The Effectiveness of Technology-Enhanced Learning Materials Employed by Teachers in Improving Reading Proficiency

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Abstract— This study investigated the impact of technology-enhanced learning materials on the reading proficiency of sixth-grade pupils in the Irosin II District during the 2023-2024 school year. It explored how teachers' use of such materials influences reading proficiency and identifies the most effective types of technology-enhanced learning materials. Additionally, it examined how teachers' digital competencies affect the effectiveness of these materials and the challenges they face in implementing them. Sixteen teachers from the Irosin II district participated in the study, which employed a qualitative research design involving interviews with researcher-made questions. Findings revealed five themes regarding the effects of technology-enhanced learning materials on reading proficiency, including accessibility to reading resources and interactive mechanisms. Specific types of effective materials were identified, such as smartphones, interactive whiteboards, and educational applications.

Teachers' digital competencies significantly influenced the effectiveness of technology-enhanced materials, particularly in utilizing them and integrating traditional and technology-based reading strategies. Opportunities resulting from implementing these materials included increased access to technological tools and improved academic performance. However, challenges included poor internet access and limited technical knowledge. An action plan was devised to enhance pupils' reading performance through technology-enhanced learning materials. The study concluded that teachers' experiences and using various technology-enhanced materials contribute to improved reading proficiency. Enhancing teachers' skills in educational technology usage is recommended, providing more digital resources and strengthening training programs. School leaders should create supportive environments and innovate technological tools to aid teaching and learning processes. The developed strategic plan can guide intervention programs to improve reading proficiency using educational technology in Irosin schools.

Keywords— Educational Technology, Digital Competencies, Reading Proficiency. Technology-Enhanced Materials.

I. INTRODUCTION

Reading is an essential ingredient of success in most societies where so much information is transmitted. According to Lyon (2015), if children do not learn to read, understand, write, and use language to communicate their ideas and views, their favorable conditions for a fulfilling and rewarding life are seriously compromised.

If children are not independent readers by the end of the third grade, it leads to difficulty to become successful in the middle grades and beyond, thus, making children passive and irritable. Such may affect them to become academically competent and may somehow lead to negative attitudes and behavior in their schooling (Mondero, 2019).

Teachers have great responsibilities in making learners all ready to read. The ideas are anchored on some legal bases such as Article VIII Section 2 of the Code of Ethics for Teachers which states that the teacher should recognize the interest and welfare of the students as his greatest or highest concern. Students must receive just and impartial treatment. This also emphasizes the school's consideration of student's differences, especially in intellectual ability. Therefore, a teacher has to utilize various learning tools and activities and must exert effort in undertaking effective reading approaches and intervention programs so that the learners can gain appropriate learning experiences.

Furthermore, the Implementing Rules and Regulations of the Enhanced Basic Education Act of 2013 Section 5 states that: Basic education is intended to meet basic learning needs which provides the foundation on which subsequent learning can be based. It encompasses kindergarten, elementary, and secondary education as well as alternative learning systems for out-of-school

learners and those with special needs. In teaching reading, the teacher must be unique and resourceful enough to the needs of learners.

With the K to 12 curricula, the 21st-century skills needed by holistically developed Filipinos are the information, Media, and Technology skills, thus the employment of ICT in educational settings has a vital role in the development of these lifelong skills needed by the learners. As such, there is a dire need to integrate technological tools that must be carefully undertaken by teachers to guide the learners in achieving their skills (Musico, 2018).

According to Ricks (2020), the teaching of ICT skills nowadays is present in almost every aspect of education, particularly in the teaching-learning process. Hence, learners must be equipped with technological skills to become competent and competitive in school and society.

Moreover, La Shun (2017) pointed out that computers play a significant role in the lives of students for they have a critical role in improving the quality of education and for them to perform more efficiently. To ensure the success of computer education, students should observe the key roles they need to play in the teaching-learning process. Therefore, students' competency in analyzing, designing, developing, educating, applying, evaluating, and controlling ICT is highly significant in education.

Based on the above-mentioned data, the Department of Education (DepEd) initiated different programs that can help solve prevailing issues of reading difficulty. It is through DepEd Order No. 12 s 2015 which is known as Guidelines on the Early Language, Literacy, and Numeracy Program: Professional Development Component and Every Child a Reader Program (ECARP) that reading literacy is strengthened. The program's main concern is to develop Filipino children's literacy and numeracy skills and attitudes which will contribute to lifelong learning.

Also, DepEd Memo No. 345, s. 2010 mandated the maximum utilization of the Philippine Informal Reading Inventory (Phil-IRI) which was launched to support the ECARP for it is in the evaluation component of ECARP that the reading proficiency level of pupils will be determined, and appropriate intervention will be made to make every Filipino child a reader at his/her grade level.

However, despite the different programs institutionalized by the Department of Education, it was revealed that the reading performance of students is extremely low locally and internationally. The Program for International Student Assessment (PISA) Results from PISA 2018 revealed that reading is among the areas in which fifteen-year-old students in the Philippines scored lower than those in the majority of the countries and economies that participated in PISA 2018. The country's average reading score was 340 score points, on par with that of the Dominican Republic. No country scored lower than the Philippines and the Dominican Republic.

In the same way, data from the Southeast Asia Primary Learning Metrics (SEA-PLM) 2019 released on Tuesday showed the percentage of Grade 5 Filipino students who achieved minimum proficiency in reading, writing, and mathematics was significantly lower than in Vietnam and Malaysia. Fifth graders in the Philippines were at par or sometimes even worse than those in Cambodia but performed slightly better than those in Laos and Myanmar.

Moreover, only 29% of grade 5 learners in the country are at the level where they can "read a range of everyday texts, such as simple narratives and personal opinions, and begin to engage with their meanings." If ranked according to the percentage of Grade 5 students performing at or above the SDG indicator by country (band 6 and above), the Philippines is the second-worst performer with 10%, following Laos with only 2%. Vietnam had the highest percentage with 82%, followed by Malaysia (58%), then Cambodia and Myanmar, with 11% of Grade 5 students having met the minimum reading standard. (Cristobal, 2015)

Furthermore, according to the Department of Education (DepEd) Region V, a series of tests administered by the Philippine Informal Reading Inventory (Phil-IRI) revealed that these students are considered "struggling readers" after taking both English and Filipino tests. Around 18,143 of those are in Grade levels 3 to 6 (CNN Philippines, 2020).

Furthermore, PHIL-IRI results in Irosin II District for the school year 2021-2022 revealed that the reading comprehension of grade III pupils was not fully developed in the Filipino language. The dismal results were also seen in the conduct of CRLA (Comprehensive Rapid Literacy Assessment) in English, particularly in Grade III, where only 25% of pupils belonged to the

adjectival description of ready to read. Therefore, these struggling pupils need intervention programs to address the reading problems of pupils (Jazareno, 2023).

As also observed in the utilization of technological learning materials, teachers cannot teach technological approaches due to low internet access in which teachers can download learning materials that can improve the learning outcomes of pupils. Lack of skills to manipulate computers is also one of the problems experienced by teachers which greatly affects the performance of pupils in reading.

Further, significant problems exist especially in the limited training for teachers in using technological tools which makes it difficult to perform their tasks, the problematic access to equipment, the frequent technical problems, as well as the lack of immediate technical and administrative support which greatly affect the performance of teachers and students academically. These existing problems served as barriers to the success of the use of technological learning in education.

The aforementioned situation affects the reading performance of pupils. The school should therefore undertake remedies and interventions to resolve the mentioned challenges. Thus, as a teacher, the researcher feels the necessity of conducting this research as the basis for designing and institutionalizing appropriate technological reading resources to be used in the teaching-learning process as a possible solution to the existing problem. Thus, this study was conducted.

II. OBJECTIVES
This study determined the effectiveness of technology-enhanced learning materials employed by teachers in improving reading proficiency.

Specifically, it identified the use of technology-enhanced reading materials impact the reading proficiency of grade 6 pupils. The specific type of technology-enhanced materials are most effective in improving the reading proficiency of Grade 6 pupils. The teachers' digital competencies influence the effectiveness of technology-enhanced learning materials in improving reading proficiency. The opportunities and challenges encountered by the teachers in implementing technology-enhanced learning materials to improve reading proficiency and strategies may be proposed for the effective use of technology-enhanced learning materials in improving reading performance.

III. METHODOLOGY
This study determined the effectiveness of technology-enhanced learning materials used by teachers in improving the reading proficiency of grade six pupils in the Irosin II District during the School Year 2023-2024. This undertaking is purely descriptive qualitative research. The participants of the study were the sixteen (16) teachers of the Irosin II district. Purposive sampling was utilized in this study. Teachers were selected as respondents since they are all teaching subjects using technological tools in teaching reading.

IV. RESULTS AND DISCUSSION
The following results were gathered, analyzed, and interpreted by the researcher based on the objectives of the study. Textual analysis and interpretation were used.

1. How the Technology-Enhanced Learning Materials Impact the Reading Proficiency of the Grade 6 Pupils
The methods of teaching have been revolutionized when the technology-enhanced learning materials have been considered as an indispensable component in the delivery of instruction. Teachers being the frontline in the teaching and learning process need to be vigilant on how technology-enhanced learning materials impact competency acquisition among learners.

Accessibility to Reading Resources
The Department of Education (DepEd) Computerization Program serves as the channel that paves the way for every school to access technology-enhanced learning materials. Both the teachers and the learners have the opportunity to access the learning resources necessary for teaching and learning engagement. Affirmation to the Program was noted by the teachers when they shared the following ideas during the conduct of the Focus Group Discussion (FGD).

"The gadgets supplied by the DepEd, particularly the laptops are great help for me to have a tool in accessing the reading materials that are so plentiful on the web." (P1)

"I am lucky to be a recipient of the thumb drive, which was distributed by the DepEd several years ago, until now the stored reading materials are of great help to me, especially in my reading activities." (P3)

"The Internet presence in our school is very advantageous in preparing reading materials and other instructional resources. Anytime, we teachers have the

immediate way of sourcing out materials for teaching." *(P2, P4, P5)*

Evident in the responses of the research participants about how laptops, thumb drives, and the presence of the internet in the school become agents in accessing reading resources. These technology tools provide access for both the teachers and learners to reading resources.

Tools for learning to read.

Based on the statements of the informants, evident were the positive perspectives in terms of using technology-enhanced learning tools in reading. These are indicated in their responses below:

Those technologies Enhanced Reading Materials can aid comprehension and retention and pupils who struggle with traditional texts (P1 and P3).

Technology-enhanced reading materials improved the reading proficiency of my learners through the different tutorials and there is a high percentage of mastery of the target skills (P4, P6).

The read-along stories improved the reading proficiency of learners in terms of wider vocabulary, and fluency, and improved their comprehension skills (P8).

It helps the learners to understand the word they are reading and develop their comprehension (P10).

It provides a visual representation of concepts and ideas. It helps them understand better and remember information as they use connections between words, images, and concepts (P9).

The responses shared by the participants indicate the vital roles that technology-enhanced learning materials play in enhancing the reading comprehension of learners. It develops vocabulary skills, fluency, comprehension skills, and other skills needed along with reading.

As revealed in the study conducted by Chen & Jamiat (2023) students' intrinsic motivation and comprehension of Tang poetry improved using the interactive multimodal application mode. As recommended in the study conducted by Mandilla (2021) teachers of English should be explicitly taught how to teach reading comprehension using technological materials. As a result, they will gain a deep understanding of the multimodal reading comprehension instructional

strategies as well as factors supporting and impeding multimodal technology in the classrooms.

Moreover, the combination of technology in reading class supports the students in comprehending reading. It is reported that a flipped classroom can intensify the students' ICT and reading comprehension significantly. The application of technology (online learning) also provides a positive effect on students' reading comprehension (Yang et al, 2015).

The interactive mechanism in reading

The responses of informants highlight the utilization of technology-enhanced learning materials saying that it makes the teaching-learning process interactive leading to motivating students in the process. This is clearly stated below.

Make the reading experience more dynamic and enjoyable (P2)

Pupils are motivated and eager to learn because of these technologies that offer different ways to learn (P5 and P14).

These technology-enhanced reading materials make reading more accessible, enjoyable, and effective by using the advantages of digital technology (P7).

It caught the attention of my learners and made them more interested in reading (P11).

This mode of teaching enhances the reading interest of the learners since it uses sounds and screens to motivate their learning habits (P12).

The findings of the study imply that the usage of technology in the teaching-learning process allows pupils to experience a dynamic and enjoyable learning process. Using digital technology tools increases students' motivation to participate in the class.

This is similar to the study conducted by Kusain (2018) on the use of Interactive Tools has visible that there was an increase based on the post-test conducted in reading. Moreover, Information Communications Technology makes learning reading accessible to the learners, while interactivity promotes engagement.

The mix of text, sound, color, animation, video, and interactivity in reading provides content that engages the learner. As such, Traditional Methods such as chalk and blackboard need to be upgraded as ICT allows wider interaction between pupils and teachers and enables

educators to build core skills to help learners function in the 21st century.

As highlighted by Jiang and Gao (2020) the inclusion of multimodal digital composition tasks contributed to the development of digital empathy among learners and helped to increase their motivation and confidence in expressing themselves in English.

Scaffolds of effective learning to read.

To achieve effective teaching, the usage of technological learning materials is advisable as shared by the experiences of informants. Their statements are evident in their responses below:

With the use of technology-enhanced reading materials, it allows the learners to make learning more effective (P16).

Technology can be a good motivational tool for a struggling reader, the teacher can encourage the child to highlight particular words or passages based on a skill that they are working on which makes the lesson effective (P13).

These materials helped me reinforce the lesson, in which retention is very positive and resulted in more permanent learning since they were able to recall the lesson visually and being able to provide concreteness of the lesson (P15).

The results of the study indicate that one way to effectively teach students is through the utilization of technology. To learn on the part of pupils positively and permanently, teaching reading using enhanced learning materials with the use of technology opens opportunities for wider learning and effective transformation of knowledge. The findings were supported by Clar whereby her study back in 2015 proved that for reading comprehension students had shown an increase in achievement when using the smart board as the primary source of instruction. As such, teachers should implement technology in the classroom to promote student participation as well as increased achievement.

As suggested by Tamban (2023) for young learners to equip comprehension skills, there is a need for proper guidance and a variety of reading materials that are interesting for learners. Teachers need to provide reading materials that will help learners to develop reading comprehension skills. As printed materials are used commonly by teachers in developing reading skills there is a need to integrate technology into the selection of reading materials. Video clips can be used as tools to help learners to understand what they read. By using it, video clips stimulate their prior knowledge, capture their interest, and motivate them to read.

Platforms towards reading proficiency.

To achieve effective teaching, the usage of technological learning materials served as platforms towards reading proficiency. Their statements are evident in their responses below:

We have been facing reading problems, but with the technology being used in the classroom, it helps them develop their reading proficiency (P14).

Students become more interactive in learning how to read with the utilization of technological reading materials which served as platform in reading remediation (participants P2, P9, P10)

The results of the study indicate that technological reading materials served as the main tools in terms of teaching learners to read especially during remediation in reading class. These materials allow teachers to improve the reading proficiency of learners using the said technological reading tools. As such, teachers must continue developing technological materials to meet the needs of learners and make teaching reading efficient and effective. As suggested in the study conducted by Johnson et al (2016) that schools were surrounded by insufficient equipment or connectivity which made the implementation of technological tools in the classroom not feasible.

2. Types of Technology-Enhanced Learning Materials Considered Effective in Improving Reading Proficiency

There were specific types of technology-enhanced learning tools that were effective in improving the earning performance of learners based on the responses of the informants. These were divided into three (3) sub-themes. They are: U Smart Phones, Interactive Whiteboards, Computers, and Online Media and Websites, and Interactive educational applications.

Smart Phones, Interactive Whiteboards and Computers

The usage of various technological tools by teachers in teaching reading such as mobile phones, interactive whiteboards, and computers. This is indicated in their responses below:

We used interactive reading application boards (P1 and P2)

The most effective is using television and mobile phone–aided instruction, aside from this is readily available, proper pronunciation is given emphasis and learners easily mimic the speakers in the clearest and most precise way possible (P15 and P13).

PowerPoint presentations, with projectors both, are effective in promoting reading proficiency because I have seen the results from my learners (P9 and P10, P11).

Based on my experience, among these technology materials that I considered the most effective in promoting proficiency is the use of video lessons because they are more attentive when there is an integration of ICT in my lesson (P4)

The video lessons. They increase the attention of my pupils (P5).

Based on the responses of informants, indicate that teachers utilized different technological learning materials to enhance the reading proficiency of learners. These tools are perceived as some of the effective ways of teaching students to read and understand concepts. One of which that commonly used by teachers is the video lesson presentation.

This is similar to the study conducted by Julinar (2018) who found that teachers have positive attitudes toward the use of multimodality in teaching. They also integrated technological materials as useful tools for teaching in different terminologies and ways. With the facilities available in the school, they believe that teaching young learners needs creativity. It is the responsibility of schools and teachers to encourage students' motivation, promote students' individual learning needs, and make them familiar with the various ways of learning.

As reported by Harper & Milman (2016) the integration of ICT will lead to countless English Language content, contexts, and pedagogical methodologies in teaching various educational environments. ICT has made the English language environment more interactive, flexible, and innovative.

Online Media Platforms and Websites

One of the common technological learning tools teachers use in teaching learners is the use of online media and websites which allow learners to explore various modes of learning and activities. This is clearly stated in their responses below:

Online reading games, increase students' participation and engagement, which leads to more understanding of the lesson (P6 and P7).

YouTube is effective and motivating since it catches the interest of the learners (participant P12 and P8, P14).

The software/ program that helps learners with grammar, spelling, and punctuation. They create learning activities that use technology to engage with reading (participant P16).

The findings of the study imply that to effectively promote better learning outcomes and to enhance the reading skills of pupils, teachers used various effective technological learning materials such as YouTube, software programs, and interactive games that lead to a better understanding of lessons, hence, increasing students' participation.

The results were similar to the study conducted by Pillay and Govender (2022) that most of our students have a multimodal learning preference, with the kinesthetic modality being the most preferred. Voice-over PowerPoint presentations with transitioning images, and audio files, supported the visual and aural learners through asynchronous engagement. Additionally, online discussion forums and applied projects (such as theme park designs) enhanced asynchronous learning by stimulating visual, read/write, and kinesthetic preferences, respectively.

As observed by Katz (2021) using multimodal, many students learn more deeply from a combination of representations (text, video, audio, images) than from words alone, whether they were attending classes in-person or online.

Interactive educational applications.

One of the common technological learning tools teachers use in teaching learners is the use of interactive educational applications which allow learners to explore various modes of learning and activities. This is clearly stated in their responses below:

I used CLassdojo apps in teaching reading (P4, P9, P11)

We used multimodal application such as google classroom, quizlet apps during reading time (participants P1, P4, P5, P15, P16)

It revealed in the responses that teachers used various modes of applications in reading time. They utilized different apps such as ClassDojo and quizlets to actively engage the learners in reading session. As revealed in the study of Bernarte (2024), that the output developed such as PowerPoint presentations, worksheets, and audio clips always assist learning and makes teaching engaging. Therefore, the teacher must download the essential technological apps or programs such as Kotobee Reader, Windows Media Player, MP3, MP4, and Microsoft PPT in order to make lessons in reading interactive leading to better performance in reading.

3. How Teachers' Digital Competencies Influence the Effectiveness of Technology Enhanced Learning Materials in Improving Reading Proficiency

Digital competencies of teachers largely influence the effects of technological materials in teaching learners. There were two sub-themes based on the responses of informants which are: Facility to utilize the technology enhanced learning materials, becoming responsible on what technology learning materials promote proficiency in reading and having the capability to fuse both the traditional and technology-oriented reading strategies.

Facility to utilize the technology enhanced learning materials.

The education received by the majority of the research participants in their college prepared them to be technologically literate. In addition, the training they acquired along with the DepEd computerization program equip them with certain digital competencies. These digital competencies they possessed facilitate their engagement with the utilization of the technologically enhanced learning materials.

One of the benefits of knowing the usage of technological tools is it increases students' attention. This is clearly stated in the responses of informants as shown below:

Digital competencies enable students/pupils to engage with multi-media content (P1)

Provide opportunities for increased engagement, accessibility, and learning to improve reading proficiency (P2).

If you are digitally competent then you can engage with and comprehend digital content thus adopting it in your reading class (P3).

It has a positive impact on both pupils and teachers and transforms a passive classroom into an active and interactive one (P4, P5).

It helps the learners be more interested in reading (P10, P11).

Since we are in the digital world, our learners are now exposed to different technologies that catch their interest, and incorporating technologies while teaching has a great effect on their level of learning (participants P12, P16).

The findings revealed that skills in the use of technological learning materials heighten their participation in the teaching-learning process. It engages students in multi-media content and transforms pupils from being passive to active makers of learning. This implies that technology largely influences the attention of students and leads them to have an interest in the teaching process.

As revealed in the study of Ganapathy (2016) the multimodal approaches integrated into teaching and learning can promote students' autonomy in learning, improve motivation to learn, and facilitate various learning styles. As stated by Felson et al (2020) technological tools can support the diverse needs of large student bodies, bringing together visual, auditory, reading/ writing, and kinesthetic elements to embed students in interactive learning environments where they feel connected and the educational content.

Becoming responsible on what technology learning materials promote proficiency in reading.

The informants shared their experiences on the importance of digital competencies in enhancing the literacy of learners. This is clearly stated in their responses below:

Teachers who are constantly improving and honing their digital abilities may provide interesting, individualized, and powerful learning experiences that enhance literacy development and prepare students for success in the digital age (P6, P7).

It enhances the reading proficiency of learners, and it plays a significant role in (P8, P15)

Technology can be effective in improving reading and comprehension skills because it often involves activities such as learning new vocabulary words and it also provides easy access to information and allows for the development of various skills such as listening, speaking, and reading (P13, P14).

The findings showed that skills in the utilization of digital technology can increase the literacy level of students. Some state that it plays a significant role in listening, speaking, reading, learning vocabulary words, and others. It implies that the more the teacher knows how to integrate technology in the classroom, the higher the literacy level of the students.

As revealed in the study of Kaarakainan et al, (2018) teacher training on the use of technology or ICT contributes the most to the existence of digital inequality and digital inclusivity of students. The higher levels of culture for professional development among teachers at school would lead to increased levels of digital competence and literacy among students. Developing the capability of teachers to use technology through training would serve as a platform for them to maximize the appropriate use of technology in the classroom.

Having the capability to fuse both the traditional and technology-oriented reading strategies.

The informants shared their experiences on the importance of digital competencies in enhancing the literacy of learners. This is clearly stated in their responses below:

In teaching reading, I sometimes combined two ways of teaching learners in reading. I teach them in traditional ways while using some technological learning materials which I found effective to them (P1, P6, P7, P9, P10, P11).

Using traditional and technological reading strategies are both important in realizing the goals of teaching in terms of reading (P12, P13, P14, P16).

It revealed in the responses of participants that teaching reading can effectively be done with the combination of traditional and technological methods. Using two at a time can effectively enhance learners' reading proficiency level. As opined by Aquino 92919) that traditional method and modern pedagogical approaches in reading can be both utilized depending on how teacher will carry the lessons to make it more efficient and effective.

4. Opportunities and Challenges Encountered by Teachers in Employing Technology-Enhanced Learning Materials

Opportunities encountered by the teachers in implementing technology-enhanced learning in grade six classrooms. There were opportunities met by teachers for the implementation of technology-enhanced learning materials. These were divided into three (3) themes which are the availability of Some Technological Tools in School, Technology Enhanced Learning Materials make it easier for Teachers to Teach, and Technology Enhanced Learning Materials Improve Academic Performance.

Availability of Some Technological Tools in School

One of the opportunities for implementation of technology-enhanced learning is the availability of some digital resources. These were evident in their responses below:

Availability of needed devices such as TV, speaker, internet, and the like (participant I1)

We have laptops, cellphones, speakers, and projector computers and speakers (participant I2 and I3)

Based on the data gathered it can be inferred that some schools have technological tools that are being utilized in the teaching-learning process. This allows them to employ materials, making learners interactive and participative in the classroom setting. TV, speaker, projector, and computers were some of the technological tools available in their classroom. This implies that schools nowadays are now using current trends in educational technology, knowing its advantages in improving the performance of learners.

The findings are related to the study of Lee (2017) that technology was a great assistance in providing high-quality education. The use of technologies provided high-quality instruction quickly and managed the project as efficiently and effectively as possible. It greatly bridged the space between teachers and students for better learning results.

As revealed in the study by Ahmet and Alev (2017) which shows that the tablet computer-aided intervention program improved the reading fluency of students with a learning disability. According to the qualitative data, the students' views about the tablet computer-aided reading fluency intervention were generally positive, indicating that this study was fun and motivated them to study. Therefore, schools must make extra effort to

provide more technological resources for better learning outcomes.

Easy access to a wide variety of reading resources

The employment of enhanced technology learning materials allows teachers to make teaching simple and easier. Their shared experiences are evident below:

It makes my work easy/easier because the instant video lesson can be downloaded from the internet (P4)

If lightens the work of a teacher, and it is very effective in the teaching-learning process (P5)

Encourage students to engage thus, easier for teachers to teach (P6)

Technology-enhanced learning materials in reading classes, increase student engagement, motivation, and literacy achievement (P7 and P8).

Access to technology and reliable internet connections, for the smooth implementation process (P9).

The findings revealed that using technology-enhanced learning materials greatly helps teachers to achieve 100% participation in the class, thus, making it easier to teach their lessons. Access to technology also allows them to have a smooth implementation of the learning process. This implies that it lessens teachers' time in preparing lessons and instructional materials through the help of digital technology.

The findings are related to the study responses shared by the participants to the study conducted by Anapathy (2016) who revealed the need to reorientation the teaching and learning with the focus on multimodal pedagogical practices as it promotes positive learning outcomes among students. As such, it is suggested that the multimodal approaches integrated into teaching and learning can promote students' autonomy in learning, improve motivation to learn, and facilitate various learning styles.

Improved learners' engagement

According to the informants, using technology-enhanced learning materials increases students' achievement. This is evident in their responses below:

We must adapt to the changing world. For us to effectively deliver our lesson and for the learners to be motivated and interested. Using such technology makes the learners go to school every day, thus, improving their academic performance (P10, P11, P12)

Implementing technology to enhance learning is important because it helps today's teachers to integrate new technologies and tools into their classrooms leading to the enhancement of their academic performance. (P13, P14, P15, P16)

Based on the data gathered, it revealed that using digital materials enhanced the delivery of lessons, thus, improving students' academic performance. This implies that the integration of educational technology into the classroom increases students' participation and learning on the part of the students.

The findings are related to the study of Tope (2021) that the digital multimodal learning tool is extremely effective in its characteristics in terms of usability, suitability, and consistency. It is evidently usable, suitable, consistent, and well laid out as validated by the master teachers and teachers in Pedro Guevara Memorial National High School. The level of academic performance of the experimental group is much higher than the level of performance of the control group as presented in the results of the pretest and posttest taken by the learners. There is a significant difference between the pre-assessments and post-assessments of the control group and experimental group. Thus, the null hypothesis was rejected which states that developed multimodal texts had a positive effect on the students learning of Afro – Asian Literature. They can result in a greater depth of understanding by presenting multiple input modalities and increasing motivation among learners.

As stated by Dixon (2021) the development of technology in education influences the materials used in the teaching-learning process. E-books, online resources, and other applications are used as material or supporting materials for the utilization of technology in teaching-learning. The use of e-books in teaching-learning has positive effects on students' academic achievement. Other studies report that the utilization of electronic reading platforms has a positive correlation to students' reading comprehension.

5. Challenges encountered by the teachers in implementing technology-enhanced learning materials.

There were challenges met by master teachers in the utilization of digital learning tools in the classroom. These were divided into four sub-themes which are poor internet access, Limited technology-enhanced learning materials, Limited technical knowledge in navigating technology-enhanced learning materials, and high

acquisition cost. This is evident in their responses below:

Poor Internet Access

One of the challenges encountered by teachers in the usage of digital resources is unreliable internet connectivity. This is evident in their shared experiences below:

Unreliable internet connectivity, the socioeconomic status of pupils, and individual differences among pupils when it comes to digital literacy skills (participants P1, P4, P9, P12, P13, P14).

The limited supply of internet inadequate supply of reading materials and lack of equipment and weak internet connections (P5, P6, P8, P11, P15, P16)

The results revealed that one factor affecting the use of technology-enhanced learning materials is slow connectivity which affects the literacy level of students. The limited supply of internet made it difficult for teachers to download materials from the internet. It implies that despite the benefits offered by technology, there were still some problems occurring in its usage.

The findings are related to the study of Julinar (2018) who found that utilization of a multimodal mode of learning, especially in remote areas, teachers cannot teach a multimodal approach due to low access to the internet in which teachers can download learning materials that can improve the learning outcomes of pupils. Such a case raises significant problems of student engagement such as lack of access to expensive technologies and lack of extra time to adapt to new learning methods. Therefore, such issues need to be examined when moving towards a longer-term model to interact effectively with modern technology (Julinar, 2018). It is therefore recommended that teachers be given continuous training on delivering multi-modal learning approaches along teacher-learner interaction, subject matter mastery, instruction, active and personalized learning, learning assessment, and inclusion so that their competence may be sustained, and schools must support to make internet accessible to all teachers. (Herrera and Janer,2021)

Hence, the need to develop technologically competent teachers has become an inevitable task of the educational system. If the educational system can successfully meet the challenge of producing competent teachers who can teach effectively and accurately using

technological devices, then the needed transfer of knowledge to students will take place.

Limited technology-enhanced learning materials

Another problem faced by teachers in the usage of digital tools is the unavailability of some technological learning materials in school. This is evident in their responses below:

Lack of gadgets on the part of the students. (P2, P3).

Limited access to digital devices and dependable internet connectivity might impede the deployment of technology-enhancing learning materials, especially in schools or communities with limited resources or infrastructure (P7).

Based on the shared experiences of master teachers, the results revealed that instructional technology is insufficient in the school to be used in the teaching-learning process. Though some tools were being used, there were still more needed resources to cater to the needs of students. This implies that schools are still experiencing a lack of educational technology which needs to be resolved to effectively deliver lessons to students.

The findings are related to the study of Aduwa (2015), who examined the major obstacles militating against the use of ICT in secondary education in Nigeria. The major obstacles to the adoption of ICT in secondary education in Nigeria were identified to be the high cost of computer hardware and software, weak infrastructure, lack of human skills and knowledge in ICT, and lack of relevant software appropriate and culturally suitable to Nigeria. These factors seem to have constituted enough stumbling blocks to the use of ICT in the teaching of reading comprehension in an ESL classroom at the secondary school level in the Abakaliki metropolis.

As stated by Arante (2018) the availability of instructional equipment and devices in various learning institutions is believed to play a vital role in the hands-on training of students. He further stated that providing all schools with sufficient instructional equipment and devices leads to better learning outcomes.

Limited technical knowledge in navigating technology-enhanced learning materials.

Another problem faced by teachers in the usage of digital tools is the limited technical knowledge of

teachers in navigating technology-enhanced learning materials. This is evident in their responses below:

I don't have enough knowledge in using computers even creating PowerPoint presentations (P4, P9, P10, P16).

I have limited knowledge of using different applications which difficult for me to engage learners in reading (P2, P5, P10, P12).

It was revealed in the responses of the participants that even though there were some technological materials available in school, still it seemed difficult for them to use them in the teaching-learning process due to limited knowledge of utilizing technological tools. As opined by Nessipayeva (2020) teachers are called to master the profession they are in. Currently labeled as facilitators of learning, they are tasked to emerge as excellent front liners in fulfilling their daily tasks with their respective students. Their competencies speak of who and what they are when they deliver their duties and responsibilities. Moreover, y Benevides, (2015) opined those technological devices, such as tablet computers, mobile devices, mobile applications, and other software can be useful for developing students' reading fluency, especially students with reading difficulties, but teachers must have enough training in using such tools to facilitate effectively in teaching reading.

High acquisition cost.
One of the challenges encountered by teachers and schools is the high acquisition of digital resources This is evident in their shared experiences below:

Even if there were a lot of applications that can help boost students during reading sessions, still we can't afford to buy technological resources that can be used in the teaching-learning process (P1, P5, P9, P10, P11, P13, P17).

Technological materials are expensive that's why we have only limited digital resources that we use in teaching reading (P2, P3, P12, P15, P16)

Based on the shared experiences of teachers, it implies that to be able to effectively teach reading lessons requires technological resources. However, with the expensive cost of such materials, only limited materials are being used during reading remediation. The findings were related to the study conducted by Fern (2021) which revealed that one problem experienced by schools is the lack of educational resources due to its high cost. Public schools do not have a budget for purchasing

technological learning materials. As such, schools must build partnerships with a community that can address school problems towards the realization of making all learners a reader.

REFERENCES

[1] Abrami, P.C., Wade, C.A., Lysenko, L., Marsh, J. & Gioko, A., 2016, 'Using educational technology to develop early literacy skills in sub-Saharan Africa', Education and Information Technologies 21(4), 945-964. https://doi.org/10.1007/s10639-014-9362-4

[2] Aduwa-Ogiegbean, S. E. & Iyamu, E.O.S. (2015). Using ICT in secondary schools in Nigeria Educational Technology & Society 8(1) 104-112

[3] Ahmet, B., Alev, G. 2017. The Effectiveness of a Tablet Computer-aided Intervention Program for Improving Reading Fluency. Universal Journal of Educational Research 5(5): 757-764, DOI: 10.13189/ujer.2017.050508

[4] Alcala, M., L., Tamban, V., E, Effectiveness of Animated Video Presentation (AVP) as Supplementary Reading Materials in Reading Comprehension of Grade 3 Learners

[5] Aohua, N., Cheung, A., K., Shi, J. Effects of educational technology on reading achievement for Chinese K-12 English second language learners: A meta-analysis1Institute of Economics of Education, Faculty of Education, Peking University, Beijing, China

[6] Arante, R. B. (2018). Design and assembly of an improvised logic gates simulator. World Journal of Engineering and Technology, 6, 839–853.doi:10.4236/wjet.2018.64056

[7] Arante, R. B., Sacay M. R., Bocboc, V. & Baisa, D. B., (2020). Design, development and evaluation of contextualized learning materials in consumer electronics. International Journal of Learning and Teaching. 12(3),153–165.https://doi.org/10.18844/ijlt.v12i3. 4956

[8] Azhimia, F. 2023. Animated Stories: It's Effect on Students' Scores in Reading Comprehension Scores. Journal Corner of Education, Linguistics, and Literature (JCELL) 3(1), 10 (16). https://doi.org/10.54012/jcell.v3i1.160

[9] Bai Sheina Kusain. 2018. Impact of Information Communications Technology (ICT) Interactive Tools in the Reading Performance of Grade Three Pupils of Cotabato City Central Pilot School.

https://www.academia.edu/40654819/_Impact_of_Information_Communications_Technology_ICT_Interactive_Tools_in_the_Reading_Performance_of_Grade_Three_Pupils_of_Cotabato_City_Central_Pilot_School_ABSTRACT_OF_THE_STUDY

[10] Balistoy, H., R. 2018. EFFECTIVENESS OF ICT INTEGRATION IN TEACHING READING FROM KINDER TO GRADE THREE TEACHERS AND PUPILS.https://www.studocu.com/ph/document/university-of-rizal-system/readings-in philippine-history/action-research-in-ict-reading/37338623.

[11] Benevides, T. L. (2013). Examining Reading Processes and Engagement of Struggling and Proficient Readers when Using Pads, Yayınlanmamış Doktora Tezi, University of Toronto.

[12] Bilyalova, A. A. (2017). ICT in Teaching a Foreign Language in High School. Procedia—Social and Behavioral Science, 237, 175-181. https://doi.org/10.1016/j.sbspro.2017.02.060

[13] Bus, A. G., Sarı, B., Takacs, Z. K. (2019). "The promise of multimedia enhancement in children's digital storybooks," in Reading in the Digital Age: Young Children's Experiences with E- books: International Studies with E-books in Diverse Contexts (Cham: Springer), 45–57. doi:10.1007/978-3-030-20077-0_4

[14] Chen CW-y (2021) Composing print essays versus composing across modes: students' multimodal choices and overall preferences. Literacy 55(1): 25–38

[15] Chen, C, & Jamiat, N. 2023. A quantitative study on the effects of an interactive multimodal application to promote students' learning motivation and comprehension in studying Tang poetry.14.https://doi.org/10.3389/fpsyg.2023.1189864

[16] Cheung, A. C. K., and Slavin, R. E. (2016). How methodological features affect effect sizes in education. Educ. Res. 45, 283–292. doi: 10.3102/0013189X16656615

[17] Christ, T., Wang, X. C., Chiu, M. M., and Cho, H. (2019). Kindergartener's meaning making with multimodal app books: the relations amongst reader characteristics, app book characteristics, and comprehension outcomes. Early Child. Res. Q. 47, 357–372. doi: 10.1016/j.ecresq.2019.01.003

[18] Clar, J. (2015). Technology's Influence on Student Comprehension. School of Arts and Sciences, St. John Fisher College.

[19] Coleman, M. B., ve Wolff Heller, K. (2020). The Use of Repeated Reading with Computer Modeling to Promote Reading Fluency with Students Who Have Physical Disabilities. Journal of Special Education Technology, 25(1), 29.

[20] Decena. 2021. SURVEY ON THE READING DIFFICULTIES OF K-12 LEARNERS IN SELECTED TAGALOG-SPEAKING PROVINCES: BASIS FOR INTERVENTION.

[21] DepEd Order 45, series of 2002 – Reading Literacy Program in the Elementary Schools and DO 27, s. 2005

[22] Dixon, A. (2012), "From touchstones to touch screens: The evolution of a book lover", Horn Book Magazine, Vol. 88, No. 2, 69-71.https://ijase.org Department of Education and Training, 2020. Literacy and Numeracy Supporting Child. Retrieved from https://education.qld.gov.au/parents/Documents/factsheet-l-n.pdf

[23] Felson, Jacob and Amy Adamczyk. "Examining the decision to offer in-person college instruction during the COVID-19 era: A multilevel analysis of the factors that affected intentions to open",

[24] Ganapathy M, Seetharam S (2016) The effects of using multimodal approaches in meaning-making of 21st Century literacy texts among ESL students in a private school in Malaysia. Advances in Language and Literary Studies 7(2): 143–55.

[25] Guello, R. 2017. Assessment Of Information Communication Technology (Ict) Competency of Teachers And Students At Batangas State University.

[26] Harper, B. (2018). Technology and Teacher-Student Interactions: A Review of Empirical Research. Journal of Research on Technology in Education, 50, 214-225.https://doi.org/10.1080/15391523.2018.1450690

[27] Hassan: Empirical Evidence from Pakistani Engineering, 2021 TESOL International Journal Volume16 Issue1 |ISSN:2094-3938, https://www.researchgate.net/publication/348381002

[28] Herrera, R.,B. & Janer, S.,S. Competence in The Learning Deliveries and Multimodal Approaches of Teachers in The New Normal. United International Journal for Research & Technology, 2(7)7,

[29] Hsu, H. Y., & Wang, S. K. (2019). Using ICTs and Mobile Devices to Assist Adult English Language Learning: An E-Portfolio-BasedLearning Approach. In Technology-Assisted ESL Acquisition and Development for Non-Traditional Learners (pp. 133-161). IGI Global. https://doi.org/10.4018/978-1-5225-32231.ch006

[30] Jiang L, Gao J (2020) Fostering EFL learners' digital empathy through multimodal composing. RELC

[31] Journal 51(1): 70–85.Julinar, J. 2018. Teachers' Perception towards the Use of Multimodality in Teaching Reading. Advances in Social Science, Education and Humanities Research, volume 254

[32] Karamti, C. (2016). Measuring the Impact of ICTs on Academic Performance: Evidence from Higher Education in Tunisia. Journal of Research on Technology in Education, 48, 322-337.https://doi.org/10.1080/15391523.2016.1215176

[33] Katz, Vikki S., Amy B. Jordan, and Katherine Ognyanova. "Digital inequality, faculty communication, and remote learning experiences during the COVID-19 pandemic: A survey of US undergraduates", PLoS One, Vol. 16, No. 2 (2021): e0246641.

[34] Kramina, M. 2020. Explorations in Classroom Management. Journal of Teacher Education, June 1961b; p.235-46.

[35] Lysenko, L., Abrami, P.C., Wade, C.A., Marsh, J.P., WaGioko, M. & Kiforo, E., 2019, 'Promoting young Kenyans' growth in literacy with educational technology: A tale of two years of implementation', International Journal of Educational Research 95, 176-189. https://doi.org/10.1016/j.compedu.2014.01.010

[36] Maduabuchi, C. 2016. ICT and the Teaching of Reading Comprehension in English as a Second Language in Secondary Schools: Problems and Prospects.doi: 10.7575/aiac.ijels. v.4n.3p.18URL:http://dx.doi.org/10.7575/aiac.ijels.v.4n.3p.18

[37] Mandilla, L. 2021. Enhancing learners' reading comprehension skills using multimodality in a form two classroom in a public secondary school in T school in Taita Taveta County: action research. THE AGA KHAN UNIVERSITY Institute for Educational Development East Africa. https://ecommons.aku.edu/cgi/viewcontent.cgi?article=2947&context=thesesdissertation

[38] Mayer, R. E. (2014). The Cambridge Handbook of Multimedia Learning. The Cambridge Handbook of Multimedia Learning, Second Edition, 1–930.https://doi.org/10.1017/CBO9781139547369

[39] Millrood, R. P. (2001). Modular course in ELT Methodology.

[40] Musico, J. (July 26,2018). DepEd to Hire more Teachers with Different Skills. Retrieved January 18, 2020 from http://www.pna.gov.ph/articles/1042690

[41] Nassipbayeva, O. 2016. The competencies of the modern teacher. Retrieved from: files.eric.ed.gov/fulltext/ED567059.pdf

[42] Ngorosho, D., 2018, 'Enhancing the acquisition of basic reading skills in Kiswahili using Grapho Game', Papers in Education and Development 35, 1-26.

[43] Nur Hidayat, Slamet Setiawan. 2020. Developing Supporting Reading Materials for English Subject Journal of Language Teaching and Learning, Linguistics and Literature, 8(1), 175-188. DOI:10.24256/ideas. v8i1.1335

[44] Nur, M., Noordan, H., Yunus, M., 2022. The Integration of ICT in Improving Reading Comprehension Skills: A Systematic Review. DOI: 10.4236/ce.2022.136127

[45] Olga, C., & Claudia, G. (2020). Efficient Ways to Develop Reading Comprehension Skills. Educatia 21 Journal, 19, 106-112.

[46] PHILIPPE, S. Alexis D. SOUCHET, Petros LAMERAS, Panagiotis PETRIDIS, Julien CAPORAL, Gildas COLDEBOEUF, Hadrien DUZAN. Multimodal teaching, learning and training virtual reality: a review and case study. Virtual Reality & Intelligent Hardware, 2020, 2(5): 421—442 DOI: 10.1016/j.vrih.2020.07.008

[47] Raskind, M. H., & Higgins, E. L. (2019). Speaking to read: The effects of speech recognition technology on the reading and spelling performance

of children with learning disabilities. Annals of Dyslexia, 49(1), 251-281.

[48] Retome, V. G., Estrella, N. C., Garcia, G. C., Yaoyao, I. B., & Granada, D. (2013). Instructional Assessment of Technology and Livelihood Education (Tle) Program. Journal of Educational and Human Resource Development, 1, 16-21.

[49] Rhon, C. 2010. Teaching Reading Skills in a Foreign Language. London: Heinemann Educational

[50] Sharples M, de Rooc R, Ferguson R. 2016.Innovating pedagogy 2016: open university innovation report 5. Milton Keynes: The Open University.

[51] Tamban, N., 2022. Effectiveness of Animated Video Presentation (AVP) as Supplementary Reading Materials in Reading Comprehension of Grade 3 Learners.https://www.academia.edu/81752142/Eff ectiveness_of_Animated_Video_Presentation_AV P_as_Supplementary_Reading_Materials_in_Read ing_Comprehension_of_Grade_3_Learners

[52] Tope, J.2021.The effectiveness of multimodal texts in enhancing student's level of academic performance in Afro – Asian literature in English of Grade VIII students in Pedro Guevara Memorial National High School, Santa Cruz District, Division of Laguna. International Journal of Research Studies in Education, 10(7), 99-109. DOI: 10.5861/ijrse.2021.654 45(4), 723-747

[53] Treptow, M. et al. (2013). Reading at the frustration, instructional and independent levels: The effects on students' reading comprehension and time on task. School Psychology Review, 2013, Vol. 36, no. 1, pp. 159-166.

[54] Willis, J. (2009). What the brain suggests for teaching reading strategies. Educational Reform, 73(4), 333-346

[55] Yang, Y., Gamble, J., Hung, Y., & Lin, T. (2014). An online adaptive learning environment for critical thinking infused English literacy instruction. British Journal of Educational Technology, Patel, P.. Torppa, M., Aro, M., Richardson, U. & Lyytinen, H.,2018,'GraphoLearn India: The effectiveness of a computer-assisted reading intervention in supporting struggling readers of English', Frontiers in Psychology 9, 1-14. https://doi.org/10.3389/fpsyg.2018.01045

[56] Zhang, X. (2016). An empirical study of the application of micro learning gin English reading in senior high school. (Master's thesis). Available from China Masters' Theses Full-text Database