

# THE IMPACT OF INTERNET INTEGRATION TO DEVELOP READING ABILITY OF STRUGGLING READERS: AN EXPERIMENTAL STUDY

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## ABSTRACT

Reading is the basic fundamental skills in teaching-learning process, thus every learner must know how to read. However there were some students who were known as “struggling readers,” the ones who are known to be in frustration stage as classified by Philippine Informal Reading Inventory (PHIL-IRI).

Therefore, it is conducted to investigate the effects of internet integration on the development of reading abilities among struggling readers, specifically focusing on silent and oral reading. Twenty-seven (27) Grade 5 struggling readers from Compostela Central Elementary School SPED Center participated. Pretests and posttests were conducted to measure reading speed and comprehension scores. Results showed significant improvements in both silent and oral reading abilities post-intervention. The findings suggest that ICT integration positively impacts reading proficiency among struggling readers, highlighting its potential as a valuable tool in education.

**Keywords:** *ICT Integration* Struggling readers, Reading ability, ICT integration, Quasi-experimental study

## 1. INTRODUCTION

Reading is a fundamental skill a student must possess which offers a life-long opportunity of success in any field that a student would have. It is an important skill to develop because it is necessary for an individual to function in the community where he/she belongs. It is basically needed for communication and to understand what the other individual would like to communicate and to facilitate to learn reading, the technology in our midst can facilitate how to read and to comprehend what has been read.

According to Pardede (2019), technology in the sector of education has overwhelmed the teaching and learning process with digital tools. Internet connection can provide any kind of information people want to know, and this has changed the habit of students in gathering of data instead of visiting the library and read printed books, students tend to access digital texts through the internet. The internet is one of the Information and Communication Technologies (ICT) which is a good means to develop the reading ability of the students since they are already exposed to it. With the growing amount of digital information available, students are more particular spending time reading electronic materials. However, only few studies focusing on the effects of the use of internet to develop reading ability of the students who are specifically struggling.

In the Philippines, a study conducted by Honey Lyn P. Valentos and Ronald S. Decano found that print and non-print materials were not the only resources that helped frustrated learners with their self-learning modules during the pandemic. Digital learning materials, including audio-visual content, also played a significant role.

A study as conducted in Indonesia by Nurhana (2014) that aimed to improve the reading skills of 8th grade students of SMP Raden Fatah Cimanggu, Cilacap by using Interactive Multimedia. The subjects of the study were the VIII E students of SMP Raden Fatah Cimanggu, Cilacap in the academic year of 2013/2014. The data from the observation and interview were analyzed qualitatively and the scores were analyzed quantitatively. The finding of this study is

that the using of the Interactive Multimedia could improve the students' reading skills at SMP Raden Fatah Cimanggu, Cilacap. The results of the research show that there is improvement of the students' reading skills through the use of Interactive Multimedia. The students made a good improvement in some aspects of reading skills, such grammatical words classes, system, particular meaning, and task achievement. They were more confident to reading aloud. They actively participated during the teaching and learning process.

In Compostela Central Elementary School where the researcher is teaching, it was observed that many classrooms are already equipped with smart televisions and internet connections. Amidst this technology, there are still many students who are struggling how to read. This is the reason why the researcher would like to delve into this study to determine whether the integration of this internet help the struggling reader to read. Research shows that 80% of the learner's learning can be achieved visually, thus in using chalkboard the teacher can only present pictures by posting them whereas by the use of multimedia he can share video lessons which are more interesting than the former.

## **2. Methods**

### **2.1 Research Design**

The study was a quasi-experimental research using one-group pretest-posttest design. Quasi-experimental research is similar to experimental research in that there is manipulation of an independent variable. It differs from experimental research because either there is no control group, no random selection, no random assignment, and/or no active manipulation (Abraham & MacDonald, 2011). Furthermore, this study used the quasi-experiment known as the one-group pretest-posttest design in which the same dependent variable is measured in one group of the subjects. This quasi-experimental research is not true experimental research. Although the independent variable is manipulated, the subjects are not randomly assigned to conditions or order of conditions.

### **2.2 Research Locale**

This study was conducted in Compostela Central Elementary School SPED Center, Compostela Davao de Oro. Compostela is one of the municipalities of Davao de Oro which is at the northeast part of Davao de Oro, is the first class municipality called "Compostela". It is where the vast rice fields and banana plantation can be found. In this municipality also lies the cradle of wisdom for young learners where all dreams begin. And that is Compostela Central Elementary School-SPED Center, the center of educational development.

It is a first-class municipality that comprises the vast plains of the province. Going to this town from Tagum City, one will pass through the national highways of Mawab, Nabunturan and Montevista. The municipality is politically subdivided into 16 barangays, namely: Poblacion, Aurora, Bagongon, Gabi, Lagab, Mangayon, Mapaca, Maparat, New Alegria, Ngan, Osmeña, Panansalan, San Jose, San Miguel, Siocon, and Tamia. In the same municipality lies one of the largest banana plantation in Davao de Oro, there are also gold deposits in one of its barangay, Bango, wherein mining was already prohibited by the government.

On the other hand, Compostela Central Elementary School SPED Center enter existed for more than 7 decades already and for school year 2022-2023, there about 3271 enrollees with 107 eligible and highly competent teachers and one school principal with exemplary leadership style.

With the land area of 18 hectares, CCESSC has facilities that allow learners to enhance their capabilities and provide conducive environment for learning. The school offers Special Education Programs which also caters learners with disabilities.

### **2.3 Research Subject**

The subjects of the study were the 27 struggling readers from the Grade 5 learners as identified by their advisers based on the Phil-Iri tool. These students were officially enrolled at Compostela Central Elementary School SPED-Center for school year 2022-2023. The subjects were identified and categorized as struggling readers.

### **2.4 Research Instrument**

The researcher used the Philippine Informal Reading Inventory (Phil-IRI) GST to determine the reading proficiency level of the pupils. According to Phil-IRI Manual (2018), the Phil-IRI Group Screening Test (GST) can tell teachers whether students were reading at, above, or below their grade levels. After the assessment of the GST result, the

researcher divided the instrument into three parts: Part 1 dealt with word recognition wherein pupils at risk were tested through identifying their reading miscues in terms of mispronunciation, omission, repetition, insertion, and substitution following this formula below:

$$\text{Word Recognition} = \frac{\text{Number of words} - \text{Number of major miscues}}{\text{Number of words in the passage}} \times 100$$

Part 2, the questionnaire dealt with identifying the reading level of the pupils as independent, instructional, and frustration considering the criteria of Phil-IRI Reading level below:

Word Recognition	Comprehension Score (in%)			
Independent	-	97-100%	-	80-100%
Instructional	-	90-100%	-	59-79%
Frustration	-	89%-below	-	58%-below

## 2.5 Statistical Treatment of Data

The data obtained were tallied and tabulated. The statistical tools used to ensure the accuracy in the analyses and interpretations of the findings are the following:

Mean. This was used to measure the central tendency between the pretest and posttest mean scores in the reading test of pupils.

Paired T-test. This was used in computing the significant difference of two groups of sample.

## 3. RESULTS AND DISCUSSION

This chapter presents the data, analysis and interpretation of the data gathered. The orders of the presentations of the results were based on the statement of the problem of this study.

### 3.1 Reading Ability of the Subjects in Silent and Oral Reading During the Pre-test

Table 1

Descriptive Statistics for Pretest in Oral Reading and Silent Reading				
	Pre -test Silent Reading Speed	Pre-test Oral Reading Speed	Pre-test Silent Reading Comprehension Score	Pre-test Oral Reading Comprehension Score
Valid	27	27	27	27
Missing	0	0	0	0
Mean	15.622	10.063	0.111	0.111
Std. Deviation	2.105	3.096	0.424	0.424
Minimum	13.800	0.000	0.000	0.000
Maximum	23.400	2.000	2.000	2.000

Table 1 shows the descriptive statistics for pretest in oral reading and silent reading abilities of subjects in terms of speed and comprehension score. The mean of speed recorded during the pretest for silent reading is 15.6 words per minute, while the mean score achieved during the same pretest for silent reading stands at 0.11. The class proficiency for this is calculated at 1.6%. The results suggest that the class proficiency in terms of reading is categorized as very low.

On the same table also, the comprehension score in pre-test both oral and silent is of same value, 0.11 percent.

### 3.2 Level of Reading Abilities of the Subjects in Silent and Oral Reading During the Post-test

Table 2

Reading Abilities of the Subjects in Silent and Oral Reading During the Post-test

	Post -test Silent Reading Speed	Post-test Oral Reading Speed	Post-test Silent Reading Comprehension Score	Post-test Oral Reading Comprehension Score
Valid	27	27	27	27
Missing	0	0	0	0
Mean	35.481	39.237	1.593	1.296
Std. Deviation	11.628	13.457	1.693	1.540
Minimum	20.500	14.800	0.000	0.000
Maximum	63.300	62.300	6.000	6.000

Table 2 presents the reading ability of the subjects in silent and oral reading during the post-test. It reveals that the level of reading ability of the subjects during the post-test in silent reading in terms of speed has a mean of 35.5 words per minute, and the mean for post-test in oral reading speed is 39.2 words per minute. In terms post-test comprehension score, silent reading has gained the mean 1.6 and oral reading got the mean of 1.3 and the class proficiency level is 19%.

Based on the results there is an increased of the reading performance of the students after the intervention, as shown in the increased in the post-test results in reading speed and comprehension score in both oral and silent reading.

### 3.3 Consolidated Result of Silent and Oral Reading During Pre-Test and Posttest

Table 3

Formulas	Silent Reading Speed		Silent Reading Comprehension Score		Oral Reading Speed		Oral Reading Comprehension Score	
	Pre test	Post test	Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post test
Valid	27	27	27	27	27	27	27	27
Missing	0	0	0	0	0	0	0	0
Mean	15.622	35.481	0.111	1.593	10.063	39.237	0.111	1.296
Std. Deviation	2.105	11.628	0.424	1.693	3.096	13.457	0.424	1.540
Minimum	13.800	20.500	0.000	0.000	0.000	14.800	0.000	0.000
Maximum	23.400	63.300	2.000	6.000	15.200	62.300	2.000	6.000

Table 3 presents the consolidated results of oral and silent reading during the pre-test and post-test. There were 27 respondents who participated in both tests, and no one is missing (as represented by 0). Prior to the pre-test, the subjects had not undergone any reading remediation. Remediation commenced only the day after the pre-test to ensure experimental reliability in addressing the statement of the problem.

During the pre-test, the mean of the scores in silent reading speed, measured in words per minute, for the passage with 196 words, was 15.6, and in the post-test the same test yielded a mean of 35.5. This suggests an improvement in reading speed attributable to the plain use of ICT Integration in reading remediation.

On the other hand, the pre-test oral reading speed of struggling readers has the mean of 10.1 words per minute, while in the post-test its mean becomes 39.2 words per minute.

The comprehension score for oral reading during the pre-test had a mean of 0.11, while during the post-test, it increased to 1.6. This indicates an improvement of 1.49 in the subjects' scores during the post-test, suggesting that

ICT integration has a positive impact on the subjects' performance. In terms of oral reading comprehension score it got the mean of 0.11, while the post-test comprehension score was 1.3.

### 3.4 Significant Difference in the Pre-test and Post-test Scores in Silent Reading Speed Before and After ICT Integration

Table 4

Difference in the Pre-test and Post-test in Silent Reading Speed Before and After ICT Integration

Variables	T	Df	P-Value	Remarks
Pre-test Silent Reading Speed Post-test Silent Reading Speed	-8.839	26	< .001	Significant

Based on Table 4 there is a significant difference in silent reading speed between pretest and posttest in favor of posttest, which means that ICT integration in reading remediation has improved the reading speed of struggling readers.

### 3.5 Significant Difference in the Pre-test and Post-test in Silent Reading Comprehension Scores Before and After ICT Integration

Table 5

Difference in the Pretest and Posttest in Silent Reading Comprehension Score Before and After ICT Integration

Variables	T	Df	P-Value	Remarks
Pre-test Silent Reading Comprehension Score Post-test Silent Reading Comprehension Score	-4.481	26	<.001	Significant

Table 5 shows the significant difference of comprehension scores in silent reading speed between pretest and posttest in favor of posttest. The result shows that there is a significant difference in silent reading comprehension scores during the pretest and posttest in favor of the posttest

### 3.6 Significant Difference of Oral Reading Speed Before and After ICT Integration

Table 6

Difference of Oral Reading Speed Before and After ICT Integration

Variables	T	Df	P-Value	Remarks
Pre-test Oral Reading Speed Post-test Oral Reading Speed	-11.377	26	<.001	Significant

Table 6 shows that there is a significant difference in the pretest and posttest scores in oral reading in terms of speed during the pretest and posttest in favor of the posttest.



### 3.7 Significant Difference of Oral Reading Comprehension Score Before and After ICT Integration

Table 7

Difference of Oral Reading Comprehension Score Before and After ICT Integration

Variables	T	Df	P-Value	Remarks
Pre-test Oral Reading Comprehension Score				
Post-test Oral Reading Comprehension Score	-3.986	26	<.001	Significant

Table 7 shows that there is a significant difference in oral reading comprehension score between post-test and pre-test in favor of post-test.

The silent reading speed of the participants after the ICT integration has gained an increase of 19.9 words as depicted in post-test result. It shows that the same integration has improved the silent reading speed of the respondents.

On the other hand, the pre-test result on oral reading speed of the subjects has an increased of 29.1 words per minute, which indicates that the said integration on the reading intervention has a positive impact to the subjects. Furthermore, the results give clearer data that the pretest silent reading comprehension scores has an increased of 1.49.

Lastly, the pre-test comprehension score in oral reading got an increased of 1.19 from the previous scores after the post-test.

The overall results are aligned with the studies of Mayes et al. (2001) and Solak (2014) about the potential benefits of digital reading in terms of speed and comprehension. While earlier research indicated mixed findings regarding the efficacy of digital versus paper-based reading, recent studies have suggested that digital reading can indeed lead to faster reading speeds.

Taking into account these insights, it can be inferred that the observed improvement in reading speed among struggling readers following ICT integration, as indicated in the provided data, can be attributed to several factors.

Firstly, the dynamic and interactive nature of digital texts, coupled with the convenience of internet access, may have enhanced students' engagement and motivation to read. Secondly, the utilization of multimedia elements and interactive features, as demonstrated in Nurhana's study, likely facilitated deeper comprehension and retention of reading materials. Finally, the broader accessibility of digital resources enabled by ICT integration may have provided struggling readers with a more diverse and stimulating reading environment, ultimately contributing to their improved reading speed and comprehension.

Thus the integration of ICT in reading remediation offers a multifaceted approach to enhancing reading skills among struggling readers. By leveraging digital technologies and internet connectivity, educators can create immersive learning experiences that cater to the diverse needs and preferences of students in today's digital age. Moreover, Adelakun et al., (2022) studied the benefits, challenges and prospects of Electronic Learning System using two research processes administered to students and lecturers, and the findings of their study show that information technology will improve performance and lead to greater productivity when standard IT infrastructure is installed.

Hence, all education curricula should be incorporated with appropriate digital technology to meet the present and future challenges of globalization and the knowledge economy.

Thierer (2000) pointed out that the role of technology in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy. Its importance has been recognized by educational institutions worldwide (Watson, 2001). After the treatment of data, results show that there is a significant difference between the pre-test and post-test results in favor of post-test in terms of speed, and comprehension scores in both oral and silent reading.

This means that the integration of the ICT in teaching reading has a positive impact of the reading comprehension and speed either silent or oral reading for struggling readers.

The increased access to digital materials through the internet has transformed the reading habits of students, motivating them to engage more with electronic texts.

Therefore, the findings suggest that ICT integration plays a crucial role in improving the reading proficiency of struggling readers, aligning with the broader goal of leveraging technology to enhance educational outcomes (Pardede, 2012; Nurhana, 2014; Solak, 2014; Sudiran, 2015; UNESCO, 2015).

#### 4. CONCLUSIONS

After exclusively using ICT for remediation for struggling readers the post-test results indicate a significant difference in reading speed and comprehension scores during the pre-test and post-test, favoring the post-test outcomes. This suggests that the implementation of ICT has positively impacted the reading abilities of struggling readers.. The observed results clearly indicate a significant difference in favor of the posttest, underscoring the positive impact of ICT integration on reading abilities of struggling readers.

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