0.02731	-0.14628	0.885788	Not Significant
	Creative	-0.05136	-0.27061	0.790638	Not Significant
Attitudes Towards ICT	Emotional effect	0.045473	0.285404	0.779514	Not Significant
	Personal interest	0.122368	0.717199	0.485046	Not Significant
	Subjective Satisfaction	0.072824	0.44605	0.662382	Not Significant
Use of ICT	Personal Development	-0.09131	-0.41367	0.685383	Not Significant
	Professional Development	-0.05077	-0.23101	0.820646	Not Significant
	Other Educational Stakeholders Advocacy	0.042517	0.199292	0.8449	Not Significant
		0.104933	0.661782	0.518856	Not Significant

Initial appreciation of the data in Table 17 suggests that the teachers' ICT knowledge, attitudes, and use have no significant relationship with the school performance based on performance improvement variables (enrolment rate, promotion rate, and achievement rate) as manifested by a low coefficient value shown in each sub-variables indicated in the table. This result leads to the acceptance of the first hypothesis which stated that there is no significant relationship between the educators' ICT knowledge, attitudes, and use and the school performance based on the performance improvement variables which are the enrolment rate, promotion rate, and achievement rate.

This finding is generally acceptable because in understanding school performance based on enrolment rate, promotion rate, and achievement rate, it is unlikely that teachers' ICT knowledge, attitude, and use can be a factor that can influence its increase or decrease.

According to Khan et al. (2015), while there is a widespread belief that ICTs can and will empower teachers and learners, transforming teaching and learning processes from highly teacher-dominated to student-centered is not very well documented and proven. This transformation though expected to result in increased learning gains for students, creating and allowing for opportunities for learners to develop their creativity, problem-solving abilities, informational reasoning skills, communication skills, and other higher-order thinking skills" has not been widely spread across countries and continents. However, there are currently very limited, unequivocally compelling data to support this belief (Khan et al. 2015).

The authors also said that ICTs are rarely seen as central to the overall learning process. "Even in the most advanced schools, ICTs are generally not considered central to the teaching and learning". Unfortunately, many ICT in education initiatives in less developed countries (LDCs) seek (at least in their rhetoric) to place ICTs as central to teaching and learning which an enduring problem is: putting technology before education. "One of the enduring difficulties of technology use in education is that educational planners and technology advocates think of the technology first and then investigate the educational applications of this technology only later". This process only creates negative beliefs about the ICT benefits in education.

Effect of Teachers' ICT Knowledge, Attitudes, and Use on the School Performance based on SBM Assessment

Table 18 shows the effects of teachers' knowledge, attitudes, and use of ICT on the School Performance based on SBM Assessment.

Table 18. Effects of Teachers' ICT Knowledge, Attitudes, and Use on the School Performance based on SBM Assessment

Knowledge, Attitudes, and Use of ICT Vs SBM Assessment		Beta Coefficient	t-value	p-value	Verbal Interpretation
Knowledge on ICT	Cultural Aspect	0.37319	1.1907	0.253569	Not Significant
	Cognitive	-0.57154	-2.97779	0.009981	Significant
	Constructive	-0.12182	-0.74828	0.466675	Not Significant
	Communicative	-0.17431	-1.12804	0.278263	Not Significant
	Creative	-0.08636	-0.53069	0.603948	Not Significant
Attitudes Towards ICT	Emotional effect	-0.24432	-2.00895	0.06423	Not Significant
	Personal interest	-0.21041	-1.51221	0.152721	Not Significant
	Subjective Satisfaction	-0.20216	-1.53904	0.146086	Not Significant
Use of ICT	Personal Development	-0.11211	-0.59166	0.563508	Not Significant
	Professional Development	-0.08445	-0.44715	0.661609	Not Significant
	Other Educational Stakeholders	-0.1205	-0.66313	0.518016	Not Significant
	Advocacy	0.005932	0.042651	0.966582	Not Significant

A preliminary observation of the data in Table 18 highlights the fact that teachers' ICT knowledge, attitudes, and use have no significant relationship with the results of the SBM assessment except for one sub-variable which is under ICT knowledge, sub-variable - Cognitive aspect which earns a t – a value of -2.97779, p-value of 0..009981. This means that among all other ICT knowledge aspects one's basic understanding of ICT operation and processes including its tools and gadgets necessitate cognition to become a responsible consumer of technology. Despite this result, the second hypothesis is still accepted that there is no significant relationship between the teachers' ICT knowledge, attitude, and use and the SBM assessment variables

In this regard, Khan et al (2015) have the opinion that the positive impact
of ICT use in education has not been proven. "In general, and despite thousands of impact studies, the impact of ICT use on student achievement remains difficult to measure and open to much reasonable debate". The positive impact is more likely when linked to pedagogy. "It is believed that specific uses of ICT can have positive effects on student achievement when ICTs are used appropriately such as to complement a teacher's existing pedagogical philosophies.

Computer-Aided Instruction' has been seen to slightly "improve student
Performance on multiple-choice, standardized testing in some areas. Computer-Aided (Assisted) Instruction (CAI)", which generally refers to student Self-study tutorials on PCs, have been shown to slightly improve student test on

some reading and math skills, although whether such improvement correlates to real improvement in student learning is debatable.

Likewise, there is a need for clear goals. ICTs are seen to be less effective (ineffective) when their use goals are unclear. "While such a statement would appear to be self-evident, the specific goals for ICT use in education are, in practice, often only very broadly or rather loosely defined".

With the preceding explanation of Khan et al. (2015), it is clear that the aforementioned finding is expected because what is being measured is the relationship between teachers' ICT knowledge, attitudes, and use and school performance, where student achievement is only one aspect of school performance but not identified as one of the dependent variables in the study.

Summary of Findings

Based on the data presented, analyzed, and interpreted, the following were the findings:

The teachers' ICT knowledge based on the five sub-variables was interpreted as High. Teachers' ICT attitudes based on three aspects were interpreted as high, which means positive. Finally, teachers' ICT utilization based on four aspects was interpreted as high.

As regards school performance based on performance improvement consists of enrolment increase rate – high; promotion rate – high, and achievement rate – high. Likewise, school performance based on SBM assessment – all the 16 respondent schools were in the advanced stage of SBM practices.

Conclusions

Based on the findings and procedures, the study's conclusions were as follows. It was concluded that there is no significant relationship between the teachers' ICT knowledge, attitude, and use and school performance based on performance improvement. Likewise, it was concluded that there is no significant relationship between the teachers' ICT knowledge, attitude, and use and the school performance based on the SBM assessment.

Recommendations

Based on the findings and conclusions drawn, the following are hereby recommended:

1. The Department of Education, whether at the national, regional or division level remain steadfast in support of educating their teachers in the area of ICT to sustain the knowledge, and attitude of their teachers and further offer relevant training in the same area to keep their teachers updated in the current trends in ICT education.
2. Teachers and educators in ICT should not only limit the use of the technological tools and gadgets for personal and professional development but likewise, enhance the utilization and extend, but not limited to sharing among fellow educators but also learn how to use it for the benefit of students to improve their academic achievement.
3. Officials should always support all school initiatives involving updating and upgrading school facilities, especially those that concern the laboratories designed for ICT facilities.
4. Efforts should be increased in educating both the teachers and the students in using and applying ICT tools and gadgets to enhance students' academic achievement, which is directly affecting school performance.
5. Further research on this topic using other variables not included in this study to ascertain the positive contribution of ICT to school performance is encouraged.

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