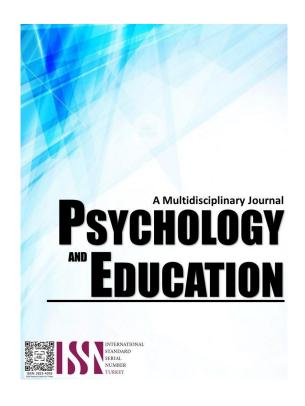
# EXPLORING TEACHER'S TRANSITION, STRATEGY ADJUSTMENTS, AND EXPERIENCES IN INTEGRATING TECHNOLOGY INTO TEACHING



# PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Volume: 24 Issue 10 Pages: 1172-1186

Document ID: 2024PEMJ2332 DOI: 10.5281/zenodo.13730256 Manuscript Accepted: 07-22-2024



# **Exploring Teacher's Transition, Strategy Adjustments, and Experiences in Integrating Technology into Teaching**

Aianiza G. Arellano,\* Rogielyn L. Abais, Janiel A. Balbuena, Marshal Lewis A. Bulasa, Hannah Maureen A. Canino, Jhanna Jane S. Eleccion, Maria Jesebele T. Estra, Mary Joy P. Hipulan, Maria Reca B. Lenizo, Catrina E. Nepomuceno, Reiand Star A. Saladaga, Jay S. Suarez, Aprilyn V. Tordos, Cyril A. Cabello

For affiliations and correspondence, see the last page.

#### **Abstract**

This study explored the teachers' transition and strategy adjustment in integrating technological approaches to teaching. This study explored the lived experiences of the teachers' transition and strategy adjustment in integrating technological approaches to teaching in Cebu Province for the school year 2023 – 2024. The challenges and highlights of utilizing technology inside the classroom are the main concern of this study. To address this, this study used Heideggerian Phenomenology as the research design. 5 participants volunteered to be part of the study and qualified with the inclusion criteria. This study used the Interpretative Phenomenological Analysis (IPA) popularized by Moustakas and modified by Van Kaam. These are the steps in analyzing the data. 4 emerging themes surfaced in this study. These are the (1) Shift to Digital Education; (2) Setbacks Amidst Advancements; (3) Strive for Excellence; and (4) Standardized Triumph. These themes are a clear picture of how the teachers' experiences in transitioning into utilizing technological tools inside the classroom have shown and exemplified. With this, veteran teachers are having difficulty in using these technological tools as they lack exposure and skills in using them. It is highly recommended that veteran teachers be sent to relevant training and seminars especially pertaining to the utilization and maximizing the impact of technology inside the classroom.

Keywords: teacher's transition, strategy adjustments, technology integration, phenomenology, lived experiences

#### Introduction

The 21st-century evolution has brought various alterations to the ways of living, and most individuals have adapted to this change in response to current trends. People have lived according to the new age, where new technologies have emerged for the sake of convenience. Moreover, jobs and other industries have also adapted and undergone major transformations, from doing tasks manually to doing work with the aid of machines and technology. In the field of education, most educators have also responded to the call for change, which is evident in the manner of teaching, from the old ways of using traditional instructional materials to digital incorporation in class discussions (Riconalla et al., 2022). On the positive side, this shift to technology benefited most learners by equipping them to be skilled in digital and technological literacy. However, most teachers find this fast-paced evolution in the education system difficult to adjust to, especially those veteran teachers who are new to these digital advances (Legon et al., 2020). In addition to that, there have been few recorded numbers of training programs that prepare educators for the shift to digital teaching (Stan, 2022). This lack of preparation and readiness became a huge hurdle in the implementation of blended learning, questioning the competitive skills of teachers in terms of technological and digital literacy (Paradouski & Jelińska, 2021).

The impact of the evolution of technology knows no exemption, everyone around the world is affected (Ando et al., 2022). Globally, teachers are being challenged as new generations are adaptive to this technological shift, they know how to manipulate technologies efficiently (Perez et al., 2022). The need to acquire technology efficiency is a prerequisite for teachers to effectively integrate instructional technology in a world where it is highly prevalent (Bahinting et al., 2022). The integration of digital technology in education has been around since the 1970s it is an integral part of the national strategy globally (Zeng, 2022). Many countries in Asia have also launched ICT integration in education. The government of Nepal, for example, made IT Policy 2000, integrating information technology into Nepal's educational system for diverse purposes, including distance learning among students (Rana, 2020). Developing countries, like the Philippines, struggle with the difficulty of competing with neighboring countries' technological advancement some areas are digitally divided, lacking technological resources. Although many have already implemented ICT in education in the Philippines, the hike in ICT integration in the teaching and learning process in the country is due to the pandemic. It forces many students and teachers, especially at the higher level, to adapt completely to the online platform to continue the education of the learners.

Currently, the education system is rapidly embracing new technologies and is now in the process of integrating digital means in every classroom setting. This fast-paced shift to digital learning has resulted in a spike in interest in improving the competencies and qualities of teaching in the field of education (Onyema, 2020). For most educators, using technology in the classroom is essential for both teachers and learners, digital platforms aid educators in creating more effective teaching strategies that can make teaching and learning more engaging (Backfisch, 2021). On the contrary, some veteran teachers struggle to adapt to this new teaching style, which requires technology. Addressing the said issue may require tremendous efforts and resources to effectively implement the said blended classroom learning (Catulpos et al., 2024; Gomez et al., 2024) such initiative may include regular training, technology development, and support which can help overcome challenges and use the benefits of ICT integration in its most effective way (Francom, 2022). On the other hand, several recorded studies highlight the importance of technology in the field of education, which states that educators

Arellano et al. 1172/1186



who use technology in their teaching style can improve the skills of each learner helping to accelerate the rate of success in their future career choices (Morgado, 2021). As a result, education professionals are expected to be significantly knowledgeable when it comes to manipulating and utilizing technology as a means for learners to thrive in an increasingly technically proficient era. However, there have been increasing lapses when it comes to fully implementing the new education system, one of which is the teacher's capabilities in using such tools for their instructions (Dionaldo et al., 2024; Olleras et al., 2022).

This study examines how teachers handle changes and their prior adjustments in integrating technology into the classroom setting. As a result of the technological shift, educational preparation might change because of how ICT is integrated into classrooms (Starkey, 2020). According to Backfisch et al. (2021), technology integration in the classroom is seen as an important educational innovation to enhance teaching and learning processes in the 21st century, this shows that teachers are expected to be flexible in adapting to the changing environment. Additionally, there is a need to know how the impacts of digital technology integration are interconnected and identify the factors that can encourage effective and efficient change in school environments (Timotheou et al., 2023). This includes changes in instructional delivery, classroom management techniques, and assessment methods to meet the student's learning needs. Studying how teachers handled transitions in integrating technology into teaching, especially those who started teaching using the traditional method, shows a valuable understanding of their flexibility, creativity, and passion for teaching. By examining this, the researchers want to find out the effects of the sudden shift from traditional teaching to digital and technological systems and how teachers transition to meet the student's learning needs. The researchers use qualitative methods, such as interviews, to determine their challenges about the integration of technology into teaching.

According to Ifinedo and Kankaanranta (2021), the transition to a technology-assisted classroom environment relies on how teachers maximize the opportunities provided by technology. Commonly, integrating technology in education is presumed to bring convenience for teachers and students (Cabello, 2022). However, there are factors to consider to prove that the impact technology has on teaching and learning is all about the advantages (Timotheou, 2022). This study aims to explore how veteran teachers adapted and adjusted during the transition process from using traditional methods to integrating technological tools in the classroom. This describes the teacher's perceptions and their lived experiences of the changes. In addition, this includes the difficulties the teachers faced and how they coped with the changes considering their technological skills, student engagement, and the use of technology in their teaching strategies. This research study wants to understand the experiences of veteran teachers and how their teaching practices are influenced by technology.

#### **Research Questions**

This study explored the lived experiences of the teachers' transition and strategy adjustment in integrating technological approaches to teaching in Cebu Province for the school year 2023 – 2024. Specifically, this study answered the following questions:

- 1. What are the lived experiences of the teachers' transition and strategy adjustment in integrating technological approaches to teaching?
- 2. What are the challenges encountered by the participants of the study?
- 3. What are the learning experiences of the participants?
- 4. What are the teachers' coping mechanisms for the challenges they face?
- 5. What is the meaning of the teachers' lived experiences?

#### Literature Review

In this section, the researchers present an overview of recent literature related to the teacher's transition and strategic adjustments in integrating technology into teaching. This study discusses the in-depth theoretical framework that impacts the study. The researcher also examines the strategic adjustments used by teachers inside the classroom and the relationship between technology and teacher efficacy. The purpose of this section is to evaluate, analyze, and improve knowledge of recent research in light of related earlier findings.

Transitioning to a technology-based approach to teaching and learning is an evident effect of children adapting to digital trends. This forced the education system, specifically teachers, to integrate technology into instructions, which challenged teachers' competency towards effective integration, skills, and mastery of the different technological tools for effective delivery. The findings of the study reveal that integrating technology into teaching and learning practices has positively affected teachers' instructions, as learning inside the classroom has become more active and exciting and has motivated students to continue in their course of learning. The inclusion of technology has detected numerous barriers to its effective implementation, such as the stability of the internet connection as well as teachers' online teaching training experiences. Thus, the study suggests that authorities must take action to support the current educational needs, which includes allocating sufficient budget for different digital resources, infrastructures, facilities, and tools to different institutions at all levels. Furthermore, for teaching development among teachers, they must be provided with opportunities to hone and practice the necessary skills for a successful and effective use of technology in the teaching-learning process (Akram, 2022).

As the generation of technology has arisen, educators need to adapt and cater to the rapid change of technology. Educators should be at ease with the student's abilities to multitask and the evolving learning styles of students. This study aims to give a thorough

Arellano et al. 1173/1186



explanation of the educator's perceptions of the change of delivery and learning content in terms of combining technology in the classroom. Using inductive and descriptive analysis in a descriptive case study, data were collected. High levels of confidence, the value of training and professional development, self-motivation, and enthusiasm about how technology can improve learning were among the themes that emerged. A wider range of participants, including teachers from kindergarten through high school, may be included in future studies. Another recommendation would be to repeat the study with a population not as vested in technology. To give stakeholders crucial information on tactics and strategies essential to a smooth transition, a pre-assessment of the current values, beliefs, and confidence of educators involved in the change process is recommended. By shedding light on the values, beliefs, and degree of confidence of educators changing, this study filled a vacuum in the literature regarding the humanistic difficulties educators face when incorporating technology into their classrooms (Hartman, 2019).

The unification of technological tools in education has completely altered the teaching and learning experiences. The study explains the impact of shifting into the digital era and how it augments the inclusivity in education. An extensive review of literature highlights the various strategic approaches of teachers in utilizing digital tools, to meet the expected enhancement of students' learning. Moreover, digital devices provide a collaborative and interdisciplinary discipline, which provides wide access to education. Despite its greater benefits, it is evident that it also presents drawbacks such as technological misuse and the digital divide that need to be carefully considered because it hinders effective learning. However, different sectors in the community must commit to one another to ensure an equitable technological-enhanced education. Upbringing strategic approaches, with the integration of multimedia, educational games, and simulations in learning, stimulate engagement, and a personalized and collaborative learning environment. Therefore, a balance of proactive measures must be addressed to associate the complexities and challenges. In a world of upgrading technological tools, students are introduced to maximize the technological benefits, wherein it promotes innovative and collaborative education that equips students with capabilities towards learning (Lasaiba, 2024).

According to the study conducted by Bereczki in 2021, the transition of integrating technology into teaching is not easy. Even the teachers who are experts in using technology in teaching encountered difficulties, especially with the implementation of technology-based creativity. To facilitate and reach the students' outcomes, the participants valued and implemented different approaches. Approaches that foster the creativity of the students. Also, an approach that allows teachers to organize things systematically to meet the needs of the students and make a greater impact in terms of collaboration among students. Furthermore, this study provides future research insights for teachers into how technology can effectively foster creativity among students.

According to Pu Zhang (2024), a lot of challenges are experienced as the carrying out of online learning has been growing in the recent digital transformation in education. From the teacher's viewpoint, although a substantial amount of literature has been written about student adaptation, a lesser amount has been written about the difficulties of successful implementation. This study examines how several factors affect teachers' abilities, especially how new learning environments adjust when they switch to an online setting. From the five provinces of China, 670 teachers were separated into two groups related to their participation in technology.

Higher Vocational Education in China plays a significant part in fostering higher levels of technical skills, which promotes the educational development of the learners. These days, as the evolution of technological advancement arises, it has created a great transformation towards education, in a way that the teacher's teaching strategies and methods vary, and the educational objectives are modified. Various contexts of digital transformations enable teachers to improve their teaching abilities. Therefore, the article implied that digital transformations from Higher Vocational Education seek to provide support and reference towards establishing teachers' teams (Hui, 2023).

According to Eileen Winter (2021), teachers who are accustomed to teaching learners in face-to-face settings find it hard to teach online. When the COVID-19 lockdown took place, the schools had to think of possible ways for the students to continue their studies and that is to move online learning. It is necessary to have various skills when using online teaching because it is a difficult transition for teachers. To a certain extent, 38 primary and post-primary teachers in Ireland were surveyed by the Adaptive and Inclusive Learning Environment (AILE) concerning using technologies and the impact of COVID-19 in their work. The results confer the teacher's insights about the different ways, challenges, and instances of incorporating technology. Nevertheless, the research focuses on technological specifications for triumphant online teaching.

Covid-19 has led to a period of uncertainty and anxiety among schools, school staff, students, and parents. In response to the pandemic, teachers in New Zealand swiftly transitioned to fully online instruction. In this sudden shift, a rapid reevaluation of teaching strategies designed for traditional classroom settings is necessitated. Along with the shift to online instruction it also brought challenges related to internet accessibility. Individuals were required to adapt to making everything remote as well as virtual instruction. This study explores the concept of designing for transitions in emergencies. By utilizing the Activity-Centered Analysis and Design framework, the paper examines the implications for educational design, emphasizing the importance of coordinating tools, social structures, and tasks to support learning activities in emergency remote education. The research specifically delves into the transition experiences of students and faculty in a Bachelor of Nursing program, which involves a three-phase educational design approach, including the implementation of Virtual Happy Hours. These Virtual Happy Hours were organized for two cohorts of first- and second-year students in the Bachelor program, as well as their instructors. By engaging in Virtual Happy Hours, participants were able to familiarize themselves with the tools, tasks, and social components that could enhance online engagement in preparation for future course sessions

Arellano et al. 1174/1186



during the lockdown period (Green, 2020).

During the COVID-19 pandemic, the educational system in the Philippines transitioned from traditional face-to-face learning to an online-based approach. Integrating technology for effective instruction has become a challenge for both teachers and educational leaders in the country. The study aimed to test the technological competency and leadership among school leaders towards the utilization of technology in teaching. In the data collection using surveys and tests, the results showed the positive performance of school leaders as they met the quality standard for teaching in technology-based learning. The study concluded that training programs must be provided for teachers and school heads to further develop their teaching skills and leadership and equip them with the necessary competencies for the current teaching and learning approach (Maala, 2022).

To conclude, this study focuses on educators who have more than 20 years of teaching experience. The researchers want to understand the different challenges faced by educators with the sudden shift from traditional teaching to the integration of technologies inside the classroom. This paper aims to show the varying experiences of educators during the pre-pandemic, at the height of the pandemic, and in the new normal setting, following the resumption of face-to-face classes in Philippine education. In addition to that, this paper aims to provide information to understand how this phenomenon made an impact on the usual routine of the educators in imparting knowledge to the learners and presents the adjustments of veteran educators here in the Philippines and how they effectively integrated technologies in every classroom setting. This paper incorporates the different insights of the educators and how they managed to get through the various challenges of integrating technology into their teaching process.

## Methodology

#### Research Design

This study used the Heideggerian Phenomenology. This design is a qualitative study wherein it explicated the lived experiences of the participants who are the teachers adjusting to integrating technological approaches to teaching. This design can delve into the challenges and highlights they experience as they utilize technological tools in delivering classroom instruction.

#### **Participants**

The sampling design utilized in this study was purposive sampling following established inclusion criteria to identify the participants of the study. The participants should be a public school teacher. They should be utilizing technological tools in discussing their lessons. They should have 5 years or more teaching experience. The participants should be within the Cebu Province. 5 participants qualified to be part of the study.

#### **Instrument**

The main instrument in this study is the researchers, themselves. It is supported by a semi-structured questionnaire which is content validated to explore the lived experiences of the teachers in teaching lessons using technological tools (Cabello & Bonotan, 2021).

#### **Procedure**

The researchers asked permission from the Campus Director and College Dean to gather data. After the permission is secured, they send the letter to all prospects or possible participants of the study to acquire their consent. After that, they scheduled an interview. After the interview, the data gathered were treated using the analysis established in this study.

#### **Data Analysis**

In treating and analyzing the gathered data, the researchers opted to use the Interpretative Phenomenological Analysis (IPA) popularized by Moustakas and modified by Van Kaam. These are the steps in analyzing the data. The following steps are horizontalization, Reduction, and elimination, Thematize the Invariant Constituents, Checking the Themes Against the Data, Creating the Individual Textural Descriptions, Creating Individual Structural Descriptions, Creating Composite Textural Descriptions, Making the Composite Structural Descriptions, and the Creation of the Composite Structural-Textural Description.

#### **Results and Discussion**

In the analysis of the data, 4 core themes emerged namely, Shift to Digital Education, Setbacks amidst Advancements, Strive for Excellence, and Standardized Triumph. These themes are discussed comprehensively with literature to corroborate the words and lived experiences of the participants.

#### Theme 1: Shift to Digital Education

Marked by evolution and innovation, the 21st century era had everyone adapting to various changes. One of which is the integration of technology into everyday work. This adaptation involves not only acquiring technical skills but also developing approaches that use technology to enhance learning. In today's digital age, teachers are increasingly expected to make use of technology to engage students, facilitate student learning experiences, and prepare them for success in a rapidly evolving world.

Teacher 9 said "Before, 2005, the class didn't happen inside the classroom because I didn't have a laptop during that time.", and "I

Arellano et al. 1175/1186



attended seminars and training to learn how to use technology."

The global trend in modern ICT-based educational systems development is personalized learning. These systems are characterized by their ability to tailor learning experiences to individual needs and preferences. In teacher training, the application of adaptive learning systems is crucial for sustainable development. The focus is on utilizing adaptive learning systems, which offer flexibility. The current trends and implementation strategies for these systems in teacher training are discussed (Marienko et al., 2020). By embracing technology and using it effectively in teaching practices, educators can empower students with the skills and knowledge they need to thrive in a rapidly changing world.

It is without a doubt that this century is all about the evolution of technology. As organizations like the educational system find ways to harness, and make use of emerging technologies to recognize the different needs of students, educators navigate the complexities and problems that are brought along with it, such as accessibility with these tools is of concern.

The accessibility of digital tools is noted to have a remarkable impact on the education system (Timotheou et al., 2022). With technological support, teachers can now have a more efficient process for accomplishing their workloads. In addition, the development of IT tools has also increased the available instructional materials that can be accessed and utilized in the classroom (Mdhlalose & Mlambo, 2023).

As Teacher 3 shared, "From doing everything manually before (like Form 14 and lesson plans), now those things can be downloaded and computerized instantly."

Most of the participants have observed how access to digital tools provides convenience to teachers when it comes to handling paperwork and other tasks. These tools not only physically lessen the burden of submitting those required documents manually but also allow teachers to focus more efficiently on providing students with engaging and progressive learning experiences.

As the educational system embraces the journey of transitioning, educators will also need to navigate the new expectations, and skills required to keep up with the changes. One of the ways to do this is for educators to shift from being the providers to being the ones facilitating students' learning experiences.

The role transition of teachers is a must, especially because the landscape of education is changing rapidly, by the advancement of technologies. This in turn impacted the educational practices which involved the shifting from a traditional mode of teaching, indicated by the role of the educators as the sole provider and disseminator of knowledge, to a facilitative model of teaching, where students are given the freedom to explore and be actively involved in the learning process. This transition challenges educators to shift from having the role of being a lesson provider and embrace a more interactive role as a facilitator that guides students to learning.

According to Teacher 7, "Changes the role of the teacher from a traditional knowledge provider into a facilitator." In this, teacher 7 highlights the evolving role of educators as they adapt to meet the changing needs and learning styles of students of today.

The transition process of schools from traditional classroom setups to innovative learning environments, which emphasize flexibility and support various teaching methods. While many schools aspire to create such environments where teaching, culture, and space converge to facilitate deep learning and student engagement, some struggle to align their teaching practices, organizational structures, and leadership with the intended vision of their redesigned spaces (French et al., 2020). By making use of and harnessing the changes in educational practices, educators can create a dynamic, interactive, and inclusive environment suited for learning.

As educators engage in continuous learning and ways to adapt, the transition in itself isn't all about acquiring new skills but making and reshaping learning approaches to meet the student's learning needs. In so, the education system and educators would need to embrace flexibility to facilitate smoother learning adjustment within the classroom and in the organization.

The fourth is the learning adjustment. Learning, indeed, is a continuous process. In the educational context, the emergence of technology use in the classroom has brought teachers to another period of learning in their teaching careers. The shift to technology-aided teaching approaches means teachers must adapt to new technological tools replacing traditional instructional methods. In the continuous cycle of learning, even with teachers being experts in various fields, there is still a need for support in their professional practice to ensure the effective integration of ICT tools in the classroom setting (Grünberger & Szucsich, 2021).

According to Teacher 1, "I often go through a period of adjustment and learning."

During the transition, teachers are not only required to know how to operate technological tools but also revisit their teaching strategies and redesign their approaches in ways that optimize student learning using technological advancements. This means that, in this transformative era of education, teachers also undergo a learning process that further equips them with technical skills and provides them with familiarity and awareness of the various digital tools.

#### Theme 2: Setbacks amidst Advancements

Every positive outcome has a corresponding set of consequences. This is reflected in the shift from traditional means of teaching to the integration of technology within the classroom. Despite its list of positive effects, various setbacks have drowned out the benefits offered by technological advancements. This section unveils the downside of technology adaptation among educators and how these

Arellano et al. 1176/1186



personal struggles blurred the promising advantages of technology within the teaching-learning process.

The first setback is a technical struggle. Transitioning from a traditional way of giving instructions to a technology-based approach, technical struggle has been identified as one of the challenges faced by most of the teachers. In the process, teachers have faced underlying issues, including internet connectivity and computer access. These difficulties have been linked to student engagement as they become technologically driven, and this is what requires teachers to adapt and learn despite the unfamiliarity in order to meet the interests and learning needs of the learners (Francom & Pinkney, 2021).

As mentioned by Teacher 1, "As a teacher, I have encountered various struggles when adapting to new technologies and understanding today's learners. Some common challenges include technical difficulties, the learning curve, and student engagement."

Integration of technology in education reached its height during the pandemic. With most, if not all, veteran teachers not prepared and familiar with technical and digital navigation, most of the participants experienced the same situation, wherein they found it difficult and problematic. Technology in the classroom has become a struggle for them, as they consider themselves incompetent and inexperienced.

Aside from technical struggles, educators, especially those who are assigned to remote areas or those who lack funding from the government, suffer from other challenges. This led to slower adaptation to technical advancements. Limited resources have been one of the issues amongst veteran teachers since then, and up until now, this problem still receives attention from the education field. Lack of educational resources is one of the leading distractors affecting the process of disseminating knowledge. Despite educators' best efforts, schools frequently operate on tight budgets, which can limit the availability of resources required to provide high-quality education (Cutillas et al., 2023)

As stated by Teacher 5, "Struggles in dealing with the realities of technologies in the physical classroom as a teacher need to address the lack of gadgets to use, badges, limitations, and limitations of professional teaching."

One of the biggest challenges facing teachers today is how to manage insufficient resources in the classroom. With that, it is indeed essential for schools to provide ongoing support, resources, and professional development opportunities for veteran teachers to help them successfully integrate or incorporate new technologies into their teaching practices.

Moving forward, other than the first two previously mentioned technology struggles, a corrupted system is listed as the third issue with regards to the technology transition. According to Alvarez (2020), although there are many reasons to use technology in the classroom to enhance student achievement, motivation, and process productivity; diversity offers teachers new alternatives for instruction and supports self-learning; various barriers hinder technology integration.

As explained by Teacher 1, "I use backup files, USB drives, or Google Drive because sometimes files can be corrupted."

Additionally, corrupted files are not just the typical daily struggles that hurdle the effectiveness and adaptive capabilities of veterans (Shanableh et al., 2022). Equipment malfunctions also contribute to their challenges when dealing with technology. Teacher 4 mentioned that whenever there are technical glitches or equipment malfunctions, the flow of the discussion is disrupted. Hence, having backup equipment or other communication channels ready can also help minimize disruptions and guarantee that classes go on as planned.

Aside from malfunctioning technological tools, power outages also contributed to the bad experience of technology adaptation amongst veteran teachers, specifically those who are assigned to far-flung areas or rural communities (Akram et al., 2022).

Teacher 5 elaborated, "Power outage not only hinders their classes but also affects their continuous learning of technology."

Unfortunately, internet unavailability has also become one of the branching shadows of transitioning to technology. This has led to major obstacles within the classroom as rural areas find it hard to access strong connectivity, and some are even deprived of such. This downside of technology has led to a great number of teachers who find it difficult to adapt to this modernized manner of teaching (Mallillin et al., 2020).

According to Teacher 7, "When there is no internet connection, the implementation of technology is not feasible."

True enough, remote and rural areas have difficulty accessing a stable internet connection due to varying reasons, which greatly affects the entire classroom discussion that utilizes a technological tool (Tembrevila, 2020).

Additionally, as explained by Teacher 9, "I can't tell if it's 100 percent because of our current location, where we struggle for signals." Furthermore, Teacher 9 added, "We also don't have the right resources."

Despite the tremendous effort of the government to address this issue, up to this date, this problem has been continuously gaining attention. As a result, most educators in these areas have a low capacity for manipulating other technologies and digital devices that require the internet to function. This led to teachers having doubts about the effectiveness of technology integration.

Technology adoption intention was negatively related to privacy concern and positively related to trust in government. However, neither user-friendliness nor the cultural values of conformity and self- direction played a significant role. While interdependent self-

Arellano et al. 1177/1186



construal was positively related to adoption intention, independent self-construal was not a significant predictor. Lan Ni et al., 2023. This idea is skepticism, which describes how teachers are being skeptical towards learning technology. Additionally, there are a smaller number of teachers who seem to be comfortable users of the available technology. This is due to the scarce training, lack of time and technology support, and several episodes of technology malfunction, which hinder them from adapting easily to new and advanced ways of teaching. Because of that, veteran educators have developed a fear of becoming incompetent when it comes to their work.

Fear of incompetence mirrors the thoughts of most educators, who are doubting themselves and their ability to learn technology.

Teacher 4 mentioned, "I also have a fear of not being able to deliver knowledge to the kids due to their lack of familiarity with technology."

This highlights a common fear among veteran teachers that they are not experts in using technology and might hinder the delivery of lessons and help students learn (Torrato et al., 2020). As mentioned in the previous statement, teachers struggle to keep up with technology for various reasons, one of which is rather personal and requires self-development to address the said issue, and this is having a lack of experience with technology.

Veteran teachers experienced technical unfamiliarity in using technology with today's 21st-century learners. This happens due to the transition from a traditional teaching approach to the integration of modern technology and educational settings. Many veteran teachers who have decades of experience in the classroom are more likely to experience difficulties in adopting and effectively utilizing various digital tools and platforms to enhance their teaching methods.

Teacher 3 stated, "I had to ask for help from my observer, and I am not familiar with the technology feature."

It is evident that veteran teachers also need assistance during the process of utilizing technological tools. According to Villon et al. (2022), there are variations in digital-experienced teachers' preparedness for digital and some may need help, depending on the technological activities involved.

The previously mentioned statements conclude that despite the positive effects of incorporating technology within the classroom, there are major setbacks that test its effectiveness and efficiency during the process of utilization. Hence, teachers, specifically those veteran educators who are new to these types of innovations, have been in a constant struggle to keep up with the new teaching methodologies. These challenges lead to the birth of other hindrances such as teacher efficiency, productivity, and quality dissemination of knowledge among learners.

#### Theme 3: Strive for Excellence

Self-development is a process where each individual seeks to find improvement, learn, and build new skills. It is continuous learning that an individual listens to feedback and even engages in activities that would develop. Through self-development, each individual will be able to expand success in their fields and achieve bigger goals. True enough, according to Qureshi et al. (2021), technology has brought an increase when it comes to education. It made the teaching and learning process improve and effective. However, as technology advances and to keep up with the trends to provide quality education to students.

Teacher 8 said, "I challenged myself on how to use technology since I am handling 21st century learners."

These educators had already faced numerous challenges in education, especially in the transition from traditional teaching to integrating technology in their teaching process but with determination, patience, and by making these challenges as inspiration for self-development, these educators were able to integrate technology in their teaching and learning process successfully.

One way to achieve deeper learning and to be able to provide learners with quality education, it is important that an educator is more skilled and knowledgeable enough to sustain the needs of the students. With that, seeking professional development can be a tool to expand learning and make learning fun.

Professional development is the act of acquiring new skills and knowledge through continuous education and training to expand in your field, especially in education. Professional development is important in education because according to Sancar et al. (2021), it is an important element of a teacher to improve students' learning. Through professional development, it gives a significant change in the professional life of an educator.

Teacher 1 said, "Seeking professional development such as attending workshops, webinars or training sessions", are a few of their coping mechanisms to deal with the challenges they encountered during the technological change in education.

In order to achieve the goal of providing quality education to students, according to Haleem et al. (2022), technologies are used as tools to provide students the access to inclusive and quality education. This concludes that, part of a teacher's professional development and one of the competencies that every educator must develop is the integration of technology in their teaching and learning process. With that, these educators were able to keep up with the new phase of education and despite the setbacks, these educators are able to provide quality education to their 21st century learners.

As technology plays an important role in modern education, veteran teachers, who may have spent decades honing their skills in

Arellano et al. 1178/1186



traditional settings, are now changing to a technology-based setting. Veteran teachers are adapting to this new educational landscape. They wholeheartedly keep up-to-date with the new technology to ensure that they will maintain their relevant and valuable contribution in the teaching field. This rate of change may contribute to an increase in anxiety that impacts effective technology integration in the classroom. However, through a spirit of self-enrichment, they improve proficiency and gain control over their fears. Veteran teachers feel more capable and equipped for the changing educational landscape.

The discussion of this theme is supported by the words of the participants about self-enrichment. According to Teacher 8, "I watch tutorials on YouTube because even if I learn something today, I might forget it the next day." Furthermore, the participants added, "When I ask my co-teacher for help, I record the instructions and write down the steps."

The aforementioned claims go beyond merely finishing a task. Veteran teachers are actively working on their way to ensure that they understand the technology they have learned and can use it in their teaching instructions. This shows great self-enrichment as a teacher by taking charge of their professional development and always enhancing their skill set. It strongly supports the idea that self-enrichment is a key motivator for veteran teachers in today's teaching instructions. Veteran teachers nowadays are taking charge of their learning to strive for excellence in today's teaching instructions and improve their teaching. According to Monteiro et al. (2021), peer tutoring is not just about acquiring new skills, but also about overcoming anxieties related to technology. Learning from colleagues creates a safe space to experiment and gain confidence. Veteran teachers should emphasize the role of peer tutoring by believing that teachers thought that the models and tutoring from their more experienced colleagues encouraged them to try more challenging practices and use of technology for instructions than they would have done on their own. It highlights a valuable coping mechanism and self-enrichment strategy for veteran teachers.

Equipped with new skills and knowledge through self-development, professional development, and self-enrichment, veteran teachers can now turn to their peers for further growth.

Educators are faced with fast-paced changes in educational practice and expectations as technology innovation continues over time. This rate of change may contribute to an increase in anxiety that impacts effective technology integration in the classroom. Veteran teachers can learn from each other's experiences and expertise through peer coaching, lesson-sharing sessions, or online communities focused on educational technology. It fosters a collective knowledge base that can keep pace with the rapid changes in the field. According to Henderson and Corry (2021), to end this gap and reduce anxiety, veteran teachers should believe that continual professional development is essential, and peer collaboration is a powerful tool within the challenges faced by our veteran teachers.

As stated by Teacher 1, "Veteran teachers should ask for support, attend workshops, and explore and experiment with different tools and platforms. Evaluate our methods of instruction and ask learners for their own opinions."

The experiences of Teacher 1 perfectly captured the essence of teacher-peer collaboration. By attending seminars, working with techsavvy people, sharing knowledge, and creating a safe space for learning about the integration of technology instructions. By following these tips, veteran teachers can enhance their effectiveness as educators. Moreover, teacher 1 mentioned that reflective teaching is aligned with the participant practices and getting student's feedback. The teacher's experiences highlight how crucial ongoing education is for veteran teachers. The significance of teamwork, ongoing professional growth, and thoughtful pedagogy is underscored by them when navigating the dynamic landscape of educational technology.

Armed with the collective knowledge gained through self-development, professional development, self-enrichment, and collaboration, veteran teachers demonstrate remarkable perseverance in adapting to new educational landscapes.

One of a teacher's major characteristics is they always have work perseverance. Educators are the drivers in changing the nation and technology has become an important tool to improve the teaching and learning process. However, educators can't deny the fact that adjusting to a new setup can be frustrating and stressful, especially for those educators who have been in the field for about more than twenty years.

The discussion of this theme is supported by the words of Teacher 8 who mentioned, "Keep trying because it's part of the job."

The statement reflects the understanding that encountering obstacles and setbacks is inevitable in any work environment. Perseverance, as Teacher 8 suggests, becomes an essential part of the job, requiring a commitment to continued effort despite challenges. The experiences of the first educator were all about learning through trial and error. This aligns with the concept of a growth mindset, which emphasizes the belief that abilities can be developed through effort and persistence. True enough, despite the countless frustrations, the stressful adjustments, the burnout from the sudden shifting and even having self-doubt, these educators remained positive throughout the whole process. (Fabelico & Afalla, 2020).

This represents that having a positive outlook is an educator's character and work perseverance is their driving force to always do their best and remain consistent in molding their students to become an effective citizen in this country with 21st-century skills.

#### Theme 4: Standardized Triumph

A triumph of learning resulted in creating new opportunities. Despite the setbacks anchored with technology, we can't neglect the fact that it undeniably changes the ways of education for the better. The technological shift brought a significant impact to education that

Arellano et al. 1179/1186



opened new opportunities for educators and has been beneficial for the students. With technology integration in education, pedagogical approaches are evolving and reshaping their framework to cope and keep up with the constant changes in the field of education (Miranda et al., 2021). Educators employing different methods and strategies have been made possible due to the convenience introduced by technology. Having technology inside the classroom allows teachers to plan with ease and provide a more enhanced education that best allows students to acquire and grasp knowledge effectively. Classrooms are transformed into a dynamic and interactive environment.

As mentioned by teacher 1, "It provides new opportunities for personalized learning collaboration and access to vast amounts of information. "Teacher 1 also added that "It requires me to be adaptable, creative, and open-minded".

With this statement, it can be concluded that technology provides a wide array of opportunities for teachers to become transformational knowledge providers inside the classroom. It challenges the teacher to become adaptable to the shift to meet the needs brought by technology. It is an opportunity for educators to restructure their teaching approaches that can cater to personalized learning experiences and various learning styles. The positive progress in the educational landscape can be made possible through reorienting fundamental structures accompanied by technology (Burbules et al., 2020).

Meanwhile, the transition to technology integration enables less workload for teachers. In the Philippines, teachers are not just the dispenser of knowledge. They are as flexible as anyone would have thought. Educators work beyond their workload. The emergence of technology in the field of education paves the way for educators to manage their time effectively. Technology, as a support tool, is the light of the tunnel that allows educators to work with less workload enable them to allocate sufficient time for their personal lives, and become more efficient as an individuals (Fernandez-Batanero et al., 2021).

According to teacher 3, "It lessens the workload of the teacher".

Learning resources are highly accessible with the available technologies at hand. From searching for specific contents or information for a lesson down to the calculation of grades, with technology it is convenient. Instead of gathering some information from traditional books which would take an amount of time, with technologies it will only take one click away. From traditionally recording scores and calculating the grades, with technology, grades can be generated instantly after encoding the scores through Excel. With technology, teachers can now design instructional material that will not consume most of the time. The existence of technology allows teachers to search for interactive videos where students can acquire quality information. Through images and GIFs, educators can prolong the attention span of the students for better learning. This way, teachers can have more time for their personal lives spend more quality time at home, and take the rest that they deserve.

Importantly, a great eye-opener for everyone arose, and easy access to technology is widely evident. In this new era of constantly expanding technologies, their impact on education has been transformational. With these advancements, educational technology becomes an essential component of the classroom, impacting the integration of various approaches in teaching, student interaction, and the entire educational landscape. Technology transformed equitable access to learning tools and educational resources, allowing personalized learning and skill development, regardless of socioeconomic status or location (Ascione, 2023).

As teacher 5 has answered, "They find it easy to navigate technology for effective learning".

The statement emphasized how profoundly modern technologies have changed education. From conventional teaching methods to the reshaping of today's learning, technology gives both teachers and students access to a variety of knowledge. Technology enables educators to create a dynamic and inclusive atmosphere by providing interactive digital tools and online platforms. One of the most evident changes is the digitization of educational materials, allowing access to more up-to-date information. Traditional textbooks are being replaced by online resources giving an engaging rich and engaging content of learning.

Additionally, through this, technology has proven its quality, and enhanced learning was merely a testimony to its functionality. In education, it is expected to interact with a wide range of students. These students have certain preferences and needs that teachers must address. And, with the incorporation of technology, the educator can better meet the needs of these students. According to the article "Embracing Innovation in Education: Tools for Enhanced Learning and Collaboration (2024)", with the large range of tools available to enhance learning, numerous tools have also transformed the way we learn. Advanced tools would be an excellent method to provide support and direction for a personalized approach to student success. These innovative tools foster better communication and collaboration between students and educators. Furthermore, students can interact with peers, engage, and contribute to working projects.

As far mentioned in the answer of teacher 3, "Enhanced student learning, easy access to information, interactive and collaborative classroom". Additionally, the teachers' response indicated that "It does not erase students' skills during the traditional method."

It implies that using these resources to learn increases the amount of knowledge gained from conventional instruction. Their proficiency in using these technical tools increases as a result. Integrating technological tools into education has greatly enhanced effective learning which is a continuous process of investigation and adaptation. Educators should adopt a growth attitude, constantly looking for new and innovative methods to improve the learning experience. By promoting an innovative culture, educators enable students to become active participants in their education, preparing them for a future in which adaptation and lifelong learning are crucial.

Aside from it, indeed a great triumph is to provide a quality education for all learners. Technology is crucial for ensuring high-quality

Arellano et al. 1180/1186



education. It is essential for creating online materials that cater to a variety of learning styles. The use of innovative tools in education has turned the learning experience into a more engaging, individualized, and collaborative one.

As teacher 5 has answered, "Provide access to a wide range of resources, facilitates personalized learning, and promotes active student engagement".

Educational technology encompasses a wide range of tools and resources that can be applied in a variety of contexts, including both traditional and online learning. It demonstrates the goal of making teaching and learning more interesting, efficient, individualized, and effective (Djalilova, 2023). It can assist students in achieving a wide range of learning objectives, including knowledge acquisition, skill improvement, and comprehension of complex topics. It also equips pupils with the necessary digital skills for today's highly connected society. As we continue to embark on these advancements, we equip potential students not only for academic achievement but also for a bright future.

Providing a strategic approach to authentic learning, the integration of technologies plays a crucial role. Authentic learning is a concept to bring the real world or real experience closer to students in the classroom. Authentic learning that presents reality in the classroom is more contextual to students' daily activities. Virtual Reality (VR) offers interactive real-life 3D multimedia simulations, promotes interactivity with the created world, and enables sensory sensations (Utami et al., 2021).

According to Stanley (2021), educators provide students with authentic learning experiences that they can apply to their lives in school—and beyond.

As Teacher 2 said, "Technology is effective in teaching literacy and numeracy. Students can easily connect with what's happening based on their daily life or situation".

The aforementioned above proves that authentic learning relates academic knowledge to actual life circumstances, making learning timelier and more enjoyable. This application helps students realize the importance of their education and pushes them to learn in greater depth. Authentic learning corresponds effectively with what is expected and needed of 21st-century learners, training them not just intellectually, but also psychologically and emotionally, for the multifaceted nature of present-day employment and everyday life.

Finally, this transition to technological learning has equipped digital learners. Digital technologies show a range of tools selected to include formalized learning environments in teaching in higher education, and students utilize these tools to promote their learning. The Industrial Revolution 4.0's technological growth has penetrated higher education institutions (HEIs), forcing them to deal with digital transformation (DT) in all of its dimensions. As they enable us to characterize the various interrelationships among stakeholders in a digitally enabled context of teaching and learning, applying digital transformation techniques to the education sector is an emerging field that has attracted attention recently (Alenezi, 2023).

As per Teacher 5, "The integration of technology is effective as learners nowadays are most exposed to using gadgets".

This concludes that due to the widespread use of technology, students can acquire digital literacy skills and become skilled in using digital tools for a variety of educational purposes. Because they can immediately perceive the advantages and applicability of new technologies in their social and academic life, students are frequently more driven to learn and use them. This increased global connectedness opens doors for cross-border cooperation and broadens viewpoints and cultural understanding. Technology can be used to develop more vibrant, entertaining, and powerful educational spaces that meet the different needs of 21st-century learners as they are referred to as "tech-savvy".

#### **Conclusions**

Technology has now become part of our lives and has played a significant role in education. It has been evident in providing convenience, accessibility, and efficiency. Teachers are mandated to adopt a new approach to teaching and learning from a conventional style to a more digital one. However, this shift has challenged most of the teachers, who have faced numerous struggles in implementing technology into their teaching. Furthermore, this transition marked a relevant process of adjustment among veteran teachers who have been in service for 10 years and above.

Exploring the lived experiences among veteran teachers in integrating technology into their teaching, the result shows the role transition of teachers from being passive dispensers of knowledge to becoming facilitators. This supports the positive impact of technology on teaching and provides students with accessibility and convenience among teachers. On the contrary, due to the sudden transition, veteran teachers have to adjust and adapt in an instant to cope, even with limited knowledge and skills in using technology, in response to the current demand for learning. This setback challenges the teacher's effectiveness in getting students the appropriate resources for learning and guiding them in navigating technological tools. Arising from this trial, a specific solution is made accessible for them that is necessary to enrich and enhance their scope in utilizing technology in their teaching, which includes seminars, workshops, and self-regulated efforts. This development is significant in the process, as teachers are the makers inside the classroom. Overcoming the struggle through self and peer development has produced important outcomes as it helps veteran teachers to be efficient in their teaching approach, the classroom environment to become interactive and engaging, support independent learning for students, and the availability of resources.

Arellano et al. 1181/1186



The difficulties met by the veteran teachers as they transition are real and relevant. It is a battle they are continuously fighting to provide quality education to all students. With this, the researchers concluded that the findings of the study will impart knowledge and help people understand the reality faced by our teachers, their adjustments and efforts invested in learning, their hardships, and their triumphs.

Based on the findings of this research, future researchers are encouraged to examine and explore the impacts of technology on students' performance in diverse populations. Specifically, researchers must include and consider the positive impacts of technology on students' performance and its underlying constraints. Researchers must also consider exploring possible solutions to mitigate the negative effects on the students' performance. Furthermore, it is an advantage to expand the sample size to have more solidified results. Lastly, it is also best advised to examine other related research studies that are not tackled that could provide various viewpoints and a thorough understanding of this study to maximize its benefits for teaching and learning.

#### References

Abedi, E. A. (2023). Tensions between technology integration practices of teachers and ICT in education policy expectations: implications for change in teacher knowledge, beliefs and teaching practices. Journal of Computers in Education, 1-20.https://doi.org/10.1007/s40692-023-00296-6

Ablao, C. J., Diaz, D. C., & Macapagal, J. (2021). Challenges of distance education assessment in the health professions during the COVID-19 pandemic: A Philippine reflection in the rapid review of international context. Acta Medica Philippina/Acta Medica Philippina. https://doi.org/10.47895/amp.vi0.3145

Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' Perceptions of Technology Integration in Teaching-Learning Practices: A Systematic review. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.920317

Alenezi, M. (2023). Digital learning and digital institution in higher education. Education Sciences, 13(1), 88.https://doi.org/10.3390/educsci13010088

Alvarez Jr, A. V. (2020). Learning from the Problems and Challenges in Blended Learning: Basis for Faculty Development and Program Enhancement. Asian Journal of Distance Education, 15(2), 112-132.https://eric.ed.gov/?id=EJ1285361

Ando, K., Basilisco, J., Deniega, A., Gador, K., Geraldo, P. J., Gipulao, W. E. M., ... & Minyamin, A. (2022). Learning without Learning in the New Normal: College Education Students Lived Experiences in Blended Learning Modality. Psychology and Education: A Multidisciplinary Journal, 2(6), 455-464.

Ascione, L. (2023). The impact of technology on education. eSchool News. https://www.eschoolnews.com/it-leadership/2023/12/11/the-impact-of-technology-on-education/

Aslan, A., Silvia, S., Nugroho, B. S., Ramli, M., & Rusiadi, R. (2020). Teacher's leadership teaching strategy supporting student learning during the covid-19 disruption. Nidhomul Haq: Jurnal Manajemen Pendidikan Islam, 5(3), 321-333.https://doi.org/10.31538/ndh.v5i3.984

Atabek, O. (2020). Experienced educators' suggestions for solutions to the challenges to technology integration. Education and Information Technologies, 25(6), 5669-5685.https://doi.org/10.1007/s10639-020-10243-y

Backfisch, I., Lachner, A., Stürmer, K., & Scheiter, K. (2021). Variability of teachers' technology integration in the classroom: A matter of utility!. Computers & Education, 166, 104159.https://doi.org/10.1016/j.compedu.2021.104159

BAHINTING, M. A., Ardiente, M., Endona, J., Herapat, M. A., Lambo, D., Librea, H. J., ... & Minyamin, A. (2022). Stronger than the Internet Connectivity: A Phenomenology. Psychology and Education: A Multidisciplinary Journal, 2(6), 465-476.

Bereczki, E. O., & Kárpáti, A. (2021). Technology-enhanced creativity: A multiple case study of digital technology-integration expert teachers' beliefs and practices. Thinking Skills and Creativity, 39, 100791.https://doi.org/10.1016/j.tsc.2021.100791

Burbules, N. C., Fan, G., & Repp, P. (2020). Five trends of education and technology in a sustainable future. Geography and Sustainability, 1(2), 93–97. https://doi.org/10.1016/j.geosus.2020.05.001

Cabello, C. A. (2022). Higher education professors in blended learning modality of teaching: The silent tears of heroes towards resiliency. Journal of Positive School Psychology, 6(3), 6171-6183.

Cabello, C. A., & Bonotan, A. M. (2021). Designing and validating an instrument to assess the wellness of business process outsources' customer service associates. Asia Pacific Journal of Multidisciplinary Research, 9(1), 1-11.

Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu). European journal of education, 54(3), 356-369.https://doi.org/10.1111/ejed.12345

Arellano et al. 1182/1186



Catulpos, L., Rodriguez, J., Sambrana, G. A., & Cabello, C. (2024). Newly Hired Teachers Lived Experiences in Classroom Management During the Full Face-to-Face Classes in the New Normal: A Phenomenology. Psychology and Education: A Multidisciplinary Journal, 16(9), 1001-1009.

Cutillas, Melanie & Lagumbay, Daryl & Ancajas, Vaneza & Besinga, Anabel & Alo, Baby & Ibale, Evelyn & Neri, Remcil & Linox, Dale. (2023). ENHANCING STUDENT LEARNING THROUGH CLASSROOM DESIGN EXPLORING THE INFLUENCE OF ENVIRONMENT ON ACADEMIC PERFORMANCE.https://shorturl.at/AFiAE

Dayagbil, F. T., Palompon, D. R., Garcia, L. L., & Olvido, M. M. J. (2021). Teaching and learning continuity amid and beyond the pandemic. Frontiers in Education, 6. https://doi.org/10.3389/feduc.2021.678692

Dionaldo, S., Aquino, H., Barrete, A., Celestian, E., & Cabello, C. (2024). The Narratives of Teachers in the Hinterland Schools: Basis for Management Plan. Psychology and Education: A Multidisciplinary Journal, 21(2), 181-194.

Dizon, R. J. J., & Errabo, D. D. R. (2022). Challenges and opportunities of online learning in the Philippine context: Thriving in the new normal. Challenges and Opportunities of Online Learning in the Philippine Context: Thriving in the New Normal. https://doi.org/10.1145/3514262.3514318

Djalilova, Z. (2023). Pedagogical educational technology: Essence, characteristics and efficiency. http://www.econferences.ru/index.php/arims/article/view/8999

Fabelico, Fitzgerald and Afalla, Bonimar, Perseverance and Passion in the Teaching Profession: Teachers' Grit, Self-Efficacy, Burnout, and Performance (May 30, 2020). Journal of Critical Reviews, 2020, Available at SSRN: https://ssrn.com/abstract=3655146

Fernández-Batanero, J. M., Román-Graván, P., Reyes-Rebollo, M. M., & Montenegro-Rueda, M. (2021). Impact of educational technology on teacher stress and anxiety: A literature review. International Journal of Environmental Research and Public Health/International Journal of Environmental Research and Public Health, 18(2), 548. https://doi.org/10.3390/ijerph18020548

Francom, G. M., Lee, S. J., & Pinkney, H. (2021). Technologies, challenges and needs of K-12 teachers in the transition to distance learning during the COVID-19 pandemic. TechTrends, 65(4), 589–601. https://doi.org/10.1007/s11528-021-00625-5

French, R., Imms, W., & Mahat, M. (2020). Case studies on the transition from traditional classrooms to innovative learning environments: Emerging strategies for success. Improving Schools, 23(2), 175-189. https://doi.org/10.1177/1365480219894408

Gomez, F. C., Trespalacios, J., Hsu, Y. C., & Yang, D. (2022). Exploring teachers' technology integration self-efficacy through the 2017 ISTE Standards. TechTrends, 1-13.https://doi.org/10.1007/s11528-021-00639-z

Gomez, J., Dumon, J. M., Trasmonte, E., Carreon, L., & Cabello, C. (2024). Desirable or Undesirable: Attitude and Behavior of Students toward Transitioning from Online to Face-to-Face Mode of Learning. Psychology and Education: A Multidisciplinary Journal, 21(2), 207-217.

Green, J. K., Burrow, M. S., & Carvalho, L. (2020). Designing for transition: Supporting teachers and students cope with emergency remote education. Postdigital Science and Education, 2(3), 906-922.https://doi.org/10.1007/s42438-020-00185-6

Greenhow, C., & Galvin, S. (2020). Teaching with social media: evidence-based strategies for making remote higher education less remote. Information and Learning Sciences, 121(7/8), 513-524.https://doi.org/10.1108/ILS-04-2020-0138

Grünberger, N. & Szucsich, P. (2021). Sustainability in a digital age as a trigger for organizational development in education. In: Ifenthaler, D., Hofhues, S., Egloffstein, M., Helbig, C. (eds) Digital Transformation of Learning Organizations. Springer, Cham. https://doi.org/10.1007/978-3-030-55878-9\_11

Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. Sustainable Operations and Computers, 3, 275-285.https://doi.org/10.1016/j.susoc.2022.05.004

Hartman, R. J., Townsend, M. B., & Jackson, M. (2019). Educators' perceptions of technology integration into the classroom: a descriptive case study. Journal of Research in Innovative Teaching & Learning, 12(3), 236-249.https://doi.org/10.1108/JRIT-03-2019-0044

Henderson, J., & Corry, M. (2021). Teacher anxiety and technology change: a review of the literature. Technology, Pedagogy and Education, 30(4), 573–587. https://doi.org/10.1080/1475939x.2021.1931426

Hui, L., Rong, Z., & Lirong, C. (2023). Strategies for Improving Teachers' Teaching Ability under the Background of Digital Transformation of Higher Vocational Education. Advances in Vocational and Technical Education, 5(5), 1-4.https://dx.doi.org/10.23977/avte.2023.050501

Hwang, G. J., Xie, H., Wah, B. W., & Gašević, D. (2020). Vision, challenges, roles and research issues of Artificial Intelligence in Education. Computers and Education: Artificial Intelligence, 1, 100001.https://doi.org/10.1016/j.caeai.2020.100001

Arellano et al. 1183/1186



Ifinedo, E., Rikala, J., & Hämäläinen, T. (2020). Factors affecting Nigerian teacher educators' technology integration: Considering characteristics, knowledge constructs, ICT practices and beliefs. Computers & education, 146, 103760.https://doi.org/10.1016/j.compedu.2019.103760

Innovation in Education: Empowering Students with Advanced Tools. (n.d.). ISDM. https://www.isdm.org.in/blog/innovation-in-education-tools-enhanced-

 $learning?utm\_adgroupid=166187072350\&utm\_creativeid=699413657880\&utm\_matchtype=b\&utm\_network=g\&utm\_placement=\&gad\_source=1$ 

Karkouti, I. M. (2023). Integrating technology in Qatar's higher education settings: what helps faculty accomplish the job. Technology, Knowledge and Learning, 28(1), 279-305.https://doi.org/10.1007/s10758-021-09553-y

Kopcha, T. J., Neumann, K. L., Ottenbreit-Leftwich, A., & Pitman, E. (2020). Process over product: The next evolution of our quest for technology integration. Educational Technology Research and Development, 68, 729-749.https://doi.org/10.1007/s11423-020-09735-y

Lasaiba, D. (2024). Classroom management strategies in the transformation of education in the digital era: Integration of technology and teaching methodologies. JENDELA PENGETAHUAN, 17(1), 77-95.https://doi.org/10.30598/jp17iss1pp77-95

Maala, E. B., & Lagos, F. D. (2022). Technological leadership of school heads and teachers' technology integration: Basis for the development of a training program. International Journal of Multidisciplinary: Applied Business and Education Research, 3(10), 2074-2089.https://doi.org/10.1186/s41239-018-0104-3

Mallillin, L. L. D., Carag, E. A., Mallillin, J. B., & Laurel, R. D. (2020). Integration of knowledge through online classes in the learning enhancement of students. European Journal of Open Education and E-Learning Studies, 5(1). https://doi.org/10.46827/ejoe.v5i1.3117

Marienko, M., Nosenko, Y., Sukhikh, A., Tataurov, V., & Shyshkina, M. (2020). Personalization of learning through adaptive technologies in the context of sustainable development of teachers education. https://doi.org/10.48550/arXiv.2006.05810

McLay, K. F., Thomasse, L., & Reyes Jr, V. C. (2023). Embracing discomfort in active learning and technology-rich higher education settings: sensemaking through reflexive inquiry. Educational technology research and development, 1-17.https://doi.org/10.1007/s11423-023-10192-6

Mdhlalose, D., & Mlambo, G. (2023). Integration of Technology in Education and its Impact on Learning and Teaching. Asian Journal of Education and Social Studies, 47(2), 54–63. https://doi.org/10.9734/ajess/2023/v47i21021

Miranda, J., Navarrete, C., Noguez, J., Molina-Espinosa, J., Ramírez-Montoya, M., Navarro-Tuch, S. A., Bustamante-Bello, M., Rosas-Fernández, J., & Molina, A. (2021). The core components of education 4.0 in higher education: Three case studies in engineering education. Computers & Electrical Engineering, 93, 107278. https://doi.org/10.1016/j.compeleceng.2021.107278

Monteiro, A., Mouraz, A., & Dotta, L. T. (2020). Veteran teachers and digital technologies: myths, beliefs and professional development. Teachers and Teaching, 26(7–8), 577–587. https://doi.org/10.1080/13540602.2021.1900809

Morales, M. P. E., Avilla, R. A., Butron, B. R., Ayuste, T. O. D., Masangcay, D. B., & Laureano, R. A. (2021). Technology Integration Traditions, Transitions and Best Practices in Philippine Higher STEAM Education. Philippine Journal of Science, 150(5).10.56899/150.05.36

National Center for Education Statistics. (n.d.). Student access to digital learning resources outside of the Classroom-Executive Summary. https://nces.ed.gov/pubs2017/2017098/

Nelson, M. J., Voithofer, R., & Cheng, S. L. (2019). Mediating factors that influence the technology integration practices of teacher educators. Computers & Education, 128, 330-344.https://doi.org/10.1016/j.compedu.2018.09.023

Ng, D. T. K., Leung, J. K. L., Su, J., Ng, R. C. W., & Chu, S. K. W. (2023). Teachers' AI digital competencies and twenty-first century skills in the post-pandemic world. Educational technology research and development, 71(1), 137-161. https://doi.org/10.1007/s11423-023-10203-6

Ni, L., Liu, W., Huang, Y., & Pan, M. (2023). Technology adoption and promotion in the age of Skepticism: examining COVID-19 mitigation through technological and human factors. Journal of Promotion Management, 29(7), 905-926.https://doi.org/10.1080/10496491.2023.2165207

Olleras, J. L., Dagwayan, M., Dejacto, A. M., Mangay, J. R., Ebarsabal, M., Diaz, D. J., ... & Minyamin, A. (2022). The life of the laters: Students procrastination in accomplishing academic deadlines in online learning. Psychology and Education: A Multidisciplinary Journal, 2(5), 444-454.

Perez, Z. O., Minyamin, A. V., Bagsit, R. D., Gimena, G. B., Dionaldo, W. V., Padillo, E. S., ... & Cabello, C. A. (2022). Research capability of faculty members in higher education institution: Basis for research management plan. Journal of Positive School

Arellano et al. 1184/1186



Psychology, 6(3), 6215-6226.

Qureshi, M. I., Khan, N., Raza, H., Imran, A., & Ismail, F. (2021). Digital technologies in education 4.0. Does it enhance the effectiveness of learning?.https://ir.unikl.edu.my/xmlui/handle/123456789/25661

Riconalla, P. G., Quiñanola, K. K., Devila, J., Zozobrado, J., Estoque, R. M., Capito, N., ... & Minyamin, A. (2022). The Lived Experiences Aged Instructors in Online Classes: Their Struggles and Coping Mechanisms. Psychology and Education: A Multidisciplinary Journal, 3(1), 1-11.

Sancar, R., Atal, D., & Deryakulu, D. (2021). A new framework for teachers' professional development. Teaching and Teacher Education, 101, 103305. https://doi.org/10.1016/j.tate.2021.103305

Shanableh, A., Aderibigbe, S., Omar, M., & Shabib, A. (2022). Opportunities in Disruption: Higher Education in the Post COVID-19 era. In Springer eBooks (pp. 227–244). https://doi.org/10.1007/978-3-031-07539-1\_12

Shurygin, V., Ryskaliyeva, R., Dolzhich, E., Dmitrichenkova, S., & Ilyin, A. (2022). Transformation of teacher training in a rapidly evolving digital environment. Education and Information Technologies, 1-20.https://doi.org/10.1007/s10639-018-9723-5

Soriano, R., Asio, H., Almoite, A., Dela Cruz, K., & Aspiras, E. (2022). Teaching in tumultuous times: Unraveling teachers' experiences amidst the COVID-19 pandemic. Journal of Education, Management and Development Studies, 2(1), 128–141. https://doi.org/10.52631/jemds.v2i1.64

Stanley, T. (2021). Authentic learning: real-world experiences that build 21st-century skills.https://doi.org/10.4324/9781003233152

Suchita, D. S. G., Devi, S. L., Pal, S., & Mahajan, R. Exploring effective strategies for integrating technology in teacher education. http://dx.doi.org/10.48047/ecb/2023.12.si12.065

Syarah, E. S., Mayuni, I., & Dhieni, N. (2020). Understanding teacher's perspectives in media literacy education as an empowerment instrument of blended learning in early childhood classroom. Jurnal Pendidikan Usia Dini, 14(2), 201-214.https://doi.org/10.21009/JPUD.142.01

Techno-scepticism in the classroom (an interview with Marie Heath). (2022). Critical Studies of education & technology. https://criticaledtech.com/2022/08/17/techno-scepticism-in-the-classroom-an-interview-with-marie-heath/

Tembrevilla, G. G. (2020). Examining ICT and FoK integration in rural public junior high schools with the Philippines' new K-12 curriculum: a case study. Examining ICT and FoK Integration in Rural Public Junior High Schools With the Philippines' New K-12 Curriculum: A Case Study. https://doi.org/10.14288/1.0392683

Timotheou, S. et al. (2022). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. Educ Inf Technol 28, 6695–6726. https://doi.org/10.1007/s10639-022-11431-8

Torrato, J. B., Prudente, M. S., & Aguja, S. E. (2020, January). Technology integration, proficiency and attitude: Perspectives from grade school teachers. In Proceedings of the 2020 11th International Conference on E-Education, E-Business, E-Management, and E-Learning (pp. 70-75). https://doi.org/10.1145/3377571.3377624

Utami, L. P. R. A., Suwastini, N. K. A., Dantes, G. R., Suprihatin, C. T., & Adnyani, K. E. K. (2021). Virtual reality for supporting authentic learning in 21st century language classroom. Jurnal Pendidikan Teknologi dan Kejuruan, 18(1), 132-141.https://doi.org/10.23887/jptk-undiksha.v18i1.32376

Villon, J. T., Balon, J., & Aranilla, A. (2022). Seasoned teachers' digital skills readiness in the online learning of selected. https://journals.cspc.edu.ph/index.php/jemds/article/view/149

Winter, E., Costello, A., O'Brien, M., & Hickey, G. (2021). Teachers' use of technology and the impact of Covid-19. Irish educational studies, 40(2), 235-246.https://doi.org/10.1080/03323315.2021.1916559

Yildiz Durak, H. (2021). Modeling of relations between K-12 teachers' TPACK levels and their technology integration self-efficacy, technology literacy levels, attitudes toward technology and usage objectives of social networks. Interactive Learning Environments, 29(7), 1136-1162.https://doi.org/10.1080/10494820.2019.1619591

Yurtseven Avci, Z., O'Dwyer, L. M., & Lawson, J. (2020). Designing effective professional development for technology integration in schools. Journal of Computer Assisted Learning, 36(2), 160-177.https://doi.org/10.1111/jcal.12394

Zhang, P., & Yang, H. (2024). The GETAMEL model: Features of the adaptation of teachers in the transition to on-line learning. International Journal of Human–Computer Interaction, 1-13.https://doi.org/10.1080/10447318.2023.2295694

Zhiting, Z. H. U., Zirou, L. I. N., Fei, W. E. I., & Hanbing, Y. A. N. (2023). Digital transformation in teacher development: Platformization, ecologization, practicalization. Frontiers of Education in China, 18(2).10.3868/s110-008-023-0008-3

Arellano et al. 1185/1186



## **Affiliations and Corresponding Information**

#### Aianiza G. Arellano

Cebu Technological University – Philippines

## Rogielyn L. Abais

Cebu Technological University – Philippines

#### Janiel A. Balbuena

Cebu Technological University – Philippines

#### Marshal Lewis A. Bulasa

Cebu Technological University – Philippines

#### Hannah Maureen A. Canino

Cebu Technological University – Philippines

#### Jhanna Jane S. Eleccion

Cebu Technological University – Philippines

#### Maria Jesebele T. Estra

Cebu Technological University – Philippines

#### Mary Joy P. Hipulan

Cebu Technological University – Philippines

#### Maria Reca B. Lenizo

Cebu Technological University – Philippines

## Catrina E. Nepomuceno

Cebu Technological University – Philippines

# Reiand Star A. Saladaga

Cebu Technological University – Philippines

#### Jay S. Suarez

Cebu Technological University – Philippines

#### Aprilyn V. Tordos

Cebu Technological University – Philippines

#### Cyril A. Cabello, PhD

Cebu Technological University – Philippines