Teachers' Competencies in Educational Technology Integration on Instructional Methodologies in the New Normal

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Abstract

The study explores the novice teachers’ competencies in integrating education technology in lesson preparation. The paper is anchored in the professional standards for teachers, specifically, the domains that focus on the positive use of ICT. The study utilized a mixed method research design. The selected 132 novice teachers answered the online survey questionnaire introduced using Google forms and 10 participants answered an online interview. They were chosen through purposive sampling technique. The data were collected using Blended Teaching Readiness survey questionnaire and semi-structured questionnaire, for the quantitative phase and qualitative phase, respectively. The analysis of data progressed through statistical software and thematic coding. The study revealed that the self-evaluation of novice teachers on their abilities is very competent. The qualitative data exposed the different struggles in teacher preparations in instructional methodologies. Hence, novice teachers must undergo additional professional development on the integration of technology in instructional designing, assessment and managing online learning environments. Teacher education institutions must intensify in equipping teachers with knowledge on integrating technology in lesson preparations. The government must provide resources for the teachers that will help them prepare instructional materials such as ICT rooms, technicians for technical support, laptops, and internet connectivity. Enough time will also help teachers to design better instructional materials for their class. The current
situation of the education system of our country needs a more significant push and optimistic view that we will be able to make progressive change. Teachers should think of personal initiative, welcome the possible ways to enhance the current system, and become part of reforms to help our country uplift and face challenges and endeavors.

Keywords: educational technology, instructional methodologies, professional development and teachers’ professional standards

Introduction

Various reforms are already put into place worldwide, so teachers are well equipped and can adapt to the possible changes brought by different anticipated situations like the Covid-19 pandemic (Adoniou & Gallagher, 2017). Over the years, ensuring proficient teachers and excellence in classroom preparation has become a primary global concern. Previous research reports that teacher standards can help in promoting quality education (Ingvarson, 2012). High-quality teachers are essential for the future growth of national educational systems and economic vitality (Panda, 2019). The deteriorating quality of education in the country prompted policymakers and researchers to investigate the possible reasons why there is a decline in student achievement (Santoro et al., 2012). Programme for International Student Assessment (PISA) 2018 results revealed that teachers are having difficulties in designing performance tasks and authentic problem-solving activities. Inadequate knowledge of student-centered teaching strategy falls to misinterpretation of the term “facilitating learning” (Organisation for Economic Co-operation and Development [OECD], 2019).

The quality of education helps in ensuring the quality of life and economic progress. It equips the people with knowledge and skills and it boosts human resources. Scientific investigations strengthen technology, industrialization, and innovations. Undeniably, education plays a vital role in the different sectors of our society. In line with the goal of promoting quality education, it is also imperative to upgrade the quality of teachers we have. Professional standards, training, and advancement are all related to the quality and professionalism of teachers. As a result, teacher preparation is critical in both training and setting the groundwork for their professional growth (Panda, 2019). In the current situation, the pandemic made a significant impact on the education sector. The challenge in the education system shows the limitations of the teachers and the capacity of the country to support learners from different stages of life.

Teacher professional standards are seen as a critical component for delivering commendable quality instruction to 21st-century learners. Quality education should be measured against global standards. Notably, teachers take responsibility for their own personal and professional development. In 2017, the Philippine education system fully
adopted and implemented the new set of professional standards for teachers known as the Philippine Professional Standards for Teachers or PPST (Department Order No. 42 s. 2017). This framework is anchored in the National Competency-Based Teacher Standards (NCBTS) institutionalized through CMO No. 52, s. 2001 and DOES No. 32, s. 2009. The guidelines enclosed the list of parameters or standards for evaluating the success of new and seasoned teachers.

The PPST categorizes the skills and competencies that quality teachers must have to cope with changing global frameworks, specifically to address the needs of the teachers in the use of technology. There are two indicators that focus mainly on upskilling and equipping teachers in using Information and Communications Technology (ICT) in teacher preparation. In the first domain (Domain 1: Content Knowledge and Pedagogy), the indicator includes the different ways on how teachers can incorporate the positive use of ICT in facilitating effective teaching and learning processes involving various applications and software. Another metric based on 4.5.1 of Domain 4: Curriculum and Planning indicate that teachers must be able to demonstrate skills in the acquisition, creation, and use of a range of teaching and learning tools, including ICT, to meet the learning objectives. The following indicators highlight the significant impact of 21st Century skills sets, which cover the application of technology in lesson preparation (Research Center for Teacher Quality, 2021). These standards have implications for preparing and supporting teachers in their early years (Luft et al., 2015; Roberto & Madrigal, 2018).

The sudden shift in learning modalities impacted both Higher Education Institutions and basic education. The implementation of the online learning system requires teachers to integrate educational technology in the preparation of lessons, choosing teaching strategies, designing learning assessment and evaluation, and improving class management (Juanda et al., 2021). In delivering content using online platforms, it is required to migrate the lesson, assessment tools, and audio-visual materials in an acceptable format needed by a software application. The efficient use of technology in lesson delivery also signifies the success of the teaching and learning process (Gepila Jr., 2020). Designing and creating online content is not easy. It requires expertise and a deep understanding of how to curate the digital content available on the internet (Mugot et al., 2019; Ramos et al., 2020). Furthermore, Yeban (2020) clearly stated that "teachers should re-orient their practice toward designing learning tasks and episodes that challenge students to explore discovery and application of existing knowledge and pursue solutions to real-life challenges that learners experience and will experience. The new role of the teacher is to guide the learners on available resources students can use and learn from".

Teacher preparation has been regarded as a paradoxical panacea for improving school curriculum and teaching and learning while at the same time being exposed to critiques that call into question its efficacy in training high-quality teachers for the 21st century (Flores, 2016). Refining teaching and learning requires investment in high-quality
collective teacher education with comprehensive, proven expertise and training (Darling-Hammond, 2013). The emerging situation opens the possibilities that teachers need to be assessed to determine the current condition in the field. The study aims to know how digital literacy helps teachers incorporate online materials in crafting effective teaching strategies. The possible outcomes of this study might assist the department of education in preparing professional programs to improve teachers’ skills and teaching practices further. The study results might help determine the possible ways to improve the teacher preparation programs of teacher education institutions.

**Purpose of the research**

The study’s primary goal is to evaluate the new teachers’ competencies in integrating educational technology into instructional methodologies in the new normal. Explicitly, the study wants to: 1) explore the advantages of having foundational knowledge on digital literacy and ways of integrating online materials in their teaching strategy; 2) determine the use of technology in facilitating student and teacher interactions or student to student interactions; 3) identify the aspect of the planning of Instructional Methods and Strategies that teachers find most struggling in integrating technology; 4) discuss the different challenges of Integrating Technology in planning for Evaluation and Assessment, and 5) determine the difficulties in Managing Blended Environments and Managing Blended Routines in an online learning environment.

**Methodology**

The new Philippine teacher standards are holistically developing and achieving new milestones. National reforms in the teaching and learning process are usually content of previous research in the country. The current study utilized an explanatory mixed method research design to investigate teachers’ competencies on Educational Technology Integration on Instructional Methodologies.

Creswell and Clark (2011) explained that explanatory research does not provide definitive evidence. Still, it does assist us in better understanding the issue. The word "explanatory analysis” means that the study aims to clarify rather than simply identify the investigated phenomenon (Subedi, 2016). Professional standards for teachers can give us many topics to explore. However, this study opts to focus only on the two domains that cover the application of educational technology in teacher preparation. According to Creswell and Clark (2011), explanatory research design includes gathering quantitative data first, then qualitative data to further justify or expand on the quantitative findings. The rationale for this approach is that quantitative data and results provide a broad picture of the research problem; further study, mainly qualitative data collection, is required to refine or explain a bigger perspective of the research. The research method is divided into six stages, outlined in the following processes:
Figure 1  
**Summary of the research processes**

Note: The model was adopted from the works of Subedi (2016). Explanatory sequential mixed method design as the third research community of knowledge claim. American Journal of Educational Research, 4(7), 570-577.

**Participants of the Study**

One hundred thirty-two novice teachers answered the online survey questionnaire introduced using Google forms and 10 participants answered an online interview. The respondents were selected using a purposive sampling method. In the general education literature, there is no consensus on the exact concept of when teachers stop being novices in terms of time teaching; it can range from one year to five years in various research papers. Farrell (2012) defines new teachers with teaching experiences of less than five years. Other authors mentioned less than five years (Kim & Roth, 2011), two years teaching experience or...
less (Haynes, 2011), and three to five years (Salleh & Tan, 2013). For the purpose of the study the sole criterion set was participants should be novice teachers with three to five years in service.

Table 1
Profile of the Respondents

<table>
<thead>
<tr>
<th>Code</th>
<th>Age</th>
<th>Rank</th>
<th>Years in Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP1</td>
<td>20</td>
<td>Teacher 1</td>
<td>1</td>
</tr>
<tr>
<td>TP2</td>
<td>21</td>
<td>Teacher 1</td>
<td>2</td>
</tr>
<tr>
<td>TP3</td>
<td>20</td>
<td>Teacher 1</td>
<td>1</td>
</tr>
<tr>
<td>TP4</td>
<td>20</td>
<td>Teacher 1</td>
<td>1</td>
</tr>
<tr>
<td>TP5</td>
<td>24</td>
<td>Teacher 1</td>
<td>3</td>
</tr>
<tr>
<td>TP6</td>
<td>21</td>
<td>Teacher 1</td>
<td>2</td>
</tr>
<tr>
<td>TP7</td>
<td>22</td>
<td>Teacher 1</td>
<td>2</td>
</tr>
<tr>
<td>TP8</td>
<td>23</td>
<td>Teacher 1</td>
<td>4</td>
</tr>
<tr>
<td>TP9</td>
<td>23</td>
<td>Teacher 1</td>
<td>3</td>
</tr>
<tr>
<td>TP10</td>
<td>25</td>
<td>Teacher 1</td>
<td>5</td>
</tr>
</tbody>
</table>

Research Instruments

Survey Questionnaire

The instrument used for the study was Blended Teaching Readiness Instrument that was developed by Graham et al. (2018). The quantitative datasets were analyzed using descriptive statistics with the help of statistical software. Blended Teaching Readiness Instrument consists of 65 Likert-item Process Model questionnaires consisting of five areas, each area containing two to four sub-domains. The first area focuses on digital literacy/citizenship subjects from their previous courses. The questions entail different aspects of online teaching. The second area focuses on incorporating online materials in teaching strategy and lesson planning. The third area focuses on integrating technology in the planning of Instructional Methods and Strategies. The fourth area deals with the planning of Evaluation and Assessment and transforming into online content. The last area focuses on the planning of Managing Blended Environments and Managing Blended Routines. The questionnaire used in the study went through two complete stages of instrument development and validation and peer review. The Cronbach alphas for each construct is reported as equivalent to (> .85). In the current study, the instrument was tested for its reliability in the Philippine setting and obtained 0.989 using Cronbach’s Alpha coefficient.
Interview

A semi-structured questionnaire consisting of seven questions were introduced further to explore their experiences and struggles in the current scenario. The questionnaire includes their struggles in integrating and implementing online learning and the use of ICT in instructions. The following questions were used: (1) What makes it challenging to choose specific software and online tools to prepare lessons? (2) Did you have digital literacy/citizenship subjects during college days? Where did you encounter the term digital literacy/citizenship? (3) During your student teaching days, how did you incorporate online materials in your teaching strategy? In what aspect of planning your lesson do you find yourself most struggling? Why? (4) In what aspect of planning your review do you find yourself most struggling in integrating technology? Why? (5) In what aspect of your Instructional Methods and Strategies planning do you find yourself most struggling in integrating technology? Why? (6) In what aspect of your Evaluation and Assessment planning do you find yourself most struggling in integrating technology? Why? and (7) In what aspect of planning your Managing Blended Environments and Managing Blended Routines do you find yourself most struggling? Why?

Data analysis

The Blended Teaching Readiness Instrument's mean scores were determined using statistical tools. The same software calculated the Cronbach's Alpha coefficient for the instrument's internal accuracy. The process ensured that the instrument adopted in the study was applicable in the current research setting. The responses of the participants from the online interview were gathered and coded.

Creswell (2012) explained that coding helps form explanations and broad themes through fragmenting and classifying text. The responses gathered from the interview were processed to come up with specific themes. By separating the different problems identified during manual coding, the organization of data to produce discrete files became more convenient (Miles et al., 2018).

Ethical consideration

Before the survey and interview, a consent letter was obtained from the participants. The study's intention was explicitly discussed, and every prospective participant was guaranteed that their responses were strictly tacted and treated with absolute secrecy. Accordingly, no identity of the participants was revealed in the results. The names of the teacher-participants were replaced with code names such as teacher-participant 1 (TP1). All involvement was voluntary, and it was discussed that anyone could withdraw from the interview with no consequence. No one was forced or compensated for their involvement in this research.
Results and Discussion

Teachers’ knowledge in digital literacy

Table 2 shows the responses of teachers concerning their background on digital literacy. It shows that the teachers are very competent in terms of dispositions, with a mean result of 3.41 and digital citizenship with a mean score of 3.49, while only competent in technical literacy with a mean result of 3.11.

Table 2

| Fundamentals of Education Technology Integration |
|-------------------------------|----------|---------|
| Indicators                    | Mean     | SD      | Description      |
| Technical Literacy            | 3.11     | 0.68    | Competent        |
| Digital Citizenship           | 3.29     | 0.67    | Very Competent   |
| Dispositions                  | 3.41     | 0.63    | Very Competent   |

The teacher participants were asked about the common tools found in an online learning environment. The curation of materials for effective teaching was emphasized, like the content of a lesson, quizzes, and activity sheets. Even though new teachers already encounter digital literacy during their course work, they still have some difficulties using online platforms. Some of their statements are the following:

“It is about providing interactive content that catches the student’s participation. The new normal poses a significant challenge for the educational sector; that is why a new environment is needed to increase the participation rate of the students.” (TP3)

“I am most concerned with interactive educational software because it does not provide specific instructions on operating and how the general software works.” (TP4)

“I must say that I also have a struggle when it comes to dealing with educational software like Google classrooms, simulations, and even with using Microsoft excel. Since I am still in the intermediate level of digital literacy, I sometimes find it hard to cope with.” (TP5)

“In a progressive curriculum, it is a must to use content-specific educational software to engage the students in the learning process. However, as a new teacher in the field, I admit that I am not good enough to use it. I am still struggling with some aspects of educational software, like the selection of educational games. In selecting, I should know how to relate it to the lesson. I also need to consider the skills and intelligence of every learner.” (TP7)
Dispositions are also essential because they measure and show the teachers' way of decision making. The choice of instructional materials to be used was one of the most challenging decisions because it can affect the students' understanding and learning experiences and security of students in using online platforms and honesty in answering assessment. It is also important to consider the students' awareness in the proper citing of references to avoid plagiarism. The integration of different life skills that promote collaboration, creativity, and critical thinking will also help students create meaningful learning experiences. Here are some of the statements of the new teachers regarding the problems they encountered in incorporating factual content using technology:

"I incorporate teaching materials in doing quizzes and reports. The most struggling part of lesson planning is in the assessment part because it cannot justify whether the students learned or not." (TP1)

"It is about providing teaching materials that work best for them. The fact that some teaching strategies work best on the others while some may not. That is one thing to consider in online education." (TP3)

"I usually use online materials when I do assessments and evaluations. I usually struggle in the making of assessments and evaluations since I do a lot of them online." (TP4)

"In lesson planning, I have struggled in incorporating online resources into learning activities. However, through simulations, classrooms, and other online platforms, it was easy for me to adapt to the new learning environment. Also, in doing such, I need to be constantly flexible and maintain a good relationship and communication with the students." (TP5)

"During my student teaching days, I was already using a laptop for PowerPoint presentations. I was able to incorporate that because that is what I am doing right now. With the help of some sources, I could use some educational videos for my daily lessons. The hardest part of teaching was the planning of activities. It is not easy to think of an engaging activity because it is an online class. We cannot play many games; there are limited games we can play, and because of that, students may get bored." (TP6)

Most of the participants affirm that they took subjects related to educational technology when they were still in college. Some of the proofs are the following responses:

"I am delighted that I do have digital literacy. We do have subjects about computers during our college days, aside from that our teachers help us be digital literate. Most of our projects and assignments have digital involvement, and that helps me today." (TP6)

"Yes, we have a subject about digital literacy. If I am not mistaken, our subjects were Educational Technology 1 and 2, where our instructors taught us about using technology in a classroom setting and managing it correctly. Because
nowadays, learners are living with the technological world. So it is more fun and engaging if technology is utilized in the teaching and learning process.” (TP7)

“We do not have such digital literacy/citizenship subjects during college, but I only had Educational Technology. However, I can say that these two have the same aspect synonymously that deals with technology-based literacy and are considered as the tool for students to enhance and develop their capability in using ICT Integration.” (TP9)

However, there are responses that state that they do not have ICT in their degree program. Perhaps, the respondents are just not familiar with digital literacy because one of the subjects/courses that they mentioned was Education Technology.

Teacher preparation programs must provide the opportunity to preservice teachers to build their Technological pedagogical content knowledge (TPACK) to integrate technology into their teaching efficiently and other lesson preparation using the concept of digital literacy (Fahrurozi et al., 2019; Shively & Palilonis, 2018; Canbazoglu Bilici et al., 2016; Cacho, 2014). Moreover, the Teacher Education Council (TEC) emphasized that online experiences are inevitable (Thomas, 2011) during disasters or pandemics.

### Designing Teacher Instructional Methodologies and Approaches

Table 3 shows that teachers are very competent in designing and facilitating their classes. The teachers are very competent in designing instructional methodologies and approaches with a mean score of 3.37. Teachers show a higher degree of competence in facilitating student-content interaction with a mean result of 3.46 than personalizing instructions.

**Table 3**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Mean</th>
<th>SD</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personalizing Instruction</td>
<td>3.37</td>
<td>0.65</td>
<td>Very Competent</td>
</tr>
<tr>
<td>Facilitating Student-Student Interaction</td>
<td>3.41</td>
<td>0.63</td>
<td>Very Competent</td>
</tr>
<tr>
<td>Facilitating Teacher-Student Interaction</td>
<td>3.45</td>
<td>0.64</td>
<td>Very Competent</td>
</tr>
<tr>
<td>Facilitating Student-Content Interaction</td>
<td>3.46</td>
<td>0.63</td>
<td>Very Competent</td>
</tr>
</tbody>
</table>

Teachers need to develop a range of teaching strategies to promote positive learning communities, professional goals, and successful teaching dispositions. Wilson and Kittleson (2011) argue that teachers should be trained to be facilitators that contribute to comprehension rather than being a science practitioner of scientific knowledge. It should be composed of a community of learners that promote sharing of knowledge. Teachers and students engage in identifying and analyzing issues, determining phenomena, inventing and checking hypotheses, and assessing the relevance and validity of their data and the
appropriateness of their conclusions. These are some of the positive responses of teachers regarding their preparation:

"During assessments, I have made it successfully using Google forms and such, but I have to spend much time exploring such software." (TP5)

"As I mentioned in number 1 (b), I do not have a problem with the LMS I am using because I could post quizzes, exams, reviewers, and more. I use the LMS to review my students." (TP6)

"Students are diverse learners, of course, so it is not easy to think and provide the best thing for them if I know that there are some cases that some of the students find it difficult to understand while others are finding it as an easy task. So, I should think better and apply the Multiple Intelligence by Howard Gardner when dealing with assessing my students like how they can perform and showcase their forte." (TP9)

Blended learning requires skill in putting online and non-digital content into lesson plans. Here are some responses that show difficulty in planning.

"Assessment is genuinely challenging. I struggled in almost every aspect of it." (TP1)

"Integrating Technology in assessment making is very challenging since it requires thorough planning and is very time-consuming." (TP4)

"In terms of assessment, we have some difficulty integrating Technology in the effectiveness of our plans." (TP8)

"It is hard to assess the students' learning online because of their different levels of digital expertise and other factors that contribute to low academic performance." (TP10)

**Instructional Methods and Strategies Preparation**

In designing instructional methods and strategies with technology integration, it can be gleaned from the result (Table 4) that the participants struggle in planning blended activities with a mean result of 3.38 over planning blended assessments of 3.43.

Table 4  
*Activity Preparation and Planning*

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Mean</th>
<th>SD</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Blended Activities</td>
<td>3.38</td>
<td>0.62</td>
<td>Very Competent</td>
</tr>
<tr>
<td>Planning Blended Assessments</td>
<td>3.43</td>
<td>0.60</td>
<td>Very Competent</td>
</tr>
</tbody>
</table>
Based on their responses during the interview, only one response shows positive feedback on preparation. That participant states that:

"It was then easy to do the instructions since I have consistently communicated with the students." (TP5)

Here are other responses that show their struggles in planning activities and assessment.

"I struggled most of the time choosing the best instructional method and strategy because I am confused whether it will be effective." (TP1)

"On what appropriate app to be used." (TP2)

"Incorporating a blended environment and making learning fun makes it challenging to provide Instructional Methods and Strategies for students. In this online teaching-learning process, it is hard to plump for the strategies that cater to the needs of the students." (TP3)

"I struggle in delivering instruction since I am not yet very adept at handling online platforms and software." (TP4)

"I am struggling in planning interactive activities and games. I am teaching grade school students, and we all know that they have a short attention span. That is why I need to have interactive and engaging activities, and that is the problem. Activities and games are limited during an online class." (TP6)

"We are struggling in the part where our methods and strategies could help increase our students' academic performance." (TP8)

"I struggle when I badly learn the given task before applying it to the whole class. Sometimes the provided task (like watching the video first, studying the preparation of using a projector needed for integrating technology) is challenging yet quickly learned. When I used to see the effectiveness of my work before letting the students apply." (TP9)

"Incorporating a blended environment and making learning fun makes it challenging to provide Instructional Methods and Strategies for students. In this online teaching-learning process, it is hard to plump for the strategies that cater to the needs of the students." (TP10)

Teacher planning and reflection which also requires a series of practice and revision are important in improving the work of a newly emerging teacher. We are expecting that teachers can gain experience on how to plan and implement teaching activities.
Integrating technology in planning for Evaluation and Assessment

In integrating technology in evaluation and assessment, Table 5 below shows that participants are very competent in preparing for evaluating and reflecting with a mean result of 3.47 over implementing blended assessment with a mean result of 3.45. In particular, this questionnaire area presents details in crafting performance-based assessments using an online platform, rubrics for scoring, evaluating effectiveness based on students' scores, providing a different avenue in feedback and collaboration.

Table 5
Integrating EduTEch in Assessment & Evaluation

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Mean</th>
<th>SD</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementing Blended Assessment</td>
<td>3.45</td>
<td>0.63</td>
<td>Very Competent</td>
</tr>
<tr>
<td>Evaluating and Reflecting</td>
<td>3.47</td>
<td>0.59</td>
<td>Very Competent</td>
</tr>
</tbody>
</table>

In some aspects, technology is helpful. Teachers always look at the possible ways to improve their instruction to avoid dishonesty and unethical behavior in an online assessment.

"In terms of assessing, the only problem I think was the students' honesty while answering the assessments. We are not sure if they are the ones who answered it." (TP6)

"In evaluation, we did not encounter such difficulties." (TP8)

"I might say that some students are still struggling in using technology, but I make sure that they will not be left behind in my class, so the remedy I usually used was to give them the basic etiquette and steps on how to deal with technology. I find it challenging to choose the specific lesson for the evaluation and assessment that should be more appropriate to the topic discussion." (TP9)

The results of the interview reveal that there are still some difficulties in designing assessment strategies. Since most schools in the Philippines are not practicing blended learning modalities, the pandemic caused a big adjustment on the part of the teachers. The following statements below:

"Considering that I have been used to the traditional way of assessing and evaluating, the most struggling part was choosing the best kind of assessment and evaluation. There might be a lot. However, it must be the most appropriate one." (TP1)

"One thing to contemplate is the late submission of the activities of the students. Evaluation and assessment are substantial, yet barriers to online
education such as connection problems, domestic noise, and other factors that affect the student's performance pose the gaps of compelling online education." (TP3)

"It has always been hard to explore and learn more about the technology I have been using." (TP5)

**Supervision of Blended Environments and Routines**

Generally, the participants are very competent in managing blended environments. However, they struggle in managing blended learning routines over blended learning environments, with the former having a mean result of 3.49 over the latter with 3.48. An online learning environment also requires proper management. It requires maintenance and organization, such as electronic modules, links, and digital resources. Clear and specific procedures should be available to help students in easy navigation of the learning environment. The student support system is also in enormous demand in an online learning modality.

**Table 6**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Mean</th>
<th>SD</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blended Learning Environment</td>
<td>3.48</td>
<td>0.59</td>
<td>Very Competent</td>
</tr>
<tr>
<td>Blended Learning Routines</td>
<td>3.49</td>
<td>0.57</td>
<td>Very Competent</td>
</tr>
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</table>

The challenges brought about by pandemic inspire the teachers to excel and learn new things. Most of the participants in the interview said they had difficulty in preparing for online classes. Time management and personal space in work from home setup also arise as common problems. Their basic knowledge in the use of technology is not enough. It also requires more experience and ideas in different applications to be used. Teachers are not the only ones experiencing learning environment problems; even students have no conducive learning space at home. Noises and other factors like animals and passing vehicles also contribute to the distraction of online classes. The absence of physical classroom interaction requires more suitable collaborative strategies and learning activities. Some of the statements below show the different struggles encountered by the participants of the study:

'I find myself most struggling in budgeting my time and finding a perfect place to work since I only live in a small home. "(TP1)

'The whole setup. These blended environments and routines are very new to me and are quite challenging considering my knowledge in Technology, which I believe is still very little. "(TP4)
"I am struggling with the problem that's happening today. Because of the pandemic, I was not able to meet my students personally. During the online class, I cannot control the noise that can be distracting during discussion." (TP6)

"It all starts when the students are prepared to learn or not, which leads the ambiance to be conducive or hindering them from learning. I can say that I struggled most with the said issue when dealing in an open area near an event area, canteen, or event places. In such cases, students get easily distracted. They could not help but focus on those different scenarios and get distracted by the noise. I cannot focus on the lesson whenever my students are not yet prepared to listen and learn, but I am still doing my best to get their attention." (TP9)

"It is about creating an interactive environment of teaching and learning. Moving to online education is a bit peculiar to everyone. Hence, this creates a teaching-learning shock for both the educators and the students." (TP3)

Overall, the survey results show that the teachers are very competent in integrating educational technology in planning their lessons, facilitating teaching-learning interactions, and planning evaluation and assessment. However, competence was more evident in planning for evaluation and assessment with a mean result of 3.46 over integrating online materials in teaching strategy with a mean result of 3.27. The competence in integrating online materials in teaching strategy is supported by the difficulty faced by the participants in planning their Instructional Methods and Strategies and Managing Blended Environments and Managing Blended Routines with a mean result of 3.405 and 3.485, respectively.

According to Oliver and Stallings (2014), a successful blended instruction teacher training should include three major elements: contextual, instructional, and technical, each of which is closely associated with standard instructional design processes that most teachers are familiar with. The Department of Education (2021) issued a learning continuity plan that showcases different modalities based on the context and capabilities of the learners. Teacher preparation should highlight different modes of learning in order to provide learners a conducive learning environment. To effectively address the challenges of developing teachers' competencies on technology integration to achieve success in online and blended learning modalities for students, teacher trainings should include opportunities for teaching staff to connect, mentor, and share information, as well as experience online and blended learning (Mirriahi et al., 2015). Teachers should also include strategies that will make the students self-regulated and motivated. The strategies should include encouragement to arouse the students' interest, participation, willingness and flexibility, collaboration, and interaction with other students to foster collaboration and communication opportunities (Gedik et al., 2013; Kaur, 2013).
Virtual interaction needs many strategies to foster collaboration and activities to have an effective learning environment. Blended learning is indeed a very challenging role for the teachers. Tracking students' learning progress requires close coordination through online activities, while synchronous activities will stimulate socialization within the class (Boelens et al., 2017). When faced with limited physical resources and space at home, disrupted schedules, scattered students, and an extended duration of unexpected events like a pandemic, creative and imaginative strategies are needed to sustain a sound academic program in addition to the integration of technology (Mackey et al., 2012). Technology is vital in the delivery of instruction. It enables people to work from different places and to teach students from the comfort of their homes. To fulfill the role of being a teacher to continue the learning process, willingness to adapt and learn will be a significant factor in improving lesson delivery. Deed and Lesko (2015) emphasized that establishing a framework with consistent educational practice, support, and empathy between teachers and students and the learning process is challenging. The framework is only possible through continuous evaluation of the process so that students, parents, and teachers can meet at the same point to help in strengthening the practice and teaching process.

Niess (2011) defines TPACK as a complex structure for explaining teachers' knowledge needed to develop, implement, and review technology-assisted curriculum and instruction. This definition opens a significant challenge within the public school community. This is not common because the education system is not designed with a complete technical support system. It is only limited to specific subjects taught by designated teachers with the corresponding specialization. The study presents the current dynamics of the problem that we are facing. One problem is that the lack of online teaching and preparation experiences harnesses different limitations that make more education a privilege to other students. Furthermore, based on Kopcha's (2012) study, one of the barriers teachers are not confident in using online learning mode is the lack of technological support that can help them troubleshoot problems using online platforms. Designing assessments using online resources makes them more challenging to produce.

There is a problem in developing valid grading procedures but good in choosing appropriate assessment tools. Some of these assessment standards are presented in PPST. We need to develop standards that will focus on developing assessment tools and addressing unethical classroom assessment practices in face-to-face and online methodologies. There is a need to revisit teacher standards and TEI's thoughts to preservice teachers (Delosa & Morales, 2015) to adopt different scenarios like a pandemic. Designing appropriate instructional strategies and different assessment activities to measure the learning and teaching process is highly advised for preservice teachers (Udomkan & Suwanno, 2018). The content and pedagogy should also blend to develop an effective learning environment (Wells et al., 2019). There are different school science experiences and curriculum content during coursework that influence the practices of preservice during practicum.
The responses of the participants will provide more visible pieces of evidence to improve teaching routines further. It is also beneficial in strengthening the preparation and practices of institutions that offer a degree program in education. A blended curriculum should also receive recognition in developing teachers’ foundation in principles of teaching and strategies. Assessment should not only focus on face to face. There should also be an option for technology adaptation such as applications online, software, or programs to develop an output (Harding et al., 2012; Cheung & Hew, 2011).

It is important to understand that real classroom experiences are an essential component of teacher preparation (Kennedy & Archambault, 2012, p. 186). The various practices in the field cover the scope of the continuous and dynamic teaching and learning process. Teachers’ decisions and dispositions, for example, are based on orienting students on their learning plans as they organize and structure various classroom events. The competence of the teachers will reveal how they manage their classroom. Professional judgment is used to guide the following teaching strategies: curriculum and lesson planning, selecting and implementing sets of teaching methods, classroom organization, and student assessment. Besides, instruction applies teaching methods as manifested in student interactions, teacher attitudes, and classroom tools and resources.

Conclusion

The study explored the teachers’ competencies in integrating education technology in lesson preparation. The paper is anchored in the professional standards for teachers, specifically, domains that focus on the positive use of ICT. The study reveals that the self-evaluation of novice teachers on their abilities is highly competent. Qualitative data expose the different struggles in teacher preparations in instructional methodologies. Based on the study results, novice teachers are lacking competencies related to online instructional preparations. However, it is also significant that teacher education institutions will help prepare teachers to equip them with knowledge on integrating technology in lesson preparations. Teachers need time to develop a higher level of skill in applying various applications in their lessons. Public schools have limited ICT resources/infrastructures; they need to provide their own such as laptops and internet connectivity (Khalid et al., 2015; Nath, 2019). The current situation of the education system of our country needs a more significant push and optimistic view that we will be able to make progressive change. Teachers should think of personal initiative, welcome the possible ways to enhance the current system, and become part of reforms to help our country uplift and face challenges and endeavors.

Recommendations

From the findings and conclusions of the study, the following recommendations are endorsed: 1) the school should conduct more training and professional development related to the integration of technology in teacher preparation for both novice and experienced
teachers; 2) there should be specific examples and pool of resources for the teachers that will help them in preparing instructional materials such as ICT rooms, technicians and ICT coordinator for technical support, laptops and internet connectivity; 3) Enough time will also help teachers design better instructional materials for their class (Salehi & Salehi, 2012). This will help teachers to revise, enhance and validate the reliability of their assessment tools for learners; 4) conduct mini practicum during Learning action cell (LAC) sessions to simulate and review their teaching materials for improvement (De Vera et al., 2020); and 5) encourage the teacher education institutions to enhance their programs in connection with the integration of technology in teacher preparations. Such practices will help the new graduates to face the reality of the educational system in the country. This research study reveals that learning is a continuous process. Beginning teachers are not fully equipped with the competencies they need that the actual scenario requires. Further training and exploration for teacher improvement are highly required. In this connection, future research related to teachers’ competencies is highly recommended. The teacher standards adopted in the Philippines are composed of 37 strands and seven domains. Only two strands from it were selected for the study. To further advance the quality of education in the country, more studies should be conducted.

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