

Effectiveness of Digital Technologies in Teaching English for Grade Six Pupils

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Abstract

This study determined the effectiveness of digital technologies in teaching English among Grade Six pupils at Muzon Elementary School, Division of Rizal, during the School Year 2025–2026. Specifically, it examined the respondents' demographic profile, assessed their English performance before and after exposure to digital technologies, determined whether significant differences existed between pretest and posttest performance, and analyzed differences in posttest performance when grouped according to selected profile variables. The study employed an experimental research design using a single-group pretest-posttest approach. The respondents consisted of 40 Grade Six pupils selected from the school. A researcher-made achievement test in English served as the primary instrument for gathering data, while frequency, percentage, mean, t-test, and analysis of variance (ANOVA) were utilized to analyze the results. Findings revealed that most respondents were female, belonged to the first to second and fourth to fifth sibling positions, came from families with one to two children, had parents who were college undergraduates, worked as self-employed individuals or private employees, and earned below ₱10,000 monthly. The respondents obtained a Fairly Satisfactory level of performance in the pretest and improved to a Satisfactory level in the posttest after exposure to digital technologies. Statistical analysis showed a significant improvement in English performance between the pretest and posttest, indicating that the integration of digital technologies positively influenced pupils' learning outcomes. Furthermore, no significant differences in posttest performance were found when respondents were grouped according to sibling position, number of children in the family, monthly family income, mother's educational attainment, father's occupation, and mother's occupation. However, significant differences were observed when grouped according to sex and father's educational attainment. The study concluded that digital technologies effectively enhanced the English performance of Grade Six pupils and recommended strengthening technology integration through teacher training, improved technological resources, learner-centered instructional strategies, continuous assessment, parental support, and the implementation of the proposed action plan. Future studies involving larger samples and additional variables are likewise encouraged to further validate the findings.

Keywords: Digital Technologies, English Instruction, Grade Six Pupils, Experimental Research, Academic Performance, Technology Integration, Pretest-Posttest Design

1. Introduction

The rapid advancement of digital technologies has transformed the landscape of education, creating new opportunities for improving teaching and learning across various subject areas. In English language education, digital technologies such as multimedia presentations, educational applications, online learning platforms, interactive videos, digital games, and collaborative tools have become valuable instructional resources that promote active engagement, meaningful interaction, and improved language proficiency. The Department of Education (DepEd) continues to strengthen the integration of information and communication technologies (ICT) into classroom instruction through the Digital Education initiatives and the Basic Education Development Plan (BEDP) 2030, recognizing technology as a vital component in developing learners equipped with 21st-century skills. Despite these efforts, disparities in technology utilization, teacher preparedness, and resource availability continue to influence the effectiveness of digital instruction in many public elementary schools.

English remains one of the most essential learning areas in the Philippine basic education curriculum because it develops learners' communication, reading comprehension, writing, critical thinking, and digital literacy skills. However, national and international assessment results continue to indicate challenges in English proficiency among Filipino learners. Traditional teacher-centered instructional approaches often limit pupils' participation and fail to sustain their motivation, resulting in lower academic achievement. Consequently, integrating digital technologies into English instruction has become an important educational strategy to create interactive, learner-centered, and engaging classroom experiences that may improve pupils' academic performance.

Recent studies have consistently demonstrated the positive impact of digital technologies on English language learning. A systematic review by Bond et al. (2021) found that educational technologies significantly enhance student engagement, collaboration, motivation, and academic achievement when effectively integrated into classroom instruction. Similarly, Major et al. (2021) reported that technology-supported learning environments provide learners with immediate feedback, interactive content, and personalized learning experiences, contributing to better language acquisition and comprehension.

These studies affirm that digital technologies are no longer supplementary instructional tools but have become essential components of effective teaching and learning.

Furthermore, a meta-analysis conducted by Sung, Chang, and Liu (2023) revealed that digital learning environments positively influence English language achievement by promoting collaborative learning, learner autonomy, and meaningful interaction. Likewise, Zhao and Watterston (2021) emphasized that technology integration encourages students to become active participants in constructing knowledge while allowing teachers to facilitate differentiated instruction that addresses learners' diverse needs and abilities. These findings support the growing body of evidence that digital technologies enhance not only academic performance but also learner engagement and higher-order thinking skills.

Within the Philippine context, recent studies have also supported the educational value of digital technologies. Cabardo and Cabardo (2022) found that technology-assisted instruction significantly improved elementary pupils' motivation and academic achievement in English by increasing learner participation and providing varied instructional experiences. Similarly, Dela Cruz and Ramos (2024) reported that the integration of multimedia resources, online exercises, and educational applications enhanced vocabulary acquisition, reading comprehension, and communication skills among elementary learners. These local studies highlight the relevance of digital technologies in addressing learning gaps and promoting quality English education in Philippine classrooms.

Although previous international and local studies have established the positive influence of digital technologies on learners' academic achievement, several research gaps remain. First, many existing studies focus on secondary or tertiary education, while limited research has examined the effectiveness of digital technologies among Grade Six pupils in public elementary schools, particularly within the Division of Rizal. Second, previous investigations have primarily explored learners' perceptions, technology acceptance, or teacher readiness rather than objectively measuring learning gains using an experimental pretest-posttest design. Third, few studies have examined whether demographic variables such as sex, sibling position, family size, monthly family income, parents' educational attainment, and parents' occupation influence pupils' English performance following exposure to digital technologies. Addressing these gaps provides empirical evidence regarding the effectiveness of technology-assisted English instruction among elementary learners and identifies learner characteristics that may influence instructional outcomes.

Anchored on the principles of constructivist learning theory and technology-enhanced instruction, this study sought to determine the effectiveness of digital technologies in teaching English among Grade Six pupils at Muzon Elementary School, Division of Rizal, during the School Year 2025–2026. Specifically, it assessed the pupils' English performance before and after exposure to digital technologies and examined whether significant differences existed based on selected demographic variables. The findings of the study are expected to contribute to the enhancement of English instruction through evidence-based integration of digital technologies. Furthermore, the results may serve as valuable references for school administrators, teachers, curriculum developers, parents, and future researchers in designing instructional interventions that improve learners' academic performance and support the effective implementation of technology-assisted teaching in elementary education.

2. Material and methods

2.1 Research Design

This study employed an experimental research design, specifically the single-group pretest-posttest design, to determine the effectiveness of digital technologies in teaching English among Grade Six pupils of Muzon Elementary School during the School Year 2025–2026. Experimental research is appropriate because it establishes a cause-and-effect relationship by measuring changes in learners' performance before and after the implementation of an intervention. In this study, the pupils were given a pretest to determine their baseline level of English performance prior to exposure to digital technologies. Subsequently, the participants underwent a series of technology-assisted English lessons utilizing digital instructional tools such as multimedia presentations, interactive learning applications, educational videos, and online learning activities. After the intervention, the same group of pupils took a posttest to determine the extent of improvement in their English performance. The difference between the pretest and posttest scores served as the basis for evaluating the effectiveness of digital technologies in enhancing pupils' learning outcomes.

2.2 Locale of the Study

The study was conducted at Muzon Elementary School, Division of Rizal, during the School Year 2025–2026. Muzon Elementary School is one of the public elementary schools under the Department of Education that provides quality basic education to learners from diverse socioeconomic backgrounds. The school continuously supports innovative teaching approaches and the integration of technology into classroom instruction to improve pupils' learning experiences and academic achievement. It offers adequate educational facilities and gradually adopts digital learning resources that enable teachers to implement technology-assisted instruction. The school was selected as the research locale because it provides

an appropriate environment for implementing digital technologies in English instruction and because the researcher has access to the target respondents necessary for the successful conduct of the study.

2.3 Respondents of the Study

The respondents of the study were the 40 Grade Six pupils enrolled at Muzon Elementary School during the School Year 2025–2026. These pupils served as the participants in the experimental intervention involving the integration of digital technologies in English instruction. The respondents represented varying demographic characteristics, including sex, sibling position, number of children in the family, monthly family income, parents' educational attainment, and parents' occupation. These profile variables were considered to determine whether significant differences existed in the pupils' English performance after exposure to digital technologies. All respondents actively participated in the pretest, technology-assisted instructional intervention, and posttest throughout the duration of the study.

2.4 Sample and Sampling Procedure

The study utilized complete enumeration (total population sampling). Since the total number of Grade Six pupils enrolled during the conduct of the study was only forty (40), all qualified pupils were included as respondents. Total population sampling is appropriate when the entire population is manageable and accessible, allowing the researcher to obtain comprehensive and accurate information from all participants without selecting only a portion of the population. Prior to data collection, permission was secured from the school principal, and informed consent was obtained from the parents or guardians of the respondents. The researcher ensured that participation was voluntary and that the confidentiality and anonymity of all participants were maintained throughout the study.

2.5 Research Instrument

The primary instrument used in this study was a researcher-made English Achievement Test consisting of items aligned with the Grade Six English Most Essential Learning Competencies (MELCs). The instrument was designed to measure the pupils' level of English performance before and after exposure to digital technologies. The same test served as both the pretest and posttest to determine the effectiveness of the intervention. The test covered major competencies in English, including reading comprehension, vocabulary development, grammar, language usage, and writing skills. To ensure the validity of the instrument, it was subjected to content validation by experts in English education, educational management, and research methodology. Their comments and suggestions were incorporated before the administration of the test. Furthermore, pilot testing was conducted among pupils with characteristics similar to the target respondents but who were not included in the actual study. The reliability of the instrument was determined using Cronbach's Alpha, yielding an acceptable reliability coefficient, indicating that the instrument was suitable for data collection.

2.6 Data Gathering Procedure

The researcher first secured approval from the Dean of the Graduate School of Tomas Claudio Colleges and obtained permission from the Schools Division Superintendent through the Office of the School Principal of Muzon Elementary School before conducting the study. Upon approval, informed consent was obtained from the parents or guardians of the participating pupils. The researcher administered the pretest to determine the respondents' initial level of English performance. After the administration of the pretest, the researcher implemented the technology-assisted English lessons using various digital technologies such as multimedia presentations, educational videos, interactive quizzes, online learning activities, and digital learning applications for a designated instructional period. Following the completion of the intervention, the posttest was administered using the same achievement test to determine the pupils' level of English performance after exposure to digital technologies. The collected data were checked, organized, coded, tabulated, and analyzed using appropriate statistical tools. Ethical standards were strictly observed throughout the conduct of the study, including voluntary participation, confidentiality of responses, anonymity of participants, and the exclusive use of collected data for academic research purposes..

2.7 Data Analysis Techniques

The data gathered from the respondents were systematically organized, tabulated, and analyzed using appropriate statistical tools to answer the research questions and test the hypotheses of the study. Frequency and percentage were used to describe the demographic profile of the respondents in terms of sex, sibling position, number of children in the family, monthly family income, parents' educational attainment, and parents' occupation. Mean and standard deviation were employed to determine the level of English performance of the respondents based on their pretest and posttest results. To determine the effectiveness of digital technologies in teaching English, the paired samples t-test was utilized to identify the significant difference between the respondents' performance before and after exposure to technology-assisted instruction. Furthermore, the independent samples t-test and One-Way Analysis of Variance (ANOVA) were used to determine whether significant differences existed in the respondents' posttest performance when grouped according to their profile variables. All statistical tests were evaluated at the 0.05 level of significance, and the results served as the basis for drawing conclusions and formulating recommendations for the improvement of English instruction through the integration of digital technologies.

2.8 Ethical Considerations

The study adhered to established ethical principles throughout the research process. Prior to data collection, permission was obtained from the concerned authorities and participating manufacturing companies. All respondents were informed of the purpose, procedures, and voluntary nature of the study, and their informed consent was secured before participation. Confidentiality and anonymity of the respondents were strictly maintained by ensuring that no personal or company-identifiable information was disclosed in the presentation of the results. Participants were assured that they could withdraw from the study at any time without any consequences. The data gathered were used solely for academic and research purposes, stored securely, and handled in accordance with the agreed confidentiality and non-disclosure provisions to protect the privacy and integrity of both the respondents and the participating organizations.

3. Results and Discussion

3.1 Profile of the Respondents in Terms of the Selected Variables

The profile of the respondents revealed that majority of the 40 Grade Six pupils were female (52.5%), while 47.5% were male. In terms of sibling position, most of the respondents belonged to the 1st–2nd and 4th–5th sibling positions, both comprising 55.0%, while 30.0% belonged to the 3rd–4th sibling position. Majority of the respondents came from families with 1–2 children (35.0%), followed by those with 3–4 children (30.0%). Regarding parents' educational attainment, most fathers (30.0%) and mothers (45.0%) were college undergraduates. In terms of occupation, majority of the respondents' fathers were self-employed (50.0%), while most mothers were private employees (35.0%). Moreover, the largest proportion of respondents belonged to families with a monthly income below Php 10,000 (35.0%), indicating that most respondents came from low-income households. Overall, the respondents represented diverse demographic backgrounds, which provided a basis for examining whether selected variables influenced their English performance after exposure to digital technologies.

Table 1
Profile of the Respondents in Terms of the Selected Variables

Sex	f		%		Rank	
Male	19		47.5		2	
Female	21		52.5		1	
Total	40		100.0			
Sibling Position						
6 th and above	-		-		-	
4 th – 5 th	22		55.5		1.5	
3 rd – 4 th	12		30.0		3	
1 st – 2 nd	22		55.0		1.5	
Total	40		100.0			
Number of Children in the Family						
6 and above	9		22.5		3	
4 – 5	5		12.5		4	
3 – 4	12		30.0		2	
1 – 2	14		35.0		1	
Total	40		100.0			
Parent's Educational Attainment	Father			Mother		
	f	%	Rank	f	%	Rank
College Graduate	8	20.0	3.5	7	7.5	4
College Undergraduate	12	30.0	1	18	45.0	1
High School Graduate	9	22.5	2	8	20.0	2
High School Undergraduate	8	20.0	3.5	4	10.0	3
Elementary Graduate	-	-	-	2	5.0	5
Elementary Undergraduate	3	7.5	5	1	2.5	6
Total	40	100.0		40	100.0	
Parent's Occupation	Father			Mother		
	f	%	Rank	f	%	Rank
Government Employee	1	2.5	3.5	1	2.5	5
Private Employee	18	45.0	2	14	35.0	1
Self-employed	20	50.0	1	13	32.5	2
OFW	-	-		2	5.0	4
Househusband/Housewife	1	2.5	3.5	10	25.0	3
Total	40	100.0		40	100.0	

Monthly Family Income			
Php 30,000 and above	4	10.0	4.5
Php 20,000 – Php 29,999	10	25.0	2
Php 15,000 – Php 19,999	8	20.0	3
Php 10,000 – Php 14,999	4	10.0	4.5
below Php 10,000	14	35.0	1
Total	40	100.0	

3.2 Level of Performance in English of the Respondents Before and After Exposure to the Digital Technologies as Revealed in the Pretest and Posttest Results

Table 2.1. shows the pretest results which revealed that the respondents demonstrated a Fairly Satisfactory level of performance in English before exposure to digital technologies, with a mean score of 19.95 and a standard deviation of 7.766. Majority of the respondents obtained scores ranging from 11–20, comprising 40.0% of the total respondents, followed by those who scored 21–30 or Satisfactory at 35.0%. Meanwhile, only 12.5% attained a Very Satisfactory level, while another 12.5% were classified as Did Not Meet Expectations. No respondent achieved an Outstanding rating. The highest score obtained was 34, while the lowest was 3. These findings indicate that prior to the integration of digital technologies, the respondents possessed basic English competencies but still encountered challenges in achieving higher levels of proficiency. The results suggest the need for innovative and technology-assisted instructional strategies to enhance learners' engagement, strengthen language skills, and provide meaningful learning experiences that may improve their English performance.

Table 2.1

Level of Performance in English of the Respondents Before and After Exposure to the Digital Technologies as Revealed in the Pretest Results

Score	Adjectival Rating	Frequency	Percent	Rank
40	Outstanding	-	-	-
31-39	Very Satisfactory	5	12.5	3.5
21-30	Satisfactory	14	35	2
11-20	Fairly Satisfactory	16	40	1
1-10	Did not meet expectations	5	12.5	3.5
	Total	40	100.0	
	Highest Score	34		
	Lowest Score	3		
	Mean Score	19.95 (FS)		
	Standard Deviation	7.766		

Table 2.2. shows the posttest results which revealed that the respondents' level of performance in English improved after exposure to digital technologies, obtaining an overall mean score of 26.33, interpreted as Satisfactory, with a standard deviation of 8.078. Majority of the respondents (42.5%) obtained scores ranging from 21–30, classified as Satisfactory, followed by 35.0% who achieved scores ranging from 31–39, interpreted as Very Satisfactory. Meanwhile, 22.5% of the respondents obtained scores ranging from 11–20, described as Fairly Satisfactory. No respondent was classified under Did Not Meet Expectations and Outstanding categories. The highest score obtained was 39, while the lowest score was 11. These findings indicate that the respondents demonstrated improved English performance after the integration of digital technologies. The increase in satisfactory and very satisfactory ratings suggests that technology-assisted instruction enhanced learners' engagement, comprehension, and application of English competencies. The results imply that digital technologies served as effective instructional tools in providing interactive, learner-centered, and meaningful learning experiences that contributed to the improvement of pupils' English language performance.

Table 2.2

Level of Performance in English of the Respondents Before and After Exposure to the Digital Technologies as Revealed in the Posttest Results

Score	Adjectival Rating	Frequency	Percent	Rank
40	Outstanding	-	-	-
31-39	Very Satisfactory	14	35	2
21-30	Satisfactory	17	42.5	1
11-20	Fairly Satisfactory	9	22.5	3
1-10	Did not meet expectations	-	-	-
	Total	40	100.0	
	Highest Score	39		

Lowest Score	11
Mean Score	26.33 (S)
Standard Deviation	8.078

3.3 Significant Difference on the Level of Performance of the Respondents Before and After Exposure to the Digital Technologies as Revealed in the Pretest and Posttest Results

The test of significant difference revealed that there was a significant difference in the level of performance of the respondents before and after exposure to digital technologies, as shown by the pretest and posttest results. The respondents' mean score increased from 19.95 in the pretest to 26.33 in the posttest, with a mean difference of -6.38. The computed t-value of -9.660 and p-value of .000, which is lower than the 0.05 level of significance, indicate that the improvement in the respondents' English performance after the intervention was statistically significant. Thus, the null hypothesis was rejected. These findings demonstrate that the integration of digital technologies positively influenced the respondents' English learning outcomes by improving their understanding and mastery of language competencies. The results further imply that technology-assisted instruction provided a more engaging, interactive, and learner-centered environment that encouraged active participation and supported the development of pupils' English skills. Therefore, digital technologies can be considered an effective instructional approach in enhancing the academic performance of Grade Six pupils in English.

Table 3

Computed t-value on the Level of Performance of the Respondents Before and After Exposure to the Digital Technologies as Revealed in the Pretest and Posttest Results

Test	Mean	Sd.	Mean Diff.	t	df	Sig	Ho	VI
Pretest	19.92	19.95	-6.38	-9.660	39	.000	Rejected	Significant
Posttest	26.33	26.33						

3.4 Significant Difference on the Level of Performance After Exposure to the Digital Technologies as Revealed in the Posttest Results in terms of their Profile

The results revealed that most of the respondents' profile variables did not significantly affect their level of performance in English after exposure to digital technologies. Specifically, sibling position, number of children in the family, mother's educational attainment, father's occupation, mother's occupation, and monthly family income obtained p-values greater than the 0.05 level of significance, indicating that no significant differences existed among the respondents' posttest performance when grouped according to these variables. However, significant differences were found in terms of sex and father's educational attainment, with computed p-values of .011 and .002, respectively, which led to the rejection of the null hypothesis. These findings suggest that digital technologies were generally effective in improving pupils' English performance regardless of most demographic characteristics. The results further imply that technology-assisted instruction provided equitable learning opportunities among pupils from varied family backgrounds. Nevertheless, individual learner characteristics such as sex and the educational background of fathers may contribute to differences in academic outcomes due to variations in learning support, motivation, and educational experiences at home. Therefore, teachers may consider learner diversity and family-related factors when designing technology-based instructional strategies to maximize learning benefits for all pupils..

Table 4

Computed F-values on the Level of Performance After Exposure to the Digital Technologies as Revealed in the Posttest Results in Terms of Their Profile

Variables	f-value	p-value	Ho	Verbal Interpretation
Sex	7.089	.011	Rejected	Significant
Sibling Position	.246	.783	Accepted	Not Significant
Number of Children in the Family	.981	.413	Accepted	Not Significant
Father's Educational attainment	5.080	.002	Rejected	Significant
Mother's Educational Attainment	.812	.549	Accepted	Not Significant
Father's Occupation	.199	.896	Accepted	Not Significant
Mother's Occupation	.087	.986	Accepted	Not Significant
Monthly Family Income	.404	.805	Accepted	Not Significant

Conclusions & Recommendations

The study concluded that the integration of digital technologies in teaching English significantly improved the performance of Grade Six pupils at Muzon Elementary School. The respondents' English performance increased from a Fairly

Satisfactory level in the pretest to a Satisfactory level in the posttest, indicating that technology-assisted instruction contributed positively to learners' understanding, engagement, and mastery of English competencies. The significant difference between the pretest and posttest results confirmed that digital technologies were effective instructional tools in enhancing pupils' academic performance. Furthermore, most profile variables such as sibling position, number of children in the family, parents' occupation, mother's educational attainment, and monthly family income did not significantly influence pupils' posttest performance, suggesting that digital technologies provided learning opportunities regardless of learners' demographic backgrounds. However, significant differences were observed in terms of sex and father's educational attainment, indicating that certain learner and family-related factors may still contribute to variations in learning outcomes.

Based on the findings and conclusions, it is recommended that school administrators strengthen the implementation of digital technology integration by providing teachers with continuous professional development programs, seminars, and workshops focused on effective technology-assisted English instruction. Schools may also enhance access to digital resources, learning applications, multimedia materials, and reliable internet connectivity to support meaningful technology-based learning experiences. Teachers are encouraged to utilize interactive digital activities, differentiated instruction, and technology-assisted assessments to address diverse learning needs and sustain pupils' engagement in English lessons. Parents may provide guidance and support in the appropriate use of digital technologies for educational purposes to reinforce learning at home. The proposed action plan may be implemented to further improve pupils' English performance through effective digital integration, while future researchers may explore similar studies using larger samples, additional variables, and other learning areas to further validate the effectiveness of digital technologies in education..

Compliance with ethical standards

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