DIGITAL CAPABILITIES AND TEACHERS' PREPAREDNESS IN THE NEW NORMAL

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ABSTRACT

Teaching with technology is made much more difficult considering the challenges newer technologies pose to teachers. Teachers are aware that teaching is indeed a complex activity that calls for the synthesis of a wide variety of specialized knowledge in TPACK represents in determining the preparedness of educators to successfully use technology to teach in the new normal and for the approaching fourth industrial revolution. This study ascertained the teachers' perception towards their digital capabilities and their preparedness to teach in the new normal. The descriptive research design was used with researchers-made questionnaire as a primary tool for collecting data. Respondents were eighty-four (84) public school secondary teachers of Sto. Tomas South District in the Division of Batangas Province. Statistical tools used to test data were mean, standard deviation, and Pearson Product Moment Correlation and Coefficient at .01 level of significance. The respondents perceived their digital capabilities as Much Capable while they evaluated their preparedness in the new normal in terms of the TPACK framework as Prepared. More importantly, it was found that there is significant relationship between the digital capabilities of teachers and their preparedness in the new normal. The results provide information about what has and has not been studied in a variety of literary works, as well as their relevance to the wider perspective of digital integration in schools. Digital competencies were highlighted that serve as contributing factors in assessing the preparedness of teachers to teach in this digital era.

Keywords: Digital Capabilities, New Normal, TPACK, Fourth Industrial Revolution, Preparedness

INTRODUCTION

Digital advancement keeps up its pace from year to year in reshaping our society for new routines, new approaches to collaboratively work with one another, and helps to develop into better people in which these changes yield to a range of opportunities and difficulties across every industry (Evans, 2019). Under the treat of the COVID-19 pandemic that causes a series of unprecedented global transformations in the health, social and economic life of people globally (UNDP, 2020), all schools throughout the world resulted in disclosure wherein more than 1.2 billion learners are out of the classroom concept and teaching is undertaken remotely with ease of digital platforms as a defensive tool (World Economic Forum, 2020). The Philippine Department of Education adopted varied learning delivery modalities including, but not restricted to face-to-face, distance learning, blended learning, and homeschooling (DepEd Order No. 12, s. 2020). This transition to the new

normal made every learning institution, especially teachers, to rethink of how successful they could provide quality education and outcome-based teaching to learners maximizing the use of technology (Basilaia and Kvavadze, 2020).

In response to these challenges brought by the new normal, teachers have gone a lot of webinars and trainings to cope up with the new learning environment and to assist learners as well as parents in the remote setup. Aside from it, teachers and learners have given assistance by the national and local government unit with technology and gadgets to transform into distance learning. Despite the appealing visions of the government to strengthen and widen opportunities for Filipinos to take advantage of what technology may offer (RA No. 10844, 2016), nevertheless, teachers' ICT skills continue to be a key component of educational progress. These can be viewed as the collection of competencies that educators need to have in order to use technological resources more seamlessly in their day-to-day work (Suárez-Rodríguez et al., 2012).

Parallel to this, there is an arising need for teachers to be prepared for a digital environment due to the approaching fourth industrial revolution (FIRe or 4IR). Accordingly, FIRe is perceived to blur boundaries between physical, digital, and biological spheres (World Economic Forum, 2020). Evolving in a fast-tracked rate (Elliott, 2017), 4IR is becoming more difficult to anticipate, presenting both difficulties and opportunities, especially to education experts to rethink the teaching-learning process. Thus, teachers' digital capabilities are to be established.

Based on the substantial deficit in technological and pedagogical competence of the teachers, the study (Cruz and Diaz, 2016) reported an alarming difference in teacher's skills about 46.31% of instructors displayed an unfavorable profile regarding ICT training in the classroom, which helped them made decisions regarding initial training policy in advancing one's professional career of teachers. Nevertheless, another study (Cantú-Ballesteros et al., 2017) identified most teachers with more ICT knowledge and flexibility. Yet, there is still the presence of a group of teachers who utilize ICT at beginner and no use levels, indicating that there are still challenges in incorporating and utilizing ICT in their professional practices. Those studies have confirmed the existence of an essential gap towards teacher training to be able to work, learn, and live in a digital society.

Furthermore, teachers' knowledge is a critical ingredient for successful integration of technology. As described by Koehler and Mishra (2008), a structure of effective teaching is Technology Pedagogical and Content Knowledge (TPACK). They stated that knowledge, pedagogy, and technology are the three essential components at the heart of excellent teaching with technology. Recent studies relating to teacher knowledge suggest that TPACK presents a dynamic framework for characterizing educators' knowledge necessary for developing, putting into practice, and assessing curriculum and teaching with technology (Niess, 2011). Hence, teaching with technology successfully in this new normal, teachers should be prepared enough with equipped knowledge in the aspects of pedagogy, content, and technology.

The study areas in Sto. Tomas South District implemented two distance learning which are modular (print) distance learning (MDL) and online distance learning (ODL) and participated in the limited face-to-face teaching. New teaching modalities persuaded teachers to improve their skills in maximizing technology usage in today's education, especially those educators teaching ODL classes.

OBJECTIVES OF THE STUDY

This study is geared to find the relationship between digital capabilities acquired by teachers and relate it to their preparedness in teaching secondary students in the new normal. Correspondingly, it sought to 1) perceive teachers' digital capabilities in terms of: ICT proficiency, information, media, and data literacy, digital creation, problem-solving, and innovation, digital communication, collaboration, and participation, digital learning and personal/professional development; and digital identity and wellbeing; 2) evaluate teachers' preparedness in the new normal education in terms of the TPACK framework as to: pedagogical knowledge, content knowledge, technological knowledge, pedagogical content knowledge, technological pedagogical

knowledge, technological content knowledge, and technology pedagogical content knowledge; and 3) determine the correlation of digital capabilities of teachers and their preparedness in the new normal.

METHODOLOGY

The research employed descriptive and correlational research methods that attempted to describe and analyze the perception of teachers towards their digital capabilities and preparedness in the new normal education.

The research was completed in Sto. Tomas South District, one of the two districts in Sto. Tomas City, Batangas in the Philippines. It has three (3) public secondary schools consisting of two hundred fifty-five (255) public school teachers. The study made use of a technique called stratified random sampling, which divides the population into smaller groupings called strata with shared attributes or characteristics. This sampling technique was employed in this study to ensure that the respondents were not clustered at the same school. A total of 84 respondents were selected among secondary teachers. consisting of thirteen (13) teachers from San Jose National High School, fifteen (15) teachers from Sta. Clara Integrated National High School, and fifty-six (56) teachers from San Pedro National High School comprising the 33.33% of the total population in each school.

The main instrument used for data gathering is a survey questionnaire. The questionnaire was divided into two separate sections – (1) the first section emphasized the digital capabilities of teachers which is adopted to the JISC model specifically designed for teachers to further education and skills (Griffiths, 2017), and (2) the second part focused on the teachers' preparedness in the new normal using the TPACK framework which was modified based on the research of Schmidt et al. (2009). The statements were presented as a checklist with a 5-point Likert scale.

Validation of the survey questionnaire was done by a principal, a head teacher, a master teacher, a teacher III, and an English teacher to assess the content's relevance. Following validation, the research tools had a run-through and passed the reliability testing using Cronbach Alpha. With the district supervisor and school principals' consent, the actual survey was carried out. It was administered via google forms. For some having difficulty to access the online survey form, they were given a printed copies of the survey and their answers have been collected the following week. The obtained data was treated with the utmost secrecy. The data was evaluated using the following statistical techniques: mean and standard deviations, and Pearson-Product Moment Correlation Coefficient.

RESULTS AND DISCUSSION

1. Teachers' perception of their digital capabilities

Table 1
Teachers' Digital Capabilities

Indicators	Mean	SD	Interpretation
ICT Proficiency	3.84	0.68	Much Capable
Information, Media, and Data Literacy	3.95	0.64	Much Capable
Digital Creation, Problem-solving, and Innovation	3.76	0.74	Much Capable
Digital Communication, Collaboration, and Participation	3.91	0.69	Much Capable
Digital Learning and Personal/Professional Development	3.88	0.66	Much Capable
Digital Identity and Wellbeing	3.89	0.67	Much Capable
Overall	**3.87**	**0.68**	**Much Capable**

Table 1 shows the teachers' digital capabilities having an overall mean of 3.87 as perceived by the respondents with a verbal interpretation of Much Capable. All variables resulted to Much Capable.

The table reveals that Information, Media, and Data Literacy got the highest mean of 3.95 with an interpretation of Much Capable. The results imply that teachers were highly knowledgeable concerning the components of the necessary information, media, and data in pursuing the quality of education with the integration of ICT tools. It can also be witnessed that teachers can process the

factual information needed for the teaching and learning process while following the standardized intellectual property and copyright policy. Thus, teachers' capabilities in media, information, and data literacy were evident and noble.

Likewise, Shonfeld et al. (2021) highlighted the importance of information literacy in teachers' performance and perceived self-efficacy, necessary for efficient lesson delivery. It means that when teachers are capable of processing necessary information with the aid of technological devices and are also aware of information processing standards, they will perform well. Also, Chen and Xu (2016) prove that teachers' information literacy significantly contributes to learners' holistic growth and development.

On the other hand, the Digital Creation, Problem-solving, and Innovation got the lowest mean of 3.76 interpreted as Much Capable. Though it was declared the lowest among all indicators, it can still be inferred that teacher were capable of research in an online community using e-forms and other electronic devices. In addition, it can be gleaned that teachers can manipulate various software to conduct mathematical computations in terms of statistics, regression, etc. Also, it can be observed that teachers were adept at utilizing digital tools to create differentiated instruction and studying materials. Hence, according on the computed findings, educators could facilitate numerous digital tools concerning creativity, research and problem solving, and innovation.

In line with this, Nalyvaiko and Ronzhes (2021) elaborated on teachers' digital creativity in formulating comprehensive and relevant teaching and learning materials for learners. Also, it has been highlighted that teachers' ability to utilize digital tools to produce quality instructional materials will help the students acquire substantial knowledge. Additionally, Esteve-Mon et al. (2020) explained the significance of teachers' digital research and problem-solving capabilities in helping the learners accumulate the necessary competencies within this ideology. Also, it has been highlighted the essential aspect of integrating technological devices in honing the higher thinking skills of the learners.

The results implicate that based on the factors identified by the study; it can be observed that teachers could utilize numerous technological devices to improve 21st-century education. Also, it can be gleaned that teachers were knowledgeable about the benefits, features, and applications of these technological devices to the contemporary teaching and learning processes. It can also be highlighted those teachers efficiently adapt to the rampant and emerging existences of the various digital tools for the teaching and learning process. Thus, teachers are embracing the current situation of the educational system as we undergo various development and innovation.

Furthermore, Garzón-Artacho et al. (2021) highlighted the needs of the teachers' digital capabilities to improve educational system of 21st-century teaching and learning. To adapt to the rampant modernization of the educational system, teachers must possess the necessary skills and competencies to deliver effective teaching and learning process. In line with this, teachers must become computer literate and highly skilled in manipulating various technological devices to meet the learners' needs. The enhanced mechanical educator skill keeps on being a test to be tended to by the instructive local area. Henceforth, the way lies in empowering educators to build their computerized information, be that as it may, most importantly, to coordinate arising mechanical assets, and not so much for advanced practice in the study hall to fall into a shallow utilization of these assets.

Additionally, Perifanou et al. (2021) explained the need for the teachers to have adequate technical and digital capabilities to adapt to the sudden shift of the educational system from a conventional viewpoint to a technology-based classroom. The COVID-19 emergency uncovered the need for educators to have advanced abilities to instruct on the web successfully. Educators ought to have the option to take advantage of, purpose and apply computerized advancements in every instructive movement. Besides, all educators should prepare to use and take advantage of the computerized advancements in their expert exercises.

2. Teachers' evaluation of their preparedness in the new normal using TPACK framework

Table 2
Teachers' Preparedness in the New Normal

Indicators	Mean	SD	Interpretation
Pedagogical Knowledge (PK)	4.03	0.72	Prepared
Content Knowledge (CK)	4.11	0.65	Prepared
Technological Knowledge (TK)	3.91	0.77	Prepared
Pedagogical Content Knowledge (PCK)	4.02	0.73	Prepared
Technological Pedagogical Knowledge (TPK)	3.98	0.72	Prepared
Technological Content Knowledge (TCK)	3.82	0.71	Prepared
Technological Pedagogical Content Knowledge (TPCK)	3.94	0.78	Prepared
Overall	**3.97**	**0.73**	**Prepared**

However, the Technological Content Knowledge got the lowest mean of 3.82 interpreted as Prepared. Though it was the lowest, it can still be inferred that teacher have adequate knowledge about the benefits of technological devices in academic research and an understanding of the professional field. Also, it can be gleaned that teachers have shown promising qualities in their perception of the role of technological devices in emphasizing the subject matter. Thus, teachers perceived their technological content knowledge as adept and equipped. Information and Communications Technology (ICT) considerably changed community, including in schooling. The majority of schools are currently consolidating ICT training system (Hero, 2020). Drill and extrapolate is essential in the educator's readiness and acknowledgment of ICT joining in instructing to successfully coordinate ICT in training. Accepting the use of ICT in instruction demonstrates that teachers in the twenty-first century are not afraid of innovations and shifting trends.

The results display that teachers were prepared in Technological Pedagogical Content Knowledge (TPACK) aspects. It can be gleaned that teachers were fundamentally equipped with substantial knowledge and skills aligned with their professions. Teachers can manage various teaching and learning tools to emphasize quality education. Also, teachers have seen adept in utilizing multiple technological devices as a mechanism in the setting of instruction and learning. Moreover, teachers entail the required qualities of a 21st-century teacher with creativity, innovation, and critical thinking.

Educators' sensations of readiness are one significant mark of the degree to which they are ready to address the difficulties that portray their calling. Teachers' sensations of enthusiasm may likewise give knowledge to the degree to which open doors for kept learning set them up to educate (Webb et al., 2021). For instance, do educators who recently partaken in conventional expert improvement exercises or joint exercises feel more ready for different homeroom prerequisites than their companions? By and large, educators who, as of late, participated in conventional expert improvement felt quite a bit improved ready than their peers for new learning environment. In addition, the amount of time educators spent participating in professional development activities significantly increased their perception of readiness. Teachers who participated in collaborative exercises also felt better prepared than their peers to fulfill the need in the new learning environment (Webb et al., 2021).

Conversely, being taught didn't necessarily, in all cases, yield comparable advantages; for instance, educators who were taught felt less ready than their friends to keep everything under control and discipline in the homeroom. Indeed, how educators collaborate, draw in, survey, and speak with students changed as a result of the transition to a virtual learning environment. Earlier than the COVID-19 outbreak, teachers worldwide were well-known for their capacity to adjust and conquer any heap of conditions that would emerge in schools. The epidemic ended up being the same as educators were strong and versatile to guarantee education prosperity.

3. Significant difference of teachers' digital capabilities and their preparedness in the new normal

As seen in Table 3, there is a significant relationship between teachers' digital capabilities and preparedness. It can be implied from the respective r-values of each indicator ranging from .434** as the lowest to .851** as the highest. It can

be gleaned that teachers' ICT proficiency, data, information and media literacy, digital creation, scholarship, innovation, communication, participation, collaboration, learning, identity, well-being, and personal/professional development affect teachers' preparedness for TPACK. Also, it can be inferred that teachers' digital capabilities serve as a contributing factor in teachers' preparedness.

Table 3
Test of Correlation between Digital Capabilities and Teachers' Preparedness

TEACHERS' DIGITAL CAPABILITIES	TEACHERS' PREPAREDNESS						
	PK	CK	TK	PCK	TPK	TCK	TPCK
ICT Proficiency	.564**	.479**	.761**	.619**	.692**	.669**	.736**
Information, Media, and Data Literacy							
Information Literacy	.727**	.631**	.715**	.758**	.790**	.743**	.775**
Media Literacy	.600**	.550**	.644**	.653**	.680**	.665**	.744**
Data Literacy	.668**	.570**	.687**	.762**	.734**	.734**	.764**
Digital Creation, Problem-solving, and Innovation							
Digital Creation	.650**	.494**	.784**	.689**	.768**	.687**	.807**
Digital Problem Solving	.666**	.529**	.778**	.692**	.717**	.766**	.735**
Digital Innovation	.594**	.434**	.715**	.631**	.710**	.623**	.696**
Digital Communication, Collaboration, and Participation							
Digital Communication	.697**	.577**	.750**	.731**	.703**	.721**	.765**
Digital Collaboration	.667**	.540**	.719**	.653**	.681**	.712**	.741**
Digital Participation	.622**	.549**	.713**	.675**	.687**	.688**	.717**
Digital Learning and Personal/Professional Development							
Digital Learning and CPD	.623**	.554**	.740**	.638**	.742**	.704**	.699**
Personal/ Professional Development	.731**	.626**	.802**	.770**	.790**	.805**	.851**
Digital Identity and Wellbeing							
Digital Identity	.728**	.620**	.801**	.734**	.782**	.798**	.803**
Digital Wellbeing	.647**	.563**	.657**	.664**	.648**	.707**	.719**

**. Correlation is significant at the 0.01 level (2-tailed).

The results imply that teachers must have the enumerated digital capabilities to become Technological Pedagogical Content Knowledge ready in 21st-century education. Teachers must become skilled in utilizing numerous technological devices to provide quality education. As a result, the teacher must utilize the contemporary form of lesson delivery demanded by the new normal and the approaching fourth industrial revolution. Also, the results indicate that having acquired the following digital capabilities, it would better improve teachers teaching capabilities to deliver practical lessons to the learners. Thus, the results depict the significance of teachers' role to enhance their capabilities and preparedness to teach in this new normal as a factor in becoming the best teaching aid. The role of the teacher in bridging the knowledge gaps among learners serves as a substantial factor for a higher learning acquisition. The results remind us about teachers' fundamental contribution in the process of instruction and learning and that digital tools introduced in this new normal for the improvement of instruction support teachers in imparting substantial learning experiences to learners.

The educators should be skillful and proficient at conferring the information they could provide for their students, being the central figure in education (Burroughs et al., 2019). Excellent instructing is an exceptionally private way. Effective teaching is worried about the student personally and his overall endeavors. The educator should perceive individual contrasts among their learners and alter their course to fit the students' needs. It is a fact that as teachers, we take on important and fundamental roles in the school system. Teachers are assumed of as the education's light. Teachers depend on countless obligations, from the exceptionally easy to the most intricate and highly testing position. Regularly, teachers experience them as a component of the work or mission. Teachers understand that they must be motivated to take care of their responsibilities competently and spur students in the class. At the point when students are motivated, then learning will effectively happen.

Nonetheless, persuading students to learn requires a challenging job for the instructor (Burroughs et al., 2019). It entails using a variety of techniques or displaying styles to gauge students' preferences. Most significantly, the educator must acquire sufficient knowledge of the educational program's objectives and procedures, as well as teaching skills, teaching interests, and standards. Several learners seem to generally be enthusiastic in learning. However, many people demand or assume that their teachers or instructors will inspire, challenge, or move them. Effective learning in the classroom depends on the teacher's ability to maintain the interest brought by the learners to the course in the initial place. Several learners are motivated by getting others' approval or by overcoming obstacles. Teachers need to be

aware of the diversity and complexity in the classroom, including the nationalities, orientations, cultures, linguistic abilities, and hobbies. Making children participate in class and learn is, to a great extent, an impact in this large number of regions. Homeroom variety exists among students and their friends and is exacerbated by language and social contrasts among educators and students.

CONCLUSIONS

According to the research findings, it can be inferred that:

1. The perception of the respondents on their digital capabilities were all Much Capable.
2. Teachers perceived their preparedness in the new normal using TPACK framework as all Prepared.
3. There is a significant relationship between the digital capabilities of teachers and their preparedness in the new normal. As a result, the hypothesis stating that there is no significant relationship between teachers' digital capabilities and their preparedness in the new normal is not sustained.

RECOMMENDATIONS

The following suggestions are made in light of the conclusions drawn from the data.

1. The school's division and district may contribute to strengthening teachers in digitally rich environments so that they can instruct, collaborate on curriculum or teaching teams, create learning opportunities, assist, and facilitate learning, and take an active role in peer learning by making effective use of the resources that are currently available online.
2. The school administrators together with its stakeholders may be provided by this study a clear guidance about which digital skills are required and may help the institution to equip teachers and staff with the tools and resources they require to enhance digital capabilities at the local or institutional level.
3. It might be a great help if those concern teachers and administrators will create a balance between technology and pedagogy which assist educators in transitioning their courses into digital manner.
4. Further researchers may use other forms of qualitative data to evaluate the viewpoint of teachers towards their digital capabilities and preparedness in the new normal instruction.

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