INTERNATIONAL JOURNAL OF ADVANCED MULTIDISCIPLINARY STUDIES
Volume VI, Issue 6 June 2026, eISSN: 2799-0664

Assessment of Technology Integration of Digitally-Challenged Teachers in Their Work

JOAN D. MANGALINDAN
joan.mangalindan@deped.gov.ph
Saint Anthony College of Technology

SONNY N. DE GUZMAN, EdD
sirsonnydg726@gmail.com
Saint Anthony College of Technology

Abstract — The researcher aimed to assess the integration of technology of the digitally-challenged teachers in their work during the School Year 2024-2025 as inputs for proposed action plan. The researcher used mixed method research. To be precise, sequential explanatory design was used. The respondents of the study were the digitally-challenged teachers in South Sector of the Division of Pampanga. There were 60 digitally-challenged teachers who were requested to be the respondents on the quantitative part, while there were 10 purposively selected teachers on the qualitative part. Questionnaire and semi-structured interview were used as instrument. Weighted mean and thematic analysis were applied for interpretation. Results revealed that the integration of technology of digitally-challenged teachers on software resources was at great extent (M=2.54) and very great extent (M=3.52) on hardware resources. In addition, digitally-teachers integrated technology to improve learning experiences of pupils and to ensure pupils' active participation. Also, the restraining factors that hinder the digitally-challenged teachers from integrating technology in teaching were Insufficient ICT Materials and Resources and Poor Competencies in ICT. Furthermore, an action plan was proposed to help the digitally-challenged teachers in integrating technology in teaching.

Keywords: ***ICT integration, digitally-challenged teachers, hardware, software***

I. INTRODUCTION

The introduction of technology in education has opened a trend in different sectors including the emphasis to improve the work efficiency. Offices, institutions and people are being managed through the help of information and communication technology. This is the same for the education sector. Teaching and non-teaching personnel are tasked to maximize the use of technology in work due to the work from home arrangement that are given to them.

The use of technology in work is indeed helpful in this situation. It has a lot of features that will help the person to address some of the challenges in work that cannot be done due to limited interaction. It is applicable for teachers regardless of their age.

With this being said, one of the pressing phenomena in education sector is integration of technology of digitally-challenged teachers. These teachers ones who are not that skillful in the use of technology, still need to cope up with the trends and apply technology in their work especially in teaching. Since students are expected to be good in technology when they enter the labor force, teachers must be well-equipped in using technology before they can teach their students about it.

From the point of view of Purmayanti (2022), the education industry lacks teachers with technology expertise and tools for their jobs. It is a well-known reality that while younger teachers are capable of utilizing technology in their job, they lack the experience and expertise of more seasoned teachers when it comes to using it. This suggests that there could be an issue with simple troubleshooting. This becomes an even greater trial for those who are considered digitally-challenged teachers.

Another point that is highlighted that teaching nowadays use technology especially in the online platform. With this, the teaching-learning process must be carefully planned on how they will integrate technology when they start their lessons. The vast majority of teachers employ expository tactics, which do not have the capability of achieving technological know-how in the contemporary world of technology.

Even Yildirim et al. (2020) noted that teaching in the twenty-first century must incorporate technology. This implies that teachers are expected to incorporate technology into their lessons even before the mentioned century. Regardless of age, gender, or number of years spent teaching, this is relevant to all teachers.. However, to be considered as 21st Century teachers, it is very salient to possess the necessary competencies for the use of technology.

Classroom technology should also become an integral part of the core mission for the institution (Wichadee, 2017), with its primary focus rooted in the paradigm shift from teaching to learning. The distance learning modalities offered by the schools now underscored that teachers still need to apply technology in teaching. Schools emphasize that technology must not be a burden for teaching but it must aid teachers on how they can better facilitate instruction.

Palilonis and Watt (2019), mentioned that programs and activities that encourage the use of computers in the classroom are essential for schools to have in place if they are to help teachers become more proficient in integrating technology into their lessons. This implies that one-time training might not be sufficient, particularly for teachers who are currently struggling with technology. They require support and guidance on how to use technology to further enhance their instruction.

According to Nuroh and Liansari (2018), Teachers can establish a relationship with their students through the use of technology. This remains valid even in situations where there is a physical separation between the teachers and the students. With the use of technology, teachers can stay in touch with their students and give them the support they require to thrive in all of their endeavors. However, in order for them to properly support their own student, teachers who struggle with technology also require support.

From the stance of Bates (2012), it is indeed important for teachers to be skilled in technology because it improves the quality of teaching and the learning experiences of the pupils. This entails that technology is a tool that the teachers may use to further improve how they deliver their instruction.

In essence, the objectives of modern classroom instruction should be multidimensional in character. As a result, in order to achieve these objectives, numerous approaches are utilized in an integration, and the utilization of instructional technology is strongly advocated.

Grabe (2017) cited that even though teachers are competent and well-versed in various learning strategies and teaching techniques, it can still be strengthened further by making sure that they are able to use technology in teaching and in their work. Due to the fact that it will enable access to a variety of knowledge sources, the utilization of instructional technology has the potential to address this significant gap. It will offer extensive knowledge in a variety of formats, which will be accompanied by a variety of examples.

In cognizance with the aforementioned, Omwenga (2018) pinpointed that educational technologies can make the learning more interesting and will help in improving the concentration of the pupils in their work. This is also applicable in creating modules for learners. Teachers can only provide interactive and interesting modules when they have the knowledge on how to manipulate ICT as they prepare their instructional materials that will suit on the kind of the learners that they have.

In this day and age, it is impossible to disregard the potential of educational technology in schools, especially when one considers the new opportunities that these technologies present for the learning environment (Mudra, 2020). Within the context of the 21st century, the concept of "technology" is a significant concern in a variety of sectors, including education. This is due to the fact that technology has become the highway for the transfer of knowledge in the majority of countries. The integration of technology in today's society has resulted in innovations and a transformation of our societies, which has completely altered the way people think, work, and live.

Due to the fact that it is a strong instrument, educational technology has the potential to make the teaching and learning process more exciting and meaningful at the school (Idayavani & Shanthi, 2013). The distance learning modalities that are embraced by the teachers now make it more suited for them to learn how to use technology regardless of their age. The situation makes teachers to further integrate technology both in teaching and clerical works (Mouli & Saroja, 2013). When teachers facilitate technology in class, they create a dimension wherein their pupils will be able to have interaction with their teachers and classmates in digital platform.

Teachers may also use technology to prepare better instructional materials either in hard or soft platforms. It is possible for a teaching environment that has limited contact hours to reap the benefits of learning materials that have been well developed, are influenced by technology, and are delivered electronically. Nevertheless, it is of the utmost importance to establish a balance between the potential of technology and the careful grooming and attention that students may at times require. Moore et al. 2013 report the findings. It is expected that the utilization of educational resources that are influenced by technology will result in the formation of a "cognitive apprenticeship." It is expected that these materials will be of assistance in the development of core cognitive processes such as analytical thinking, critical thinking, and problem solving.

At this time, the utilization of technology is gaining popularity in a great number of educational institutions; nevertheless, the factor that is responsible for deciding the success or failure of the implementation, namely the teachers, is frequently underexposed. The teachers and the major role that they play in the incorporation of technology into the classroom are the most significant elements, according to Chen et al. (2013). According to Sang et al. (2011), the attitudes, views, and philosophies that teachers have on technology play a significant effect in the way that their pupils perceive technology. Furthermore, the attitudes of teachers are related to the utilization of technology in the classroom; a more traditional or constructivist belief about education effects the instructional methods and the utilization of technology. In addition, the use of such technologies places a significant amount of responsibility on the shoulders of teachers

The use of information and communication technology necessitates a transformation of the role of teachers, who will require additional skills and responsibilities in addition to teaching skills (Churiyah et al., 2020). These include the ability to integrate the technology that is provided into their regular classes as well as the ability to use technology. On the other hand, teachers have expressed a sense of inexperience in the utilization of educational technology and they have requested further feedback and help (Bhatt & MacKenzie, 2019). There are software and hardware that are new to them that they need to use when the school implement distance learning modalities. The use of simple Microsoft office may not be enough during this time.

Research of Oakley, Pegrum, Faulkner, and Striepe (2012) confirmed these findings and stated that teachers felt both technically and pedagogically uncertain in this new territory. They

may experience uncertainties during this time because there are software and hardware that may be new for them. This means that teachers still need to improve themselves on the kind of technology that they need to use (Heinrich, 2012).

As another essential component, professional development is an essential component for successfully integrating technology in educational settings. In a study that was carried out by Howland and Wedman (2014), teachers participated in a personalized professional development program that lasted for two years. The program's goals were to (a) improve teachers' understanding of technology and skills, and (b) incorporate technology into the classroom. According to the findings of the research, there was a substantial improvement in the level of expertise and effectiveness of the teaching staff in the areas of communication, inquiry-based learning, feedback and metacognition, and problem solving (Howland & Wedman, 2014). Howland and Wedman (2014) also found that the pre-service teachers reported using more technology-based applications in their courses.

Martinez-Pons and Rosenfield (2015) discovered that there were statistically significant differences between the before and post tests, which demonstrated that the technology interventions were successful. This was demonstrated by the fact that the differences were measured. In addition, Martinez-Pons and Rosenfield (2015) discovered that the level of technology utilization in the classroom was directly proportional to the level of competence in the utilization of technology in learning environments.

In the Philippines, many teachers have doubts about using computers. It is common to feel apprehensions towards the machines. Even knowledgeable people in computers have limit on what they know regarding technology.

According to Inosanto (2014), in his paper titled "Incorporating Computers into Education Setting," the application of computers in the academic setting addresses the demand for faster and more accurate processing of data to assist teachers in the preparation of education reports utilizing spreadsheet software such as Excel. Additionally, PowerPoint presentation application software is a tool that teachers can utilize to provide interactive lessons to their students. An examination of the role that computers have in the lives of teachers is presented in the article. It covers the ways

in which it may make the effort of creating an efficient lecture presentation easier for the teacher, as well as the ways in which it could process the data collected from students for evaluation.

The results of the study conducted by Tinio (2012) shed light on a number of additional interrelated problems that contribute to the intricate process of incorporating technology into the public secondary school system in the Philippines. For starters, there is the problem of inadequate educational infrastructure. This includes the reliability of the power supply, the extent of the telecommunications service and internet connection that is accessible, as well as the availability of space within the school to allow the deployment of technological resources.

The research conducted by Gamboa (2018) covers the growing significance of the internet in the global community, with a specific focus on the Philippines. The study also examines the utilization of internet-based courses, particularly for advanced study in which the student already possesses a solid foundation in the subject matter. More specifically, this is the case with regard to the study of English. According to Gamboa (2018), the only students who can benefit from e-learning are those who are students in the Philippines and have a very little knowledge of English but are too embarrassed or ashamed to study in a traditional classroom setting. Even though it is recommended that students who are just starting out study in a traditional classroom setting, and even though total immersion is still the most effective approach to learn the fundamentals of the language, online programs are becoming a more reasonable alternative because of the anonymity they provide.

For any innovation, teachers are faced with a challenge and that is to implement or not to implement. It is imperative that teachers embrace the technologies of the future in order to maintain a connection with the brains of today's students. Only when teachers are able to make effective use of technology will the primary goal of integrating technology be accomplished. The unfortunate reality is that if teachers are not provided with training to use new technological tools, they will continue to employ the traditional ways of instruction. It is necessary for teachers to have training that teaches them about technology in order for them to be able to use it effectively in the classroom.

A thorough review of the literature lends credence to the belief that school administrators and teachers must move forward and embrace the glitz of educational technology. It was also

shown that technology must really be used to improve quality of education even before the new normal in education. However, one thing that is highlighted is that most of the studies are conducted during the time that technology must be integrated in classes in schools. Another point that is revealed is that there are few available data regarding how the digitally-challenged teachers integrate technology in their teaching. This gap in the body of knowledge was given focus by the researcher. With this, the study aims to assess the integration of technology of the digitally-challenged teachers in their work during the School Year 2024-2025 as inputs for proposed capability development program.

Conceptual Framework

The study was based on the Attitude Theory of Ajzen (1993). In this theory, it is emphasized that the actions of a person is dependent on the attitude towards the idea. When there is a positive attitude on one idea, the person tends to react positively. It is linked with the cognition of Plato wherein what is the mind of an employee serves as basis in acceptance of ideas and actions to be taken. The theory suits the purpose of the study for it assessed the attitude of the teachers in the integration of technology in the realm of teaching.

The aforementioned theory was used to craft the blue print of this study. With this, the researcher utilized the IPO model as shown in Figure 1.

The input capsule included the data to be collected such as integration of technology in teaching, what encourages the digitally-challenged teachers to integrate of technology in work, restraining factors that hinder the digitally-challenged teachers from integrating technology in work and how they address the restraining factors.

On the other hand, the process capsule had quantitative part such as request to adopt the tool, distribution of questionnaire, retrieval, statistical treatment, while the qualitative part listed the composition of qualitative questions, validation of interview guide, interview proper and thematic analysis.

The output capsule was an action plan for digitally-challenged teachers.

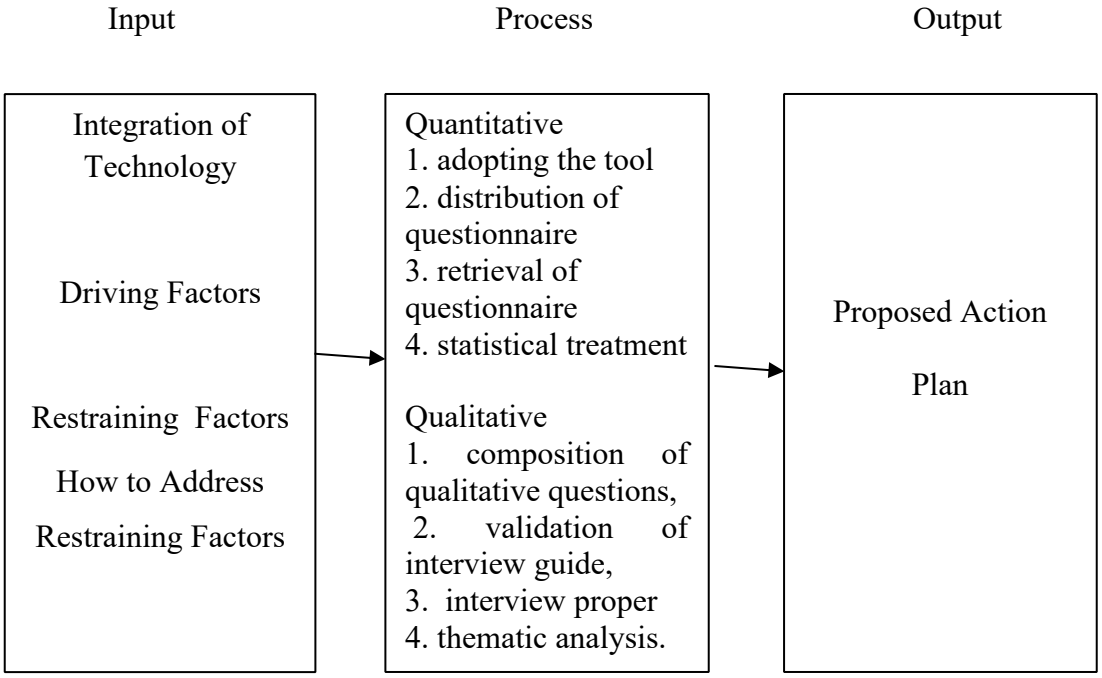

FIGURE 1
PARADIGM OF THE STUDY

Statement of the Problem

The researcher aimed to assess the integration of technology of the digitally-challenged teachers in their work during the School Year 2024-2025 as inputs for proposed action plan.

Specifically, the study sought answer to the following questions:

1. How may the integration of technology of digitally-challenged teachers be described in terms of:

1.1. software resources, and

1.2. hardware resources?

2. What encourages the digitally-challenged teachers to integrate of technology in work?

3. What are the restraining factors that hinder the digitally-challenged teachers from integrating technology in their work?

4. What action plan may be conceptualized based on the findings of the study?

Significance of the Study

It is expected that the following will benefit from the study:

School Principals. The investigation will give the school principals an understanding on how technology is being integrated at the school level and the process in order for one to see what is being done at this level to facilitate the implementation of technology in teaching and other works. This is an area that truly must be explored in order to understand technology integration in schools.

Teachers. The findings of the study will serve as a useful reference material for teachers, allowing them to embrace the current trend of utilizing technology and support it by supplying computers and other forms of instructional technology..

Learners. The improvement on their teachers will have a positive contribution in the performance of the pupils in the school. When the teachers become adept in the technology, learners will experience a more relevant instruction in the school. Furthermore, their interests will be sustained when they see the technology being used in the classroom because of the new methods being used in the classroom.

Future Researchers. The researcher has high hopes that this study will be able to inspire other research in the field of education that involves the utilization of various instructional technologies. In addition, the research will offer information regarding the degree to which the utilization of instructional technologies helps to prepare both

teachers and students for the world of technology. This information can be utilized as a reference for further research in the future.

Scope and Delimitation

This research aimed to assess the integration of technology of the digitally-challenged teachers in their work during the School Year 2024-2025 as inputs for an action plan. This was confined in South Sector of the Division of Pampanga.

For this, purposively selected teachers were requested to be the respondents of the study. To materialize the study, the researcher focused on collecting information regarding integration of technology of digitally-challenged teachers in terms of software resources and hardware resources; what encourages the digitally-challenged teachers to integrate of technology in work, and restraining factors that hinder the digitally-challenged teachers from integrating technology in work. All of these were used to have the proposed action plan.

Definition of Terms

For further understanding of the study, the following terms are conceptually and operationally defined:

Educational Software. Instructional programs that are utilized to make the computer's processes more efficient. It is possible for educational software to contain any software product that is utilized for instructional purposes for any subject that is included in the school curriculum.

Integration. This term refers to the adoption, inclusion and use of resource materials / equipment to aid instruction in the teaching and learning process.

Technology. This word refers to the field of study that examines the development and application of technical means, as well as their connection to life, society, and the

environment. It draws from a variety of fields of study, including engineering, applied science, industrial arts, and pure science (Technology, 2016).

II. METHODOLOGY

This chapter discusses research design, respondents and sampling technique, instrumentation, data collection and data analysis.

Research Design

The purpose of this research was to assess the integration of technology of the digitally-challenged teachers in their work during the School Year 2024-2025 as inputs for action plan. To meet this, the researcher used mixed method research. As the name suggests, it is a method where the quantitative method and qualitative methods are both used in one research. According to Cameron (2015), it is a type of research that entails the collection, analysis, and interpretation of quantitative and qualitative data in either a single study or in a series of studies that investigate the same underlying issue. The main purpose is not to simply combine the beauty of the two methods, but to substantiate the weakness of the other through the strength of the other.

To be precise, sequential explanatory design was used. A collection and analysis of quantitative data is the first step in this process, which is then followed by a collection and analysis of qualitative data. Utilizing qualitative findings as a means of assisting in the explanation and interpretation of the findings of a quantitative investigation is the objective of this tool (Berman, 2017). The qualitative data collected and interpreted will be used to substantiate the quantitative part. It means that data collection started with quantitative data gathering to be treated using statistics. The result of the analysis served as basis for crafting the qualitative questions.

The aforementioned research design suited the purpose of the study which was to assess the integration of technology of the digitally-challenged teachers in their work during the School Year 2024-2025 as inputs for an action plan.

Respondents/Participants

The respondents of the study were the digitally-challenged teachers in South Sector of the Division of Pampanga. For a richer data, the researcher considered purposive sampling technique in selection of teachers. It is a type of non-probability sampling technique that puts premium on giving criteria for selection to ensure that the right teachers were selected for data collection. For selection, the basis was the IPPD where in the development or improvement on the use of technology is needed. To know who among the teachers were given questionnaire, record on IPPD was requested. Still, only those who agreed to part of the study were considered.

TABLE 1
RESPONDENTS OF THE STUDY

Districts	Frequency	Percentage
District A	7	11.67
District B	9	15.00
District C	6	10.00
District D	5	8.33
District E	8	13.33
District F	7	11.67
District G	8	13.33
District H	10	16.67
Total	**60**	**100.00**

It can be seen from the illustration that there were 60 digitally-challenged teachers who were requested to be the respondents of the study. These teachers came from eight districts of the sector.

In terms of the qualitative part, the selection of the participants was based on non-probability sampling technique. It is a method wherein randomization is set aside and the selection is based on specific criteria that the researcher sets before determining the person to be interviewed. To be included in the interview, the following criteria were observed: 1) included technology as priority development on IPPD for the last two years, 2) has no personal laptop and 3) with a low rating on the integration of ICT on COT. Ten teachers were requested as participants.

Research Instruments

Since the study applied both quantitative and qualitative study, two sets of instrument were used.

The first instrument was a pre-validated questionnaire that aims to measure the integration of technology in teaching, which is the primary goal of this study. The tool that was used in study of Luzande (2017) is the instrument to be used. It is a survey questionnaire that examines the integration of technology in terms of hardware resources and software resources. It applies the use of 4 point Likert scale to measure the integration of technology. The researcher modified the instrument to suit it on the current set up.

In terms of qualitative phase, semi-structured interview was applied. The questions asked were only formulated once the result of the quantitative part is already present. The point is to prepare the questions before the actual interview. This means that questions were predetermined. In addition, interview questions were in open-ended questions form. This gave teachers the chance to fully express themselves without thinking about limitations of figures and measurement.

The creation of the questions asked was based on the expanded version of qualitative research question. This was used as interview guide. According to Patton (2012), an interview guide is a document that has a list of questions or concerns that are intended to be discussed during

the course of an interview. It is necessary to establish an interview guide in order to guarantee that the same fundamental lines of inquiry are explored with each individual under investigation. The guide for the interview includes a list of themes or subject areas that the interviewer is free to investigate, probe, and ask questions about in order to shed light on a certain subject.

These questions were personally prepared by the researcher. Once the first draft was crafted, the insights of the research adviser were incorporated for the betterment of the questions. The second draft was presented to the panel of experts which consist of (1) education program specialist in charge of research, (2) master teacher, and (3) ICT coordinator.

The panel of experts was asked to carefully review the instrument to ensure that it is a valuable and realistic data collection tool. The researcher submitted the tool on online platform to experts for validation. Their suggestions were used to refine the instrument to improve the accuracy of this instrument and minimize bias.

Data Collection

The researcher crafted letter of request duly noted by the adviser to ask permission to conduct the study. This was addressed to the graduate school including the Schools Division Superintendent of the Division of Pampanga for approval. Once the approvals were secured, data collection commenced by sending a copy of the approval to the target participants as well as the copy of the questions to be asked.

The distribution of the survey questionnaire was done with the assistance of the school heads. With their assistance, the teachers who are digitally-challenged were identified. The actual data collection for quantitative part lasted for eight weeks.

In terms of qualitative, informed consent forms was distributed on the day of each focus group interview, and the participants had to sign a copy of the form granting their permission to be involved in the research study. Copies of this signed form was given to the participants for their records.

Open-ended questions were asked, and the participants were asked to respond at their own will to these questions. The researcher was relaxed and cordial to make the groups feel comfortable during the discussions. Everything was captured using google meet, zoom or messenger application.

Ethical Considerations

The purpose of the study was discussed to the target respondents and its possible contributions in the performance of their duties were tackled with the teachers. It was emphasized that their participation on the survey is on voluntary basis and they have the right to withdraw anytime they want. To make them feel relax on their answers, they were given the option to write their names.

In qualitative part, the entire discussion for each interview was recorded using online recording platform and permission was granted from the participants prior to the group interview. Confidentiality was assured by the use of index cards for each participant, and each person in the group was identified by a letter.

To do this, there was a letter of consent that was signed by the respondents to show their approval. Furthermore, the researcher protected their identity by giving them the chance to write their names optionally. In addition, there were no information in the entire manuscript that pinpointed the identity of the teachers. All of the data were coded and no answer was singled out in the entire manuscript.

All of the answers and responses were only used for this research and were treated with utmost secrecy and confidentiality.

Statistical Treatment/Data Analysis

After all the survey questionnaire were retrieved, the data were tabulated, classified, and encoded. The following statistics were applied for quantitative data collection and gathering:

1. Weighted mean was used to measure the extent of integration of technology in teaching of the digitally-challenged teachers. This scale served as basis for analysis and interpretation

Scale	Mean Range		Descriptive Rating
4	3.51-4.00	-	Very Great Extent (VGE)
3	2.51-3.50	-	Great Extent (GE)
2	1.51-2.50	-	Some Extent (SE)
1	1.00-1.50	-	Not at all (NA)

The researcher reviewed all of the responses to the questions by reviewing the transcripts of interview conducted. In doing this, the researcher looked at the transcripts to see what patterns emerged, common themes, new questions that came about from the discussions, and the conclusions that seem to be true (Berkowitz, 2017).

The uniqueness of qualitative phase lies more on its data analysis. Words, phrases, sentences, and observations are the pieces of information that are tough to analyze or interpret because the researcher is the one who extract the meaning from the given data.

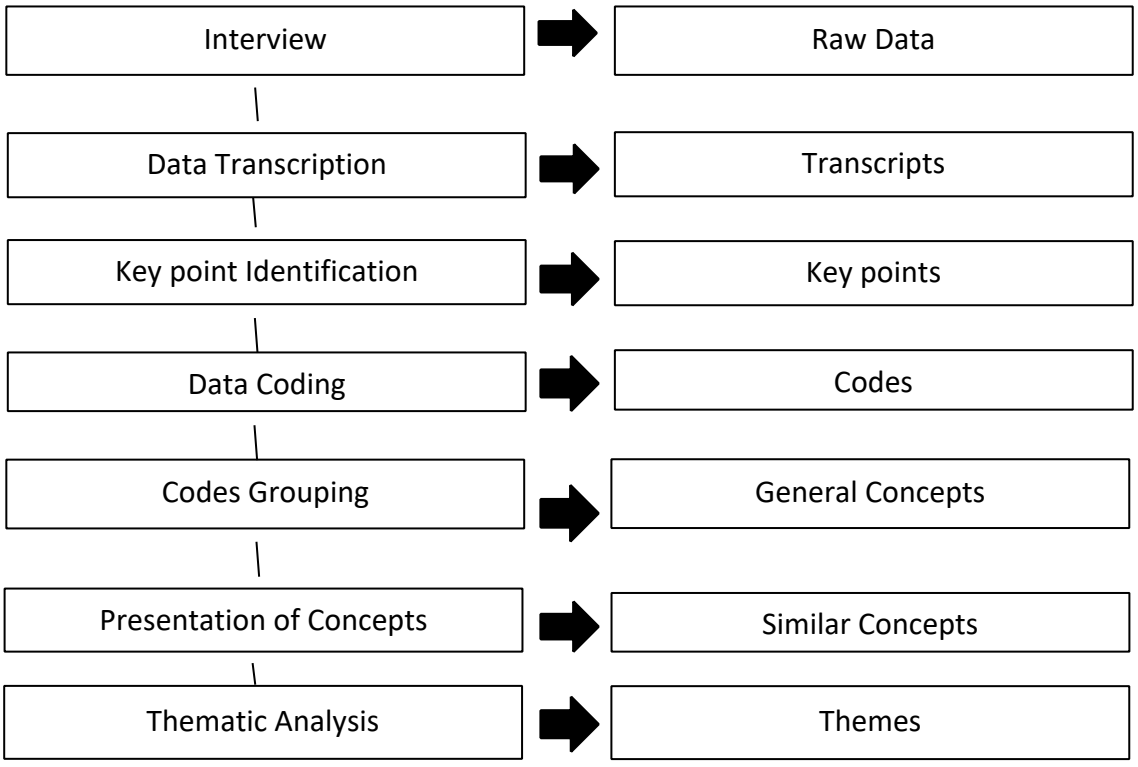

FIGURE 2
DIAGRAM OF QUALITATIVE DATA ANALYSIS

III. RESULTS AND DISCUSSION

This part of the study focuses on the results of the quantitative and qualitative data gathering and analysis.

1. Integration of Technology of Digitally-Challenged Teachers

The integration of technology of digitally-challenged teachers was assessed using a survey questionnaire.

It can be shown from Table 2 that digitally-challenged teachers used software resources at great extent (M=2.54, SD=0.35). In addition, using “Presentation Software (MS Powerpoint, Google slides, etc” got the highest mean of 3.20 (SD=0.34) with verbal rating of great extent. The lowest mean of 2.17 (SD=0.35) is found on “Simulations/Modelling Programs” with verbal rating of some extent. This entails that there is still room for improvement on this part.

The results reveal that digitally-challenged teachers are not that quite adept in using software that are different from what they typically do. Usually, teachers use word processing and spreadsheets. Salgado and Paglinawan (2025) pointed out that expertise on the use of software is highly crucial before a person may utilize it. However, others are hesitant to even begin learning these applications, which limit their advancement.

TABLE 2
ASSESSMENT OF INTEGRATION ON SOFTWARE RESOURCES

As a teacher, I utilize the following resources…	Weighted Mean	SD	Description
1. Word Processing (MS Word, Google Docs, etc.)	3.13	0.37	Great Extent
2. Spreadsheet (MS Excel, Google Sheets, etc.)	3.14	0.34	Great Extent
3. Presentation Software (MS Powerpoint, Google slides, etc.	3.20	0.34	Great Extent
4. Recreational Games (Clash of Clans, Candy Crush etc.)	2.73	0.33	Great Extent
5. Internet browsers (Google, Firefox, Safari, etc.)	3.13	0.41	Great Extent
6. Educational Games (Mind Games, Scrabble, etc).	2.74	0.36	Great Extent
7. Email Software (Yahoo mail, Gmail, etc.)	2.79	0.34	Great Extent
8. Video/Audio/Authorware	3.01	0.37	Great Extent
9. Statistical/Mathematical Programs	2.75	0.38	Great Extent
10. Simulations/Modelling Programs	2.17	0.35	Some Extent
Grand Mean	**2.54**	**0.35**	**Great Extent**

Legend

Very Great Extent	3.51-4.00
Great Extent	2.51-3.50
Some Extent	1.51-2.50
Low Extent	1.00-1.50

Table 3 shows that digitally-challenged teachers utilize hardware resources at very great extent based on its mean of 3.52 (SD=0.30). The same illustration reveals that "Laptop/Desktop Computers" marked a mean of 3.91 (SD=0.27) with a verbal rating of very great extent, while "Graphical tablet/Interactive Board) recorded a mean of 3.01 (SD=0.32) but still rated as great extent.

As a result of the collection of data, it has been discovered that even teachers who have difficulty with digital technology are becoming more acclimated to incorporating or making use of hardware resources. According to Nurhidayat et al. (2024), the development of technology has led to the introduction of a variety of pieces of hardware that are anticipated to be of major aid to humans. These pieces of hardware are expected to be of substantial assistance to individuals. Under these circumstances, it is of the utmost importance that teachers have the willingness to acquire the knowledge necessary to make effective use of them. Teachers are required to make use of new equipment or apparatus in order to make use of the hardware resources that are available to them. Because of this, people find it challenging to even attempt to use it.

TABLE 3
ASSESSMENT OF INTEGRATION ON HARDWARE RESOURCES

As a teacher, I utilize the following resources…	Weighted Mean	SD	Description
1. Color Printer (Inkjet, Deskjet Printer, etc.)	3.72	0.35	Very Great Extent
2. Scanner	3.65	0.32	Very Great Extent
3. TV and Decoder (Projection Device)	3.43	0.36	Great Extent
4. Video/ LCD Projector	2.17	0.38	Some Extent
5. Device for digital imaging and video processing (Camera/CamCorder)	3.53	0.40	Very Great Extent
6. Laptop/Desktop Computers	3.91	0.27	Very Great Extent
7. Graphical tablet/Interactive Board	3.01	0.32	Great Extent
8. Ipad/Tablet/Smartphone	3.61	0.33	Very Great Extent
Grand Mean	**3.52**	**0.30**	**Very Great Extent**

Legend

Very Great Extent	3.51-4.00
Great Extent	2.51-3.50
Some Extent	1.51-2.50
Low Extent	1.00-1.50

2. What Encourages Digitally Challenged Teachers to Integrate Technology

The digitally-challenged teachers still view themselves as part of the school and academe and they are still eager to continue teaching despite the obstacles that they have in incorporating technology. With this, it is very crucial to understand what inspires these teachers to integrate technology in teaching. Using the semi-structured interview, the researcher was able to gather data and came up with the following themes:

Theme 1: Improving Learning Experiences of Pupils

One of the most important responsibilities of teachers is to facilitate instruction in the classroom. They have been entrusted with the responsibility of putting the curriculum into practice through classroom instruction. Teachers are responsible for a number of important functions, one of which is to provide their students with learning experiences that are based on the competencies outlined in their respective curriculum guides. Through the employment of information and communication technology, it is possible to effectively impart instructions to the learners.

The participants are encouraged for the sake of their learners as shown in the following responses during the interview:

> *I only think about learners to give them better instructions* (T1)

> *Actually I am old already but my pupils need it so I try my best to use them (T3).*

> *I am not familiar with those tools that the young teachers are using but I try because there are learners who will benefit from it* (T5)

> *I want to improve my teaching because my students will benefit* (T9)

For the sake of my pupils in my class that I consider my children (T10)

Because they are the ones who are supporting the students in the classroom to find new information, teachers are meant to be the most knowledgeable people in the classroom. This is because they are the ones who are helping the students find new information. As a consequence of this, it is anticipated that they will be proficient in a variety of fields, including the utilization of technology. They are able to present their students with improved educational chances, which in turn makes the process of learning more enjoyable. This is made possible by incorporating technology into their teaching methods (Viray & Olalia, 2022).

The employment of technology has the potential to be of significant aid to teachers in terms of their professional development, as stated by Phani and Rao (2024). Teachers can benefit tremendously from this potential. Consequently, as a consequence of this, they will be able to find ways in which they can further improve the manner in which they provide instruction to their students. When teachers make use of technology in their job, it not only makes it easier for them to finish their assignments, but it also enables them to save time, which they can then devote toward addressing other issues that are of greater value.

Theme 2: Ensuring Pupils' Active Participation

The teachers are the ones who are responsible for the teaching and learning process that takes place in the classroom. It is their responsibility to make sure that their pupils are attentive and actively participating in the activities and other sessions that are available. When it comes to increasing student involvement, one of the most successful methods for teachers to do so is to include technology into their lessons. It is for this reason that they make use of it in their classes, which is one of the reasons why they find it useful. When teachers integrate technology, they see that students become more engage as shown in the following responses of the select teachers:

Since pupils are interested when there are moving presentation, their interest is sustained (T2)

They participate more when they see something on tv rather than just when I keep on talking (T4)

When the technology is engaging, they participate more (T6)

To invite my pupils to be active in class (T7).

They are better than me when using cellphone so they are interested (T8)

When it comes to the process of teaching and learning, one of the goals that teachers strive to accomplish is to attract and keep the attention of their students. It is one of the most challenging things to carry out since the surroundings is currently quite distracting. This is one of the reasons why it is so difficult to execute. In light of the fact that students are easily distracted by the things that they are observing in their surroundings, it is of the utmost importance that teachers design tactics that will help them to attract the attention of their students. Kumar and Durga (2018) suggested that information and communication technology (ICT) is a tool that teachers can use to stimulate the attention of their students. They said that this tool can be used to engage students in learning. Students are captivated to the colors and the new things that their teachers are displaying to them when teachers incorporate information and communication technology (ICT) into their lessons. (ICT) stands for information and communication technology.

3. Restraining Factors that Hinder Integration of Technology

After knowing what encourages teachers to utilize technology, the study also looked into the restraining factors that hinder the digitally-challenged teachers in integration technology in their teaching.

Theme 1: Insufficient ICT Materials and Resources

In order for teachers to be able to successfully incorporate technology into their learning experiences, it is crucial for them to possess the necessary goods and materials that they need to utilize in their teaching for them to be able to do so. Teachers, on the other hand, frequently report that they do not always have access to the tools and resources that they require in their work. People may find themselves in situations where they are unable to exercise control over certain aspects of the situation, such as the speed or efficiency of the internet connection that they have. The vast majority of the time, teachers are the ones who end up purchasing their own personal laptops. Teachers are of the opinion that when the materials and resources associated with the incorporation of technology are insufficient, it hinders their incorporation into the teaching process because of the limitations placed on the items that they require. This is due to the fact that there are a limited amount of various materials and resources available.

This is shown in the following key points of the participants:

> *I have an old laptop that I use but I do not have enough money to buy new one so I cannot use other apps* (T1)

> *We need to buy data sometimes and some of the AI sites have payment (T2)*

> *Some applications cannot be installed because of low memory of my laptop. It is personal (T6).*

Teachers have expressed a significant amount of anxiety over the availability of technological resources and materials throughout the course of the previous several years. First and foremost, it is necessary for them to have access to materials before they can begin incorporating technology into their teaching. Teachers, on the other hand, are the ones who are purchasing their own personal computers for employment purposes. The things that teachers need

to integrate technology, such as laptops and other devices, are being purchased with their own money or, in some cases, with advantages that they sometimes receive.

It is necessary to give teachers with tools and materials in order for them to be able to effectively incorporate information and communication technology (ICT) into their teaching, as stated by Hennessy et al. (2022). It is difficult to have a successful flow of teaching and learning when there is a lack of access to computers and internet connection. Due to the circumstances, it is possible that teachers will not be able to provide the greatest possible instruction to their students.

Theme 2: Poor Competencies in ICT

In spite of the fact that it is a must for teaching in the 21st century, teachers who are not proficient in the use of technology are nonetheless required to incorporate technology into their courses, regardless of the age of their students. It is common knowledge among these teachers that the biggest barrier that stops them from incorporating technology into their classrooms is their lack of expertise in the application of technology. The majority of jobs in the current day are now carried out with the assistance of information and communication technology (ICT). This includes the preparation of lessons, the computation of grades, and the design of instructional materials. Therefore, having a strong understanding of technology is a requirement in this modern era.

This theme is created based on the following responses of the seasoned teachers:

> *Those AI that they tell us, we do not know how to use them* (T3)

> *The young teachers are using many applications that I do not know how to use* (T5)

> *I don't know how to use them. All I know is powerpoint but I am okay with teaching* (T7)

> *Even though I only know how to use powerpoint, well I can still teach well without other apps* (T9)

Skills in information technology are a fundamental requirement for everyone in this day and age, but they are extremely important for teachers. The work that is done in the Department of Education, including the delivery of instruction, makes substantial use of information and communication technology (ICT). One of the competencies that are being examined is the extent to which teachers are able to successfully incorporate information and communication technology (ICT) into their instructional practices. Taking this into consideration, it is of the utmost importance that teachers have a level of expertise in the application of information and communication technology that is at least adequate.

According to Zou et al. (2025), it is of highest importance for teachers to possess the ability to properly incorporate technology into their lessons. Teachers and scholars have demonstrated a substantial amount of interest in the idea of technical competence over the course of the previous few years. School administrators and teachers collaborate to develop techniques that would enable them to assist teachers who struggle with digital technology in improving their skills. These strategies are intended to help teachers improve their abilities.

4. Proposed Action Plan for Digitally-Challenged Teachers

The researcher was able to come up with a proposed action plan for digitally-challenged teachers.

Key Result Area	Objectives	Strategies / Activities	Persons Involved	Time Frame	Success Indicators
Basic Digital Literacy	Increase teachers' confidence in using basic ICT tools	Conduct ICT skills needs assessment and baseline survey	School ICT Coordinator, Teachers	Month 1	Survey completed and competency gaps identified
	Enable teachers to use basic computer functions	Hands-on training on basic computer operations (MS Word, PowerPoint, email use)	ICT Trainer, Teachers	Month 1–2	90% of participants can create basic documents and presentations
Online Teaching Tools	Improve ability to use online platforms for teaching	Training workshops on Google Classroom, Google Forms, and Zoom	ICT Coordinator, Master Teachers	Month 2–3	Teachers successfully create and manage online classes
	Promote responsible and safe use	Seminar on digital citizenship	School Head, ICT Experts	Month 3	Teachers demonstrate

	of digital tools	and cybersecurity basics			safe online practices
Instructional Integration	Integrate ICT in daily classroom instruction	Demonstration lessons using ICT-based teaching strategies	Teacher Leaders, Coaches	Month 4	ICT used in at least one weekly lesson
	Encourage development of digital instructional materials	Workshop on developing simple digital learning materials (slides, videos, online quizzes)	ICT Team	Month 4–5	Teachers produce at least one ICT-based material
Peer Support & Mentoring	Sustain learning through peer collaboration	Organize ICT peer-mentoring (tech-savvy teachers buddy system)	School Head, ICT Mentors	Month 2–6	Improved confidence and reduced ICT anxiety
	Establish a culture of continuous ICT learning	Create an ICT helpdesk or online support group	ICT Coordinator	Ongoing	Increased teacher participation and problem-solving

Monitoring & Evaluation	Evaluate progress in ICT competence	Conduct post-training assessment and classroom observation	School Head, ICT Team	End of Month 6	Improved ICT competency scores
	Recognize improvement and good practice	Recognition of most improved and ICT-innovative teachers	School Head	End of Plan	Increased motivation and sustained ICT use

Expected Outcomes

1. Digitally-challenged teachers demonstrate improved confidence and competence in using ICT tools.

2. ICT is effectively integrated into teaching and learning processes.

3. A supportive and collaborative digital culture is established among teachers.

IV. CONCLUSIONS AND RECOMMENDATIONS

This part shows the summary of findings, formed conclusions and crafted recommendations.

Summary of Findings

The following were the summary of findings:

1. The integration of technology of digitally-challenged teachers on software resources was at great extent (M=2.54) and very great extent (M=3.52) on hardware resources.

2. Digitally-teachers integrated technology to improve learning experiences of pupils and to ensure pupils' active participation.

3. The restraining factors that hinder the digitally-challenged teachers from integrating technology in teaching were Insufficient ICT Materials and Resources and Poor Competencies in ICT.

4. An action plan was proposed to help the digitally challenged teachers in integrating technology in teaching.

Conclusions

Based on the summary of findings, the following were inferred:

1. When it came to incorporating technology into the classroom, teachers were more skilled in exploiting hardware resources than they were in utilizing software resources. These hardware resources were the ones that they apply more during the actual execution of their work as teachers.

2. For the purpose of providing their pupils with improved educational opportunities in the classroom, teachers who struggled with technology were inspired to include technology into their lessons even though they are struggling.

3. Respondents recognized that their lack of competence in information and communications technology (ICT) and their lack of access to technology for work prevent them from successfully incorporating technology in the classroom.

4. The proposed action plan for digitally-challenged teachers will be of great help for them to understand technology and how they can use it in their work.

Recommendations

Based on the conclusions, the following are recommended:

1.Digitally-challenged teachers are encouraged to broaden their use of technology in the classroom, particularly with regard to software resources, by experimenting with alternative platforms such as artificial intelligence applications to help them ease their work.

2. School heads may work with other teachers who are competent in ICT to train the teachers on their weaknesses in integration of technology. The seasoned teachers may be adopted or mentored by the young teachers who are adept in ICT.

3. The enhancement of ICT competence of digitally-challenged teachers may be included in their professional development plan. In addition, school heads may monitor the activities so they can provided the technical assistance when needed.

4. The proposed action plan for digitally-challenged teachers may be adopted in a district to test its effectivity.

5. Future researchers may conduct qualitative study on how the use of digital technology affects the actual teaching.

REFERENCES

[1.] Bates, A. (2010). *Media and Technology in European distance education*: proceedings of the EADTU workshop on Media Methods and Technology Open University, Milton Keynes

[2.] Berkowitz, B. (2017). Conducting focus groups. *The Communitv Tool Box.*

[3.] Berman, E. (2017). An Exploratory Sequential Mixed Methods Approach to Understanding Researchers' Data Management Practices at UVM: Integrated Findings to Develop Research Data Services. *Journal of eScience Librarianship* 6(1): e1104.

[4.] Bhatt, I., & MacKenzie, A. (2019). Just Google it! Digital literacy and the epistemology of ignorance. *Teaching in Higher Education*, 24(3), 302-317. https://doi.org/10.1080/13562517.2018.1547276

[5.] Chen, F.H., Looi, C.K., & Chen, W. (2013). Integrating technology in the classroom: a visual conceptualization of teachers' knowledge, goals and beliefs. *Journal of Computer Assisted Learning*, *25*(5), 470–488

[6.] Churiyah, M., Sholikhan, S., Filianti, F., & Sakdiyyah, D. A. (2020). Indonesia education readiness conducting distance learning in Covid-19 pandemic situation. *International Journal of Multicultural and Multireligious Understanding,* 7(6), 491-507. http://dx.doi.org/10.18415/ijmmu.v7i6.1833

[7.] Gamboa, C. (2018). The language business, *Journal of Internet Banking and Commerce*, 13(1)

[8.] Ghavifekr, S. & Rosdy, W.A.W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science (IJRES)*, 1(2), 175-191.

[9.] Grabe, M., (2017). Integrating technology for meaningful learning (5th ed.). Boston, MA: Houghton Mifflin.

[10.] Grabe, M. & Grabe, C. (2018). Integrating Technology for meaningful learning: Second edition, Houghton Mifflin Company. Boston

[11.] Heinrich, P. (2012). *The iPad as a tool for education - a case study.* Longfield Academy, Kent: Naace.

[12.] Henderson, S., & Yeow, J. (2012). iPad in Education: A Case Study of iPad Adoption and Use in a Primary School. In *2012 45th Hawaii International Conference on System Science (HICSS)* (pp. 78–87).

[13.] Hussain, N. (2010). *Teacher Competencies for the Use of Information Communication Technology*. Researchgate.

[14.] Idavayani, M. and Shanti, D. (2013). Evaluating the effects of technology in school reform. In B. Means (Ed.), *Technology and education reform: The reality behind the promise*. San Francisco: Jossey-Bass.

[15.] Hennessy, S. et al. (2022). Technology Use for Teacher Professional Development in Low- and Middle-Income Countries: A Systematic Review. *Computers and Education Open* 3(1):100080

[16.] Howland, J. & Wedman, J. (2014). A process model for faculty development: Individualizing technology learning. *Journal of Technology and Teacher Education,*12(2).

[17.] Kumar, P and Durga, S.S (2018). *The Use of technological Aids and Tools in Teaching/ Learning English*. ISSN: 2456- 8104. http://www.jrspelt.com Issue 5, Vol. 2, 2018.

[18.] Lang, C. (2010). Effective integration of ICT in Singapore schools: pedagogical and policy implications. *Educational Technology, Research and Development,* 55(1).

[19.] Li, Q. (2017). Student and teacher views about technology: A tale of two cities? *Journal of Research on Technology in Education,* 39(4).

[20.] Makoviy, K., Proskurin, D., Khitskova, Y. and Metelkin, Y. (2017). *Server hardware resources optimization for virtual desktop infrastructure implementation*. Information Technology and Nanotechnology

[21.] Martizez-Pons, M. & Rosenfeld, B. (2015). Promoting classroom technology use. *Quarterly Review of Distance Education,* 6(2).

[22.] Moore, B., et al. (2013). *Using technology to support education reform.* Washington, DC: Department of Education, Office ofEducational Research and Improvement.

[23.] Mouli, M. and Saroja, E. (2013). Teachers, technology, and change: English teachers' perspectives. *Journal of Technology and Teacher Education,* 13(1).

[24.] Mudra, H. (2020). Digital literacy among young learners: How do EFL teachers andlearners view its benefits and barriers? *Teaching English with Technology*, 20(3), 3-24.

[25.] Nurhidayat, E. et al. (2024). Technology integration and teachers' competency in the development of 21st-century learning in EFL classroom. *Journal of Education and Learning (EduLearn)* 18(2):342-349

[26.] Nuroh, E. and Liansari, V. (2018). *Digital age literacy in elementary school.* Paperpresented at the 1st International Conference on Intellectuals' Global Responsibility (ICIGR 2017). https://doi.org/10.2991/icigr-17.2018.29

[27.] Nwana, S., Ofoegbu, T. and Egbe, C. (2017). Availability and Utilization of ICT Resources in Teaching Compute Education In Secondary Schools in Anambra State, Nigeria. *Mediterranean Journal of Social Sciences*, 8(5)

[28.] Oakley, G., Pegrum, M., Faulkner, R., & and Striepe, M. (2012). *Exploring the pedagogical applications of mobile technologies for teaching literacy*, Report for the Association of Independent Schools of Western Australia.

[29.] Okojie, M., Okojie-Boulder, T. & Olinzock, A. (2016). The pedagogy of technology integration. *Journal of Technology Studies,* 32(2).

[30.] Omwenga, N.M (2018). Use of Media resources during teaching practice (A study of Kamagambo and St. Paul). Kenyatta University, Unpublished, Med Thesis

[31.] Palilonis, J., & Watt, T. (2019). Professor Garfield's 21st Century Digital Literacy Project: Supporting K-5 Teachers in their Digital Literacy Instructional Efforts. *International Journal on E-Learning,* 18(4), 395-412. https://www.learntechlib.org/primary/p/185269/

[32.] Patton, M. (2012). *Qualitative research & evaluation methods.* Thousand Oaks, CA:Sage Publications, Inc.

[33.] Phani, K. and Rao, L. (2024). Benefits and Use of Technology in Instructional Process. *The Review of Contemporary Scientific and Academic Studies* 4(1):4

[34.] Purmayanti, D. (2022). The Challenges of Implementing Digital Literacy in Teaching and Learning Activities for EFL Learners in Indonesia. *BATARA DIDI English Language Journal* 1(2):101-110

[35.] Salgado, J. and Paglinawan, J. (2025). Teacher's Challenges and Opportunities in Integrating Digital Technology in the Classroom. *International Journal of Scientific and Management Research* 8(10)

[36.] Salleh, M., Bahari, M. and Zakaria, N. (2017). An Overview of Software Functionality Service: A Systematic Literature Review, *Procedia Computer Science* 124 (2017) 337–344

[37.] Sang, G., Valcke, M., van Braak, J., Tondeur, J., & Zhu, C. (2011). Predicting ICT integration into classroom teaching in Chinese primary schools: exploring the complex interplay of teacher-related variables. *Journal of Computer Assisted Learning*,

[38.] Viray, J. & Olalia, N. (2022). Tpack (Technological, Pedagogical And Content Knowledge) Of Primary Level Teachers Towards A Proposed Professional Development Plan. *Journal of Pharmaceutical Negative Results*, 13(9)

[39.] Wichadee, S. (2017). A development of the blended learning model using Edmodo for maximizing students' oral proficiency and motivation. *International Journal of Emerging Technologies in Learning (Online),* 12(2), 137. https://doi.org/10.3991/ijet.v12i02.6324

[40.] Yildirim, B., Topalcengiz, E. S., Arikan, G., & Timur, S. (2020). Using virtual reality in the classroom: Reflections of STEM teachers on the use of teaching and learning tools. *Journal of Education in Science Environment and Health*, 6(3), 231-245. https://doi.org/10.21891/jeseh.711779

[41.] Yunus, M. M., Nordin, N., Salehi, H., Embi, M. A., & Salehi, Z. (2013). The use of Information and Communication Technology (ICT) in teaching ESL writing skills. *English Language Teaching,* 6(7), 1- 8

[42.] Zou, Y. et al. (2025). Digital learning in the 21st century: trends, challenges, and innovations in technology integration. *Front. Educ*. 10:1562391. doi: 10.3389/feduc.2025.1562391