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Status of ICT Education in the New Normal Education Setup

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Abstract: ***ICT is significant in delivering education this new normal education setup. However, teachers used to face-to-face classes have problems with the sudden changes in learning modality. This study then aims to know the profile of the elementary teachers in terms of availability of gadgets, pieces of training, integration and competence in ICT software and hardware, and the elementary teachers' encountered problems related to ICT during this pandemic. The study involved 146 elementary teachers for the quantitative and 20 for the qualitative part. Using mean and descriptive phenomenology, results showed availability but not all functional gadgets and four themes were derived.***

Keywords: ICT, new normal education, Covid-19 pandemic, modality of learning, TPACK

1. Background of the Study

ICT has been a trend that is being used in the delivery of quality education. It has always been a part of teaching for today's generation. Also, ICT in education can help individuals compete and adapt to the knowledge and information society by achieving the 21st-century skills that can enhance the skilled workforce and social mobility (Haji, 2017).

As Ahmed et al. (2020) and Ratheeswari (2018) claimed, these emerging technological developments improve every part of our lives and that computer users like teachers can access information anytime and anywhere. In support, Zarabanda (2019) posited a significant transformation to learning and socialization brought by the latest technology developments.

With this, teachers being the second parents of the learners must be well equipped with the competencies of the subjects they teach and the use and troubleshoot of technological tools. According to Sharma (2003), as quoted by Hussain et al. (2017), the utilization of ICT enhances better outcomes, instruction, and administration.

Goodwin and his co-writers (2015) conducted their study in Columbia, USA, regarding enhancing teachers' perception of the importance of ICT used in the classroom. They found that cognitive playfulness correlated significantly with the perceived importance of ICT use and the sense of ICT competence. Thus, teachers must be inclined to use immediate basic troubleshooting of ICT for better teaching outcomes.

Moreover, Karabayeva (2015), with his study in Almaty, Kazakhstan regarding teaching insights using technology in a second language classroom, found that the use of ICT in the educational process leads to the establishment of new ways of the teacher's activity based on the realization of cognitive and axiological self-rating of a teacher and a new system of axiological relations. The result shows that the use of ICT is a great help in the teaching process and the axiological aspect of a teacher.

However, most current teachers are computer migrants, and different age groups affect their attitudes towards ICT (Mwila, 2018; Role-Greenidge & Walcott (2020). Teachers need training and practical applications to use and apply immediate basic troubleshoot ICT effectively. Collectively, most of the researches reviewed revealed that lack of enough proper training, lack of suitable software and hardware, lack of knowledge and skills, lack of ICT leadership support, lacking time, and lack of self-efficacy are obstacles in the use of ICT of teachers (Mirzajani, Mahmud, Ayub & Luan, 2015; Alkahtani, 2017; Saxena, 2017; Alvarado et al., 2020). To add, Mogwe & Balotlegi (2020) conducted a study in Bostwana, while Singhavi and Basargeka (2019) conducted a study in India. Results reveal the same mentioned challenges regarding computer skills and ICT use.

Here in the Philippines, Revised Basic Education Curriculum (RBEC) that was implemented in 2002 included competencies of computer skills as one of its salient features. Learners both in elementary and high school will be taught computer skills (Camacho & Pintor, 2015), so teachers are expected to have the knowledge and skills before teaching them for an effective teaching-learning process. However, this implementation resulted in challenges in schools. Despite strategic actions, further investigation is needed for deeper understanding and application to school performance, including teachers' performance and curriculum (Daling, 2018).

Bonifacio (2013) claimed there is a limitation in the day-to-day use of ICT due to teachers' fear of technology despite the initiated several programs and projects on ICT use in education.

Lorenzo (2016) outlined that the high school public teachers of Tarlac are being challenged with computer hardware and software usage like "UPS failure, dysfunctional workstations, weak router signal, and bogged-down operating system (OS). Several Philippines researchers also claimed that training, proper re-echoing, and actual hands-on usage are some issues discovered (Dela Rosa, 2016; Lorenzo, 2016; Tomaro & Mutiarin, 2018;).

Teachers nowadays are being caught up with challenges in this "New Normal Education Modality" due to this pandemic brought by CoVid19 (Frenette, Frank & Deng, 2020; Gudmundsdottir & Hathaway, 2020; OECD, 2020). Moreover, schools used to the traditional mode of teaching face challenges on the adaptation of virtual learning (Trust &Whallen, 2020; Cheng, 2020; Graumann, 2020; Hafifah & Sulitsyo, 2020).

Cheng's (2020) study in China reveals that there are issues with the use of online resources, the digitalization of other resources, and even learners' self-home study ability. This is supported by the study of Graumann (2020) in Germany and Hafifah and Sulitsyo (2020) in Indonesia. To add, teachers may be ICT literate, yet they are not trained enough to be independent enough in ICT use (Trust & Whallen, 2020; Graumann, 2020) and need to be regularly updated (Hafifah & Sulitsyo, 2020).

Such issues are also evident in the Philippines (OECD, 2020). Akamai (2017) claimed that the Philippines is one of the countries with the lowest internet connectivity. There is a shortage of digital technology in the different public schools (OECD, 2020). Also, the study of Toquero (2020) showed that teachers need training for "online instruction, blended learning and distance learning."

Studies in the Philippines that were formerly mentioned are also being observed in Mankayan District of Benguet. It is evident at the elementary level as most schools are located in far-flung areas. It can be observed that many elementary schools are having problem with the scarcity of gadgets they could use for this new normal education setup. Also, there are teachers' comment regarding the incorporation of ICT applications they are not much familiar with. Further, teachers are being bothered with the problems they face with gadgets. Lastly, the researcher noticed that there are no studies yet in Mankayan related to ICY during this pandemic.

In relation to this, the Commission on Higher Education suggested the online platform and blended learning while the Department of Education encourages blended learning and modular learning (Tria, 2020). Furthermore, the Department of Education has commonly used modular learning with recorded materials to cater to learners with no internet connectivity and no gadgets (Dangle & Sumaoang, 2020). However, modular learning still requires the use, the skills to use, and the skills to troubleshoot ICT.

Indeed, there are plenty of studies regarding issues and challenges of teachers with ICT usage and troubleshooting. However, the update of ICT is fast. With this, the study would want to know the profiles of the teachers to be able to have a glimpse of the training they were able to join.

Also, this study would want to know the issues or challenges these teachers face with the use and immediate troubleshooting of ICT despite their training and interventions being given by the Department of Education.

There are indeed videos from YouTube that teachers could use. However, not all teachers are assigned to a place with a strong internet connection. Further, teachers do not always have data or internet connectivity to access YouTube anytime. This is supported by the study of Daling (2018) in Pakwan Integrated School of Surigao del Sur, where due to distance and internet inaccessibility, updates and submission of reports are being delayed. Lastly, the said intervention will be simplified to fit the current situations of the respondents.

In this way, teachers will improve traditional teaching and even increase productivity. It will also be integrated into their classroom activities for student learning (Tezci, 2011 as cited by Daling**,** 2018).

2. Theoretical Framework

Technological Pedagogical Content Knowledge (TPACK) was birthed from the PCK of Shulman (1987). Over time, there were different variations until the latest TPACK was coined and completely defined (Mishra & Koehler, 2006; Koehler and Mishra, 2008).

The theory explains that a teacher must be competent in the content of the subjects being taught. The teacher must also be knowledgeable on the most appropriate pedagogy to deliver the content. Then, the teacher must have the knowledge to use technology in actual tasks (Koehler, Mishra & Cain, 2013; Luhamya, Bakkabulindi, & Muyinda, 2017). Technological knowledge includes usage and immediate troubleshooting to avoid dead air during the delivery of lessons and to avoid the wasteful time when preparing. Most importantly, TPACK is the basis of effective teaching with technology.

The use of appropriate technology in teaching by teachers, who are competent in information technology, will provide a good learning outcome. Therefore, teacher pedagogy needs proper knowledge and experience with computer education, including computer-technology usage and learning, assessment, and professional productivity (Bhattacharjee & Deb, 2016).

This theory also supports the National Adoption and Implementation (DO 42, 2017) of the Philippine Professional Standards for Teachers (PPST). This aims to set teachers' expectations, proficiency, and uniform assessment. In addition, domain one of the PPST inculcated the integration and "positive use of ICT" to the curriculum. Here teachers' proficiency on ICT is important. With this, teachers are expected to have trainings, skills in ICT so they could apply and inculcate them in their teaching and other teacher-related work.

Statement of the problem

This study aims to know the profile of the elementary teachers in one District of Benguet at the same time their challenges they have experienced while using ICT during the suddent shift to new normal education.

This study further aims to answer the following specific questions:

1) What is the ICT profile of elementary school teachers in Mankayan in terms of:
   a) ICT facilities/gadgets,
   b) training of teachers in ICT,
   c) integration of ICT in the curriculum; and
   d) perceived competencies of teachers in ICT?
2) What are the issues/challenges related to ICT that the teachers are experiencing during this new normal education setup?

3. Design and Methodology

Research Design

This study employed Mixed-Method which are qualitative and quantitative methods. The survey method was used to address the first research question of the study where profiles of teachers were accounted. According to Check and Schutt (2012), as cited by Ponto (2015), Survey Method is defined as collecting information from a sample of individuals through their responses to questions.

Since this study was geared up to describe teachers' challenges and issues related to ICT, descriptive phenomenology was used to address the second research question. Groenewald (2004), Creswell (2006), and Faulkner and Faulkner (2009) distinguished the method as seeking to "explore and create a detailed description of the phenomenon, " and it is further used to deduce the lived experiences of the participants. This study is founded on the idea that the description of the challenges of ICT experiences while considering the profiles of the teachers could be addressed via the intervention crafted by the researcher.

Population and Locale of the Study

There were 146 elementary teachers interviewed inone of the District of Benguet. This sample size of respondents was determined using Slovin's formula calculator.

These 146 respondents were chosen using the accidental sampling method. The researcher used accidental or convenience sampling because only the respondents who were present during the time of floating were the ones who answered the survey questionnaire. Also, the researcher floated the survey questionnaire first to the schools with few teachers, especially in the far-flung areas with multi-grade schools. The floating stopped when the sample size was reached, but the researcher made sure that he gathered the data from all district schools. The said respondents gave their oral consents to answer the questionnaires before distributing it to them.

Data Gathering Tools

A survey questionnaire was used to gather data for the first research question. The said survey questionnaire was patterned from Dela Rosa (2016), Basargekar and Singhavi (2017), Mailiza and Fan (2019), and Willis, Fradale, Yeigh's (2018) research questionnaires. Since modifications are done in the questionnaire, the researcher sought experts to validate its content. As a result, two sets of experts validated it. IT experts validated the proper content and terminologies, and master teachers validated its relevance to teaching and teacher-related works for the consolidated validation. After the content validation, the questionnaire undergone a pilot test which was conducted in two nearby elementary schools from another District. Finally, Cronbach's Alpha was used to determine the validity of each item

Data Gathering Procedure

A request letter duly signed was given to the PSDS of Mankayan District for the approval to conduct the study. Next, another request letter was distributed to the participants through the elementary school heads after the school heads gave their consent to conduct the study in their respective schools. The approved letter of PSDS and the survey questionnaire were attached. A list of teachers' names containing their contact number and messenger per school was also requested from the PSDS which she gladly shared. Regarding retrieving data, the researcher collected the data either as hardcopy or softcopy, which could be sent via messenger or SMS.

Prior to the conduct of interviews, ethical consideration was observed. The research procedures were thoroughly checked and evaluated by professors knowledgeable and experienced in qualitative research, and this made sure that the research adhered to ethical considerations. The interview guide was also scrutinized to ensure that it is free from bias, offensive statements, and other factors which may be detrimental to the respondents. In terms of the conduct of the study, safety protocols were observed by the researcher.

From the evaluation, the researcher was able to identify responses that may need some clarifications or confirmation. They were also asked if they would be willing to continue answering open-ended questions regarding the challenges they have experienced regarding ICT usage and troubleshooting. Lived experiences and first hand observation of the respondents became the basis of the phenomenological situation they are in.

After gathering the data for research question number two, the responses were now treated. Finally, the result for question number two was crafted.

Treatment of Data

To analyze the data for research question 1, central tendency, particularly mean was used. To determine the minimum and maximum length of the 5-point Likert type scale, the range is calculated by (5-1=4) then divided by five as it is the greatest value of the scale (4÷5 = 0.80). Afterwards, number one which is the list value in the scale was added in order to identify the maximum of this cell.

For the second research question, transcription was employed in phone calls. First, the call was recorded for transcription. The recording was transcribed verbatim by replaying the recorded responses of the participants. Then, the researcher proceeded to horizontalization, as Moustaka calls it by highlighting the important statements for the research (Creswell, 2006). From this, the researcher grouped the significant statements where themes were derived. The themes were validated, clarifying them from the respondents. This is to make sure that there was no misinterpretation done on the data, and doing this revealed additional data from the participants (Simon & Goes, 2011).

4. Presentation, Analysis and Interpretation of Data

ICT profile of the elementary school teachers
This section discusses the ICT facilities and teachers' gadgets, training of teachers in ICT, integration of ICT in the curriculum, and competence of teachers in ICT.

4.1 ICT facilities/gadgets

School facilities are necessary to carry out the wholistic application of TPACK as supported by the RPMS of DepEd teachers (DO no.2 s.2015). Table 1 reflects the availability of school facilities and gadgets. Also, the table surmises that common facilities and gadgets necessary for a teacher this new normal are all available.

Table 1: Availability of School Facilities/ Gadgets

School Facilities/Gadgets	Ave	Description
Computer Laboratories	3	AD
AVR	2	AR
Cabled internet connection	2	AR
Portable/Pocket wi-fi	3	AD
Desktop/Laptop	4	ABF
Tablet/Smartphone	2	AR
Printer	5	ACF
Photocopy Machine/Duplo/Riso	3	AD
Projector	4	ABF
Smart TV/ Flat television Screen	3	AD
Camera	2	AR
Computer Speakers	3	AD
Computer Microphones	2	AR
Generator/UPS	2	AR
Clickers/Pointers	2	AR
Headphones/Headsets	2	AR
TOTAL	**2.58**	**AD**

Legend: AR= Available-Ruined
AD= Available-Defective
ABF= Available-Basically Functional
ACF= Available-Completely Functional

The result can be explained by regulating the government allocation of budget and purchase of materials. Schools cannot just request for another issuance of materials as there are limitations set by DepEd Order 8 s.2019. Regulation of MOOE on the cost of gadget must not exceed php15, 000.00. Lastly, schools cannot just dispose of, change, or repair facilities and gadgets easily (DO 36 s.2011).

In terms of school purchase as guided by DepEd Order 005 s.2020, the Annual Procurement Plan (APP) depends on the projected five-year plan of the school. Thus, the MOOE of the funding dictates the purchase of materials. If said gadgets are needed, it is not easy to purchase them. It is not further easy to avail for repair for all defective and ruined materials of schools if it is not included in the APP (Lorenzo, 2016).

Further, the result supports the claim of several studies (Robosa, et al., 2021, Buda, 2020; Singhavi & Basargekar, 2019; Muhammad, Tumburku, Muza & Gwandazu, 2019; Aivazidi & Michalakelis, 2021) where there is the inadequacy of supply of assets like few computers that may hinder the integration of digital technologies in the teaching process.

Despite this, the elementary teachers did their best to be resourceful and making sacrifices. Such claim is supported further by a study in Bulacan, Philippines (Robosa, et al., 2021) where teachers by strategizing their own coping mechanisms. Many of them bought personal laptops, speakers and printers with scanners. Some sought for donation from LGU and alumni. These are some means on how teachers survived the new normal set up as claimed by the respondents during the interview.

4.2 Training of Teachers in ICT

This part discusses the training of teachers in ICT software and hardware.

4.2.1 Training of Teachers on ICT Software

ICT training of teachers augment the skills of teachers when using technology. Also, it is a skill necessary for this 21st-century arena (Hockly, 2012 cited by Gusti Nur Hafifah & Sulistyo, 2020). Table 2 shows that teachers were able to have trainings on the different provided software applications. It could be observed that the highest level of training was average.
Based from table 2, Microsoft Office like word, PowerPoint, and excel are average. These are the usual ICT software parts being usually used by teachers. These are being used for school reports, graduate school reports, and even teaching. This could be why teachers focus on attending trainings, or asking for peer tutors on the mentioned software. Downloading materials and messaging apps are also some basic software for them to focus on. These are also helpful in creating lessons and in other teacher-related works.

Table 2: Level of Training of Teachers on ICT Software

Software Training on:	Ave	Description
Microsoft Word	2.9	ALT
Microsoft PowerPoint Presentation	2.9	ALT
Spreadsheet/Microsoft Excel	2.6	ALT
Desktop Publishing	2.2	LLT
Photo Editing	1.9	LLT
Video Editing	1.9	LLT
Google Apps	2.2	LLT
Video Conference Apps	2	LLT
LMS	1.6	NT
Emails/ Messaging Apps	2.6	ALT
Digital/Computer File Management	2.2	LLT
Downloading/Installing/Uninstalling	2.7	ALT
Downloading/Uploading Resources	2.6	ALT
Computer Virus/Troubleshooting	1.6	NT
TOTAL:	**2.28**	**LLT**

Legend:
LLT: Low Level of Training
ALT: Average Level of Training
NT: No Training

This result then still supports the study (Moralista & Oducado, 2020) conducted in the Philippines that teachers either lack trainings or hands-on training. Moreover, there are trainings in ICT that are with DepEd memoranda.

However, attendees are chosen. Not all teachers are given the privilege to join the said ICT trainings. Days allocated for training are even limited. Despite this, teachers tried to cope through peer teaching and watching Youtube tutorials. Their actions support peer teaching (OECD, 2020) and continuous training (Neofotistos & Karavakou, 2018) as means to improve the ICT skills of the teachers.

4.2.2 Trainings of Teachers on ICT Hardware

The result showed that almost all the respondents have no related training in the mentioned hardware servicing. This result supports the statement of several researchers (Aivazidi & Michalakelis, 2021; Moralista & Oducado, 2020; Gordillo, Pernas & Barra, 2019; Tomaro & Mutiarin, 2018) that lack of teacher training in ICT is a "special cause for concern. "

Table 3: Level of Trainings of Teachers on ICT Hardware

Hardware Trainings on:	Ave	Description
Computer Assembly/disassembly	1.3	No Training
Troubleshoot/Repair TV Screen/monitor	1.2	No Training
Troubleshoot/ Repair of Printers	1.4	No Training
Troubleshoot/ Repair of Photocopy Machine	1.2	No Training
Troubleshoot/ Repair of Projector	1.1	No Training
Troubleshoot/ Repair of Laptop	1.3	No Training
Troubleshoot/ Repair of AVR/UPS	1.1	No Training
Troubleshoot/ Repair of Cellphone	1.2	No Training
Troubleshoot/ Repair of Headsets/phones	1.1	No Training
Troubleshoot/ Repair of Speaker	1.2	No Training
TOTAL:	**1.21**	**No Training**

During the interview, the respondents claim that their job description is to teach, and repairing is not part of it. The result seconded the claims that there is still a strong resistance or attitudinal obstacle to some introduced changes in ICT (Aivazidi & Michalakelis, 2021; Moralista & Oducado, 2020). This is one reason why many teachers had no interest in joining any ICT Hardware training. It must be noted that printers are directly related to teachers' work.

Regardless of the result, table 4 reflects the highest average that is 1.4 and is related to troubleshooting or repairing printers. This is followed by troubleshooting or repair of laptops/desktops and computer assembly and disassembly. The said hardware is indeed important for the production of learning materials and reports. Since printers and laptops are directly related to the respondents' work, there are still 1.5 and 1.3 respondents who participated in related training. This implies that teachers tend to focus on what is directly and currently useful for them.

This result further implies that trainings on ICT hardware was least prioritized in any trainings conducted and attended by the elementary school teachers.

Yet to cope with the situation, teachers sought help from other stakeholders to help them in giving first hand troubleshoot in the hardware ICT problems. They also sought the help of technicians to repair their gadgets. They also request help from ICT experts from the Division Office however this could delay current workload.

4.3 Integration of ICT in the curriculum

This part discusses the integration of ICT software and hardware in the curriculum. Integration to curriculum includes the preparation of lesson, lesson proper, after lesson and even to any other teacher related works.

4.3.1 Integration of ICT software

Several studies showed a low rate of use of ICT (Mogwe & Balotlegi, 2020; Syahid, Isrokatun & Nugraha, 2019). The result of this study supports the mentioned studies. The use or the integration of ICT software showed that the respondents rarely use them or integrate them in their work, as supported by the general average of 2.01.

Microsoft Word tops the different software in table 4 with an average of 3.0, sometimes integrated. This is followed by a PowerPoint presentation, and spreadsheet/excel with 2.8, sometimes integrated, and 2.3, rarely integrated, respectively.

Microsoft Word is usually used for making modules, letters, and reports. Power point presentation is also being used for lessons, meetings, or online or limited face-to-face and webinars. Finally, excel is being used by teachers to record learners' scores.

Besides this, downloading and uploading resources and applications have the same average of 2.2, which is described as rarely integrated. Lesson plans, modules, activity sheets, and other learning materials could be downloaded or uploaded. Thus, teachers still integrate ICT software.

It could also be observed that messaging apps/e-mails with an average of 2.1 is described to be rarely integrated. However, messenger and other messaging apps are the means for teachers to reach their fellow teachers, school heads, learners, and even parents during this pandemic. This corroborates with the idea of OECD (2020) on strengthening communication and stronger partnership with parents.

Table 4: Integration of ICT Software

Software Uses/ Integrates:	**Ave**	**Descrip.**
Microsoft Word	3	SI
PowerPoint Presentation	2.8	SI
Spreadsheet/ Excel	2.3	SI
Desktop Publishing	2	RI
Photo Editing	1.7	NI
Video Editing	1.6	NI
Google Apps	1.8	RI
Video Conferencing	1.6	NI
Learning Management System	1.5	NI
E-mails/ Messaging apps	2.1	RI
Digital/ Computer File Management	1.9	RI
Downloading, In/unstalling	2.2	RI
Down/uploading Resources	2.2	RI
Computer virus Troubleshoot	1.6	NI
TOTAL:	**2.01**	**RI**

Legend:
RI: Rarely Integrated
SI: Sometimes Integrated
NI: Never Integrated

The rest of the mentioned Softwares are not being used or integrated by the respondents. Despite not having integrated software, having scores of more than 1.0 would mean that all the mentioned softwares are familiar with the respondents and have experience with each software. The limited usage or integration could be affected by the respondents' training (Buda, 2020; Moralista & Oducado, 2020; Tomaro & Mutiarin, 2018) and low level of self-efficacy (Coban & Atasoy, 2019).

This study then implies that teachers integrate what is familiar and common to them. Further, this result means that it is directly related to the result of the teachers training. There is a rippling effect where there is low training, there is low integration.

4.3.2 Integrates ICT Hardware

Use or integration of ICT Hardware to the curriculum resulted in never being integrated or used in this study. This supports the research of Mogwe and Balotlegi (2020) regarding the low rate of ICT utilization. Despite this, it could be observed that both skills on troubleshooting printers and skill on troubleshooting cellular phones are both ranking first with an average of 1.5. The result is consistent with the result on training related to ICT hardware. The overall result claims that the respondents do not have training supporting the result in table 5, which is never integrated or used.

This study implies that teachers need to improve their skills ICT hardware through trainings. By this, they could have at least the basic skill so they could be able to integrate it in their work as a teacher.

Table 5: Integration of ICT Hardware

Hardware Uses/ Integrates:	Ave	Descrip
Skill on Computer Assembly and Disassembly	1.4	NI
Skill on troubleshooting TV Screen/ Monitor	1.3	NI
Skill on troubleshooting Printer/s	1.5	NI
Skill on troubleshooting Photocopy Machine	1.3	NI
Skill on troubleshooting Projector	1.3	NI
Skill on troubleshooting Laptop/Desktop	1.4	NI
Skill on troubleshooting AVR/UPS	1.2	NI
Skill on troubleshooting Cellular Phones	1.5	NI
Skill on troubleshooting Headphones/Headsets	1.3	NI
TOTAL:	**1.4**	**NI**

Legend:
NI: Never Integrated
RI: Rarely Integrated

The results then support the urge of Gunduz (2017) and Moralista and Oducado (2020), where "teachers must improve themselves against developing technology" and through computer training (Rolle-Greenidge & Walcott, 2020). The higher the ICT literacy rate, the higher the use of ICT in the teaching-learning process, as Gusti Nur Hafifah and Sulistyo (2020) said. This could happen when self-efficacy in ICT usage is improved (Coban & Atasoy, 2019). Yet, the fact cannot be denied that teachers are resourceful. They sought help from other individuals who have the knowledge to help them when problems are met using ICT.

4.4 Perceived Competence of Teachers in ICT

This part discusses the perceived competence of teachers in ICT software and hardware. Perceived competence here is related to the actual experiences and application of the respondents to the skill areas of ICT.

4.4.1 Perceived Competence of Teachers in ICT Software

The competence of teachers in ICT Software is under low level of competence with a total average of 2.34. This means that there is a need to enhance the competence of the teachers in the said ICT software. This study corroborates a latest study for Primary school teachers of Greece (Aivazidi & Michalakelis, 2021) where many are not ICT literate. Another study in the Philippines (Moralista & Oducado, 2020) focusing on faculty members of a State College even claim that they do no have training on e-learning. Further, the researchers strongly suggest for continued support and training. From this, it could be seen that such a problem is the with elementary teachers and even in faculty in higher education level. Thus, several studies (OECD, 2020; Gordillo, Pernas & Barra, 2019; Willis, Lynch, Fradale & Yeigh, 2018) posited that efforts of teachers must focus on the development of their expertise in the use of ICT in their teaching.

Table 6: Perceived Competence of Teachers in ICT Software

Application Software	Ave	Desrip
Microsoft Word	3	ALC
Power point Presentation	3	ALC
Spreadsheet/ Excel	2.5	LLC
Desktop Publishing	2.2	LLC
Photo Editing	1.9	LLC
Video Editing	1.8	LLC
Google Apps	2.2	LLC
Video Conferencing	2	LLC
Learning Management System (LMS)	1.7	NLC
E-mails and other Messaging Apps	2.8	ALC
Digital/Computer File Management	2.3	LLC
Download, Install and Uninstall Applications	2.9	ALC
Download/ Upload Curriculum Resources	2.7	ALC
Troubleshoot/Manage Computer Virus/ Malwares	1.8	LLC
TOTAL:	2.34	LLC

Legend:
LLC: Low Level of Competence
ALC: Average Level of Competence

It could also be observed that softwares that are almost being used daily by teachers resulted in an average level of competence. For example, Microsoft Word and PowerPoint Presentation both have an average of 3.0. These two applications were followed by downloads, install and uninstall applications, e-mails, and other messaging apps; and download or upload of curriculum resources with averages of 2.9, 2.8 and 2.7.

4.4.2 Perceived Competence of Teachers in ICT Hardware

Teachers are not competent in terms of ICT hardware servicing, as evidently shown in table 7, with a total average of 1.4. Also, this result implies that no training is directly related to non-competence. This supports the study of Mogwe and Balotlegi (2020) and a Philippine study

(Moralista & Oducado, 2020), where the respondents lack basic ICT skills. This result then further asserts the need for hands-on training that will improve the ICT skills of teachers as participants.

Despite this result, the consistency of scores could still be observed in the table compared to previous tables related to ICT hardware servicing. For example, printers ranked 1 with an average of 1.6. It was followed by computer assembly, and disassembly with an average of 1.5 Laptop/desktop and cellular phones ranked as 3.5, having both an average of 1.4.

Table 7: Perceived Competence of Teachers in ICT Hardware

Hardware Servicing	Ave	Descrip
Computer Assembly and Disassembly	1.5	NLC
Troubleshoot TV Screen/ Monitor	1.3	NLC
Troubleshoot Printer/s	1.6	NLC
Troubleshoot Photocopy Machine	1.3	NLC
Troubleshoot Projector	1.3	NLC
Troubleshoot Laptop/Desktop	1.4	NLC
Troubleshoot AVR/UPS	1.2	NLC
Troubleshoot Cellular Phones	1.4	NLC
Troubleshoot Headphones/Headsets	1.3	NLC
Troubleshoot Speakers	1.3	NLC
TOTAL:	**1.4**	**NLC**

Legend: NLC: No Level of Competence
LLC: Low Level of Competence
ALC: Average Level of Competence

The low result contrasts with Velickovic and Stosic (2016) statement, where 21st-century educators must be competent in terms of profession, pedagogy, and method. Pedagogy and method include the use of ICT. Thus, these respondents then need to enhance their skills in ICT.

4.5 Issues/Challenges Related to ICT Experienced by the

Teacher related challenges

Teachers were asked about the difficulties they encountered with the software and hardware applications. In terms of Microsoft office, it could be observed that most of them are using the basic functions of Microsoft Word. They are also using excel just for grades and PowerPoint presentations but not often.

To support this claim, respondents 3, 8, 9, 10, and 16 claimed that they only use Microsoft Word. Respondents 19 and 20 even said they have a problem with pagination and referencing. For example, respondent 19 said, *"Hindi ko alam kung paano ang pagination"* [I do no knot know how to apply pagination.] Respondent 18 also claimed, "I know only basic encoding. "

With this, Microsoft Word, which teachers often use, is not fully mastered by the respondents. In support, respondents 4, 5, 6, 10, 17, and 18 orally accepted that they have "little knowledge" "basic knowledge" on Microsoft Office. On the other hand, respondents 1 and 7 claim to use Microsoft Word and PowerPoint presentations.

However, some respondents have experiences with the use of excel, PowerPoint presentation, and even publisher. Respondents 5 and 14 claim to have little knowledge of excel and publisher use. Respondent 17 claims to have little knowledge of Microsoft Office's use except for the publisher. Respondent 17 said *"Saanak nga agus-usar ti publisher. "* [I do not use publisher.]

Respondent 20 also admitted that she only uses excel to input grades ("Man-us-usarak si excel ya power point ngem din idownload ko ay excel et wat ko ienter din grades. "). From these several responses, Microsoft Office is not yet fully mastered by the respondents.

In terms of photo editing and video editing, all the twenty respondents claimed to either have no knowledge, no training, or little training. In addition, respondents 1 and 4 tried using them but claimed to have forgotten them. Finally, respondents 5, 7, and 8 even mentioned the "Law of Use and Disuse. "

According to the twenty respondents, internet connection is the culprit in terms of Google apps, emails, and educational apps. In addition to this, respondents 5, 9, 15, and 20 claim that they have little knowledge and rarely use email.

The respondents also have difficulties troubleshooting computers or laptops as all the twenty respondents do not have basic knowledge of this. Respondent 15 claims to have no issue with this but does not know about installing a photocopy machine for installing printers. The rest of the respondents have difficulties installing printers or photocopy machines.

The respondents have a common response to all hardware mentioned in terms of ICT hardware. They claimed to have no training or knowledge about them. These results imply that the respondents profile during the survey confirms to their oral responses. The respondents lack the training so they do not have the competence to use it or integrate it I their work. This claim supports previous studies where lack of computer competence and training (Ahmed, Quasem & Pawar, 2020; Haji, Molouayonge & Park, 2017; Mogwe & Balotlegi, 2020), lack of basic understanding of ICT functions (Alkahtani, 2017; Caluza, Funcion, Verecio & Quisumbing, 2017; Rolle-Greenidge & Walcott, 2020) and lack of teacher participation (Alvarado, Aragon & Bretones, 2020; Singhavi & Basargekar, 2019). There is a need for advanced ICT for individual respondents who claim to have known the use of specific apps (Basargekar &Singhavi, 2017; Gudmundsdottir & Hathaway, 2020).

ICT-related challenges

The challenges observed are lack of ICT materials, malfunctioning materials, internet connectivity, and compatibility. For lack of ICT materials, the respondents claim that their schools lack gadgets necessary in their work. Respondent 9 said that there is 1 one laptop or two laptops issued per school; however the laptops are only used for the ICT coordinator and/or school heads. The laptop is sometimes used during the lay-outing of the local paper, thus, the school paper adviser only.

Respondents 2, 7, 8, and 11 also claimed that there is scarcity of printers in their schools. On one hand, respondents 15, 16, 1 and 5 claimed that they have

individual printers in school but the said printers malfunction always especially when they reproduce their modules. The result supports some studies (Alvarado, Aragon & Bretones, 2020; Mirzajani, Mahmud, Ayub & Luan, 2015; Mogwe & Balotlegi, 2020; Rolle-Greenidge & Walcott, 2020) that ICT materials are either lacking or unequally allocated.

For downloading and installing, respondents still blame internet connection as the main reason they have a lower rate on their usage. Nevertheless, it is notable that the virus is also a challenge when downloading or installing, as witnessed by respondents 14, 16, 17, 19, and 20. There are respondents who claimed climb the mountains or look for good spots to download the modules or to send reports which are already due. Also, some respondents claimed that they do not have internet or Wi-Fi connections at school. Rather, they pay for their own data and they've bought their own personal Wi-Fi gadgets. In fact, a study (Rotas & Cahapay, 2020; Nadiahan & Cabauatan Jr., 2021) in the Philippines support unstable internet connectivity and electric power interruptions.

It is also noticeable that respondents have many comments for printer and projector. Paper jam, resetting printer, ink flow, and refilling of ink are the common issues met by the respondents. Some of the responses are the following:

Respondent 6: "Printers need reset a lot as it is the main tool being utilized brought about by the pandemic. There are only a few teachers who know how to reset, and they learned that through the internet. "
Respondent 12: ". . . man-ip-ipit si papel, manfofold, man-ug-iged. "
Respondent 19: "maraming mantsang ink sa bond paper, man-ug-uged, folds the paper. "
Respondent 20: "not enough ink, don't know how to put ink, pulls much bond papers. "

For the projector, incompatibility and screen adjustment are the challenges met by the respondents. First, due to incompatibility, the respondents do not use the projector. Then, eventually, the respondents claim to have forgotten the proper operation of the projector. Despite this, respondent 20 claimed that she has no difficulty using the projector. This result implies then that such disadvantages are not only on the part of the respondents. ICT has also its disadvantage. This is the reason why ICT gadgets needed to be updated and repaired to be refreshed. This is where allocation of budget should be reconsidered.

Stakeholder-related challenges. Stakeholder here includes the learners, the parents, and the Government. According to the respondents, some learners do not know how to use ICT properly. Kids do not know how to use their gadgets properly. Some tend to use it to just watch or play. This was according to respondents 3, 4, 6 and 11. At young age, the learners do not know yet the reliable sources they will open when searching said respondent 7. Also, inadequate learning resources which is also evident with higher education level learners here in the Philippines is a problem met (Rotas & Cahapay, 2020).

This supports the study of Alkahti (2017). Also, a teacher said that not all learners' parents have the same economic status supporting some studies (OECD, 2020; Frenette, Frank & Deng, 2020) and a Philippine study (Agaton & Cueto, 2021). In addition, there are parents with no android phones, and there are more technical limitations (Frenette, Frank & Deng, 2020; Agaton & Cueto, 2021). There are even homes without televisions, so the learners cannot watch DepEd TV programs. Lastly, the respondent said that it is not easy to buy school ICT facilities and equipment depending on the MOOE and budget.

School Leader Counterpart related Challenges
School leader here includes the school heads and/or school principals. Principals and school heads are significant entities in the allocation of MOOE per school. They are also the ones who lead the schools in the conduct of INSETs (In service trainings) and the budgetary needs for the said trainings. Further, they play a significant role in planning and adopting in this new normal setup.

Respondents 4, 6, and 8 claimed that there is a need to consult their school heads/principals when requesting for ICT materials or repair. There are times that budget is not enough to accommodate all the requests of the teachers said respondent 9. This is why school heads/principals help in prioritizing the gadget that needed more attention as perceived by them. Thus, school leaders are also facing the challenges in addressing the needs of its teachers especially when related to ICT.

In terms of training, school heads/principals are the ones who often join trainings. However, firsthand information is not the same with the second hand information. Oftentimes, what was not understood cannot be properly disseminated. Thus, this is also a challenge observed in the leadership of the school heads/principals as claimed by respondents who does not want to be named in this study.

This result implies then that school leaders need to enhance the planning of budget allocation and other school related matters, good initiators and good decision-makers. This claim is highly supported with the result of Francisco and Nuqui's (2020) study on situational leadership in Bulacan, Philippines during this pandemic. Further, Aytac's study (2020) stated that school administrators accepted skills of technology leadership and crisis management to be crucial during this pandemic.

5. Conclusions

It is noticeable that schools have available facilities and gadgets, but not all are functional and are sufficient enough to be used by the teachers, and the profile of the respondents shows that they have poor training in software and no training at all in hardware which confirms to the very low level of competence to software and no competence in hardware affecting their use or integration with very low level of integration to software and no integration to hardware. Such result implies the need to reconsider budget allocation and conduct of a well-planned training and directly catering to teachers and not ICT coordinators or school leaders only.

Teacher related challenges include lack of training, no training, and law of use and disuse, ICT related challenges, which includes physical troubles, internet connectivity, incompatibility, and Stakeholder related challenges, which include learners' and parents' ICT literacy, parents' economic status, and allocation of fund by the government, and school leader counterpart related challenges are the four themes derived from the interview. This implies that the detailed oral responses of the respondents confirm to the survey.

6. Future Scope

The result could also be an avenue for administration to increase the allocated fund for ICT training and facilities' repair and procurement. Since the study focuses on elementary teachers only, a study could also be conducted at the high school level since high school have computer subjects. Since the study used the survey method and descriptive phenomenology, there are still limitations. Thus, it is also suitable for future researchers to use other quantitative and qualitative methods.

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