

Digital-Based Teaching, Reading Problems and Comprehension of Grade One to Grade Six Pupils of Maglahug Elementary School

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Abstract—This study measured the extent application of Digital-Games/Platforms in teaching, the extent observation of reading problems, and the comprehension level of the grade one to grade six pupils in Maglahug Elementary School. This also assessed the significant relationship of Digital-Games/Platforms with Comprehension Level, and the significant relationship between Reading Problems and Comprehension Level. The results of the study were the basis for a digital-game based intervention plan. This study used the descriptive -correlational design using the quantitative approach. There are 93 pupils and 6 teachers who are included in this study. This research revealed that digital-games are applied rarely in teaching, reading problems are sometimes observed, and that there are higher number of pupils under frustration level than both instructional and independent level. This study revealed that there is a moderate significant relationship between digital-games and comprehension level, and also a moderate significant relationship between reading problems and comprehension level. The result of this research is the suggested Digital-Game Based Intervention Plan.

Keywords—*Digital Game-Based Teaching; Reading Problems; Comprehension Level; Elementary Pupils*

I. Introduction

Reading comprehension, without a doubt, is an important factor in the learning process. It is the very foundation for further and more advanced skills. Aligned with DepEd Memorandum no. 173 series of 2019 released last November 22, 2019 “The Bawat Bata Bumabasa” which aims to provide quality education through developing reading skills. Reading is a skill that should be acquired by the learners in order to succeed in their studies. Learners whose reading skills don’t match with their grade level tend to be left far behind their classmates who possess sufficient reading skills needed, Lynch 2020. It is sometimes misunderstood as word recognition only. A learner is considered a reader if he can produce and identify the sound of each letter as well as the words that these letters are formed. Leipzig (2001) said reading does not only involve the process

of word recognition because it includes fluency, motivation, and comprehension. The main objective of reading is to comprehend the words that are recognized with ease and fluency, then assimilating prior knowledge with the text being read, Mullis and Martin (2015). Without comprehension reading does not occur. It is merely word recognition. Comprehension has many benefits; it makes a learner an active reader because a reader can already enjoy the reading material, helps in language development since reading is a way of learning language, it is necessary for success because learners who can read with comprehension can easily cope up with the changes in the environment, it improves reading skills, it develops focus and concentration, develops writing skill, and makes learners excel academically. However, there are causes why comprehension is not achieved mentioned by Lynch (2020) and few of these are the lack of vocabulary and the lack of interest towards reading. Reading is one of the most essential skills that plays an important role in education. Johnson (2017) believes that reading is the ability to interpret written symbols and understand printed materials. He added that reading occurs gradually through continuous experience with reading materials. Blakeley (2020) defined reading as a cognitive process because it involves decoding symbols to get the meaning of the words read. She added that reading is an active process of constructing meanings of words. Purposeful reading helps the readers in directing information towards an objective and helps them to focus their attention. A. Tennant stated in his article, reading is recognition of words. It starts from the recognition of the letters individually and how letters create a particular word, to the meaning of the words formed not only in individual level, but also as part of a reading material. In an article in twinkl, reading is the process of watching at symbols written and letters and understanding their meaning. Anderson, Hiebert, Scott, and Wilkinson suggested five principles that helps define what reading is: They said that reading is a constructive process, there must be fluency in reading, reading must be strategic, reading needs motivation, and lastly, reading is a developing skill. Based on Leipzig (2001), reading is a multifaceted process that involves word, recognition, fluency, comprehension, and motivation. These three components must be developed to consider a person as a reader. It is also the act of seeing a word and recognizing its pronunciation immediately and without any conscious effort. If reading words requires conscious, effortful decoding, little attention is left for comprehension of a text to occur. According to Garnett (2011), word recognition with automaticity is an early critical objective in reading to achieve its ultimate goal which is comprehension. Hudson, Lane, and Pullen define fluency as the ability to read like the way you speak and that fluency is composed of these three key elements: accuracy, appropriate expression and correct phrasing. Guillot, Marie-Noëlle (1999) in her study defines fluency as connection between word recognition during reading and reading comprehension. University of Oregon in its article Big Ideas in Beginning Reading stated that fluency is not the end but rather the beginning to comprehension. Mullis and Martin (2015) define comprehension as the ability to process words, understand their meaning, and to assimilate them with what the reader's prior knowledge. It includes not only what lies on the page (literal comprehension), but also on how readers can apply what they read to new situations. Tompkins (2011) said that reading comprehension is reader's level of understanding of a text. Based on Pearson (1999) there are factors to be considered. These are

factor within the readers, factor within the written message, and factor within the reading environment. The main goal of reading is comprehension in which the reader can understand the context and can get the information from the reading material. Reading with comprehension means getting message and point from what has been read. Without comprehension, reading is saying the written text correctly without understanding its meaning. Cain et., al 2004 & Paris 2005 reading comprehension is the process of creating meaning of the text by coordinating different complex processes including language, word reading, word knowledge, and fluency. According to Terry (2021), comprehension is the ability to understand and use what you have learned. Vocabulary plays an important role in comprehension. Since vocabulary is the knowledge-based of words and their meanings. Readers use words stored in the brain memory to make sense of words in order to associate. When a reader conducts an association, it is easier for him to remember. Reading comprehension involves understanding, analyzing, and synthesizing words, sentences, and ideas. Studies have shown that when a reader does not have a large vocabulary to draw upon, comprehension does not occur. According to Richards (2000), suggest that vocabulary is a main component of language proficiency and offers much of the foundation for how well learners speak, listen, read, and write. According to Brandon (2021), Comprehension is the ability to understand words, though it is different from word recognition because recognition is only recognizing the word without understanding., She added that the main objective of reading is comprehension. E. Collier 2019 stated that reading can never be belittled for it has many benefits that can ensure learning, including; cognitive development, development of empathy, gain deep understanding, and build strong relationship. McLeod (2020) states that cognitive development is a continuous reorganization of mental processes as a result of biological maturation and environmental experience. Children construct an understanding of the world around them, then experience discrepancies between what they already know and what they discover in their environment. Cherry (2020) tells that empathy is the ability to emotionally understand what other people feel, see things from their point of view, and viewing oneself in other people's place. Essentially, it is putting yourself in someone else's position and feeling what they must be feeling. In addition, according to Collier (2019), during reading a book, readers put themselves in the story in front of them. This allows them to develop empathy as they experience the lives of other characters and can identify with how they are feeling. Bereiter (2006) asserts that reading helps in gaining deeper understanding. Collier (2019) stated that Reading provides an opportunity to have a regular and shared event that both parent and child can look forward to. Furthermore, it provides children with feelings of attention, love, and reassurance which is key for nurturing and well-being. However, there are signs of lack in reading comprehension as stated in an article posted by Avivit Ben-Aharon entitled "7 Signs of Reading Comprehension Problems in Children and Adults", readers show no interest in reading, difficulty following directions given, pronunciation problems, issues in understanding the reading material, difficulty in solving tasks, poor penmanship, and family background on comprehension problems. Some of the said signs are observable in in the workplace of the researcher.

In today's time of technological advancement, games and applications have increased their popularity. These games and applications have been trending and have been attracting many individuals. They are part of the day-to-day living. Taking the advantage of this trend, these games have been studied as to how they can be utilized in the teaching-learning process. Based on Top Hat's article in Game Based Learning, **game-based learning is where games are integrated within the learning activities. In this approach, learners are motivated to master skills and that it promotes engagement.** According to McLaren (2017), game-based learning has received more interest and attention in the teaching-learning process in the last 20 years. According to the Editorial Team of EdTechReview, game-based learning is a strategy in teaching in which learners explore important aspect of games. Teachers and learners cooperate to reach the goal of learning and increases the experience of playing games. Farber (2021) explained that with guidance, games can help learners control emotions, displays empathy, and shows social behaviors. In addition, games can be effective in developing those skills. Connolly (2012) asserts that it is the application of games to learning using specialized content all within gaming environment. Games could be fun and enjoyable games or educational games. Games have been subjects of different research and studies as to how they can be applied in the teaching-learning process. This is the reason why Game Based Learning is developed. Game based Learning is where games are integrated in the teaching and learning process, it is a process in which learners explore the games and learn in different environment. Its goal is to let learners acquire new skills and enhance them. Through games, learners find reading as an active and engaging process rather than passive and a boring activity. Games can also develop problem solving skills. Aside from making the learners hype up because it is motivationally fun and enjoyable, there are games that can be used in developing vocabulary. These games are those that involve spelling, word knowledge, and word understanding if they are properly applied in the teaching learning process.

The result of the previews studies, articles, and the existing dilemma of the researcher's learners push him to pursue his study and find out the relevance of these games and the Game Based Learning in developing reading comprehension of the Grade Six pupils, so that they will be equipped with necessary skills that can help them improve academically and let them succeed in a more challenging environment that they are going to face. This study aims to identify the digital-based platforms, reading problems and comprehension skills of the Grade 1 to Grade 6 pupils in Maglahug Elementary School for SY 2021-2022. The findings will be the bases for a proposed intervention scheme. Further, it sought to answer the following questions:

1. What is the extent of using digital-based platforms used by reading teachers?
 - 1.1 wordhunt
 - 1.2 Offline digital dictionary
 - 1.3 Scrabble
 - 1.4 WordHunt
 - 1.5 4 pics 1 word
 - 1.6 Wordscapes

- 1.7 Reading Comprehension Game
- 1.8 English Alphabet Mobile Application
- 1.9 Kids Spelling Game
- 1.10 Phonics: Reading Games for kids and spelling
2. What are the reading problems identified by the reading teachers:
 - 2.1 pronunciation
 - 2.2 vocabulary
 - 2.2 Omission
 - 2.4 Substitution
 - 2.5 Transposition
 - 2.6 Reversal
 - 2.7 nsertion
3. What is the extent of the comprehension skills?
4. Is there a significant relationship between the comprehension skills and:
 - a. use of digital-based platform
 - b. reading problems?
5. What digital-based intervention plan can be proposed based on the findings of the study?

II. Methodology

Design. This study will utilize the descriptive-correlational design using quantitative approaches of research. Descriptive research design is applicable towards the study of Game-Based Learning and Reading Comprehension since it does not control or change variable. The researcher records, observes, and measures the given information. Correlational design since the researcher collects data from natural setting and that the researcher wants to know how game-based learning can affect reading comprehension level of the learners and the significance of reading comprehension with reading problems. Results of this study will be helpful and can be applied in real life situation. Quantitative approach will also be utilized since the researcher will gather numerical data about the extent application of digital platforms, the extent observation of reading problems and the number of pupils in every reading comprehension level.

Sampling. The participants of this research are the ninety-three 93 pupils from Grade 1 up to Grade 6 of Maglahug Elementary School, Ormoc City in which fifty-three (53) are males; forty (40) are females. Six (6) teachers are the respondents in the conduct of the research. The research will use the universal sampling since all learners from Grades 1 to 6 are the participants.

Research Procedure. The researcher will seek formal permission from the Graduate School, the Division Office, the District Office, the school, and the parents. After seeking of formal permission, the researcher will start conducting the study. Each 6 tablets given by the stakeholders has been installed with games and are used in the teaching process. Teachers made schedule for the application of games in each pupil. Using the digital-game-based teacher made checklist, the teacher will record as to what extent he/she is using games in order to develop reading among

learners. Through this, the researcher can analyse if teachers are using digital-games in their teaching. To gather data about reading problems, each teacher will use problem-teacher made checklist. Provided in this checklist are the problems that learners are experiencing. The teacher will check the problems he/she has observed while their pupils are reading the text from the PHIL-IRI. It is a tool designed to aid teachers in measuring and describing reading performance and has four (4) graded passages. Its objective is to search and identify the learner's independent, instructional, and frustration levels. It can be used in assessing silent-reading by recording the time it takes in reading the text and silent-reading comprehension by asking the learners five to eight questions that varies according to level of difficulty. It can also be used in assessing oral-reading since it can describe word recognition, decoding and fluency that lead to comprehension which is the main goal of reading. It gives approximation of learner's ability and may be used with the combination of other tools. This tool helps teacher identify the reading comprehension level of the learners according to the categories like independent, instructional and frustration. The researcher will utilize a digital – based – teacher made checklist that contains identified digital games. The teacher will check as to what extent they are using the listed games in developing reading comprehension. It could be always, sometimes, rarely or none at all. The researcher will use Problems-teacher made checklist in which reading problems like but not limited to pronunciation, omission, substitution, reversal, and transposition. The teacher will listen while the learners are reading and that they have to check as to what problems are committed by the learners. To identify the extent comprehension level of the pupils, the teacher will use the PHIL-IRI tool. In this tool, the comprehension level will be measured by following the procedures provided and instructed in the PHIL-IRI.

Ethical Issues. Before the conduct of the study, the researcher formally asked permission through formal letter of approval from pupils who are the participants, parents, teachers who are the respondents of the research tools, School Head, Public Schools District Supervisor, and Schools Division Superintendent.

Treatment of the data. The data gathered in the extent application of Digital-Games/Platforms and the extent observation of Reading Problems in the conducted setting were treated through a weighted mean and a description. The reading comprehension result was treated through simple mean percentage. The significant relationship between digital-platforms and reading comprehension; reading problems and comprehension level are treated using Pearson r and chi square.

III. Results and Discussion

Table 1

The Extent Application of Digital Platforms in Grade One to Grade Six level of Maglahug Elementary school

Digital platforms	Weighted mean	Interpretation
1. Online Scrabble	1.83	Rarely
2. Crossword	2.00	Rarely
3. WordHunt	2.17	Rarely
4. 4 Pics 1 Word	2.17	Rarely
5. WordScape Game	2.50	Sometimes
6. Offline Digital Dictionary	3.83	Always
7. Reading Comprehension Mobile Game	2.67	Sometimes
8. English Alphabet Mobile Game Application	2.33	Rarely
9. Kids spelling game	2.33	Rarely
10. Phonics: Reading Games for Kids and Spelling	3.00	Sometimes
GRAND MEAN	2.48	Rarely

In table 1 as shown above, the games that is always used in the process is the Offline Digital Comprehension with the weighted mean: 3.83 this is because the most observable reading problem based on table 3 is the vocabulary in which according to Biemiller (2005), comprehension is depressed when there is no large vocabulary to draw upon. Second is the Phonics: Reading Games for Kids and Spelling with a weighted mean: 3.00 the said game is used sometimes based on the interpretation. Phonics is the method of teaching the sounds of alphabets and is the foundation towards reading. According to C. Snow et al. reading and spelling both rely on the mental portrait of the words. The knowledge of spelling develops a fluent reader, they added. The third game is the Reading Comprehension Game with a weighted mean of 2.67 and based on the interpretation, it is sometimes applied. The fourth game is the WordScape with a weighted mean: 2.50. Next games are the English Alphabet Mobile Game Application and Kid's Spelling Game having the same weighted mean of 2.33 used rarely based on the interpretation. Sixth games are the Word Hunt and 4 Pics 1 word, both have 2.17 as their weighted mean and are rarely applied. Lastly, both Crossword and Online Scrabble having 1.83 as their weighted mean and both are rarely used. The Grand Mean of the Extent application of Digital Platforms is 2.48. This means that the Platforms

are applied rarely. Teachers used the type of game according to the reading problems the pupils have, to aid them overcome their dilemma thus resulting to applying the platforms rarely rather than always. There are only 6 tablets, one per grade level affecting the extent application of games in the teaching process. In addition, there are games that are not likely applicable for all pupils according to their grade level that is why the extent application of the said games are rare.

TABLE 2
The Extent Observation of Reading Problems

READING PROBLEMS	WEIGHTED MEAN	INTERPRETATION
1. Vocabulary	3.50	Always
2. Pronunciation	3.33	Always
3. Omission	2.50	Sometimes
4. Transposition	2.67	Sometimes
5. Reversal	2.67	Sometimes
6. Substitution	3.00	Sometimes
7. Insertion	2.33	Rarely
GRAND MEAN	2.87	Sometimes

In table 2 as presented above, there are seven (7) reading problems identified. Vocabulary is the first and is always observed reading problem based on the table with a weighted mean of 3.50. Vocabulary is the stack of words that a reader must possess to comprehend the reading material, as cited in an article from readingrockets.org. Teachers used Offline Dictionary in aiding readers understand the meaning of an unfamiliar word. Readers also looked for the meaning of the said unfamiliar word in the offline dictionary. Second to it, is pronunciation with a weighted mean of 3.33 and is always observed. Third is the substitution with a weighted mean of 3.00 and is sometimes observed. Fourth are both transposition and reversal are sometimes observed with a weighted mean of 2.67. Fifth is omission with a weighted mean of 2.50 and is also sometimes observed. Last is insertion with a weighted mean of 2.33 and is rarely observed. The grand mean is equivalent to 2.87 with the interpretation as sometimes observed. This data had affected the extent application of digital-games since teachers used the games that are applicable to pupils according to their reading problem and grade level. It is very important to identify the reading problem of every pupil before providing the game to increase their engagement.

TABLE 3
 Reading Comprehension Level of the Pupils

Reading Comprehension Skills	Frequency	Percentage
INDEPENDENT	19	26
INSTRUCTIONAL	27	37
FRUSTRATION	28	38
Grand Mean	74	100

In table 3 presented, there are nineteen (19) independent pupils equivalent to twenty-six (26) percent, twenty-seven (27) instructional pupils equivalent to thirty-seven (37) percent, and twenty-eight (28) frustration pupils equivalent to thirty-eight (38) percent a total of seventy-four (74) pupils. There were only seventy-four pupils in total since Grade 1 doesn't have reading comprehension data in English yet. English subject will be taught in the third quarter based on the K-to-12 Curriculum implemented by the Department of Education. The researcher gathered the data earlier than the said time. In the table, the number of pupils under frustration is higher than both instructional and independent level. Frustration level has 1 pupil more than the instructional pupils, and 9 pupils more than the independent pupils. Instructional level has 8 pupils more than independent.

TABLE 4
TEST OF RELATIONSHIP

Variables Correlated	r	Computed value or t	Table Value @.05	Decision on Ho	Interpretation
Comprehension Skills and Digital Platforms	0.34	0.162	0.012	Reject Ho	Significant Relationship (Moderate)
Comprehension Skills and Problems	0.51	0.622	0.012	Reject Ho	Significant Relationship (Moderate)

Table 4 presents the test relationship between comprehension skills and digital platforms; comprehension skills and reading problems. In digital platforms and comprehension skills, the

value of r “correlational coefficient” is 0.34. This value is between +1 or -1 therefore this is interpreted as moderate in significant relationship. This means that the extent application of digital platforms has an effect with the reading comprehension of the pupils in Maglahug Elementary School thus, rejecting the null hypothesis. This is already a step for a further related study and a proof that engaging learners in digital-platforms has impact to the pupils’ reading comprehension. Researchers should try maximizing the application of digital-platforms in the reading remediation process to improve reading comprehension of the pupils and to further support this study. For comprehension skills and reading problems, the value of r “correlational coefficient is 0.51. This is larger than the previous relationship of two variables. This means that the relationship of these variables is more significant than the previous variables though it is also in moderate significant relationship. This result proves that reading problems have impact with reading comprehension, supporting all the previous researches and adding concrete data with the obvious fact.

PROPOSED DIGITAL-BASED INTERVENTION PLAN

Objectives	Activities	Materials	Human Resources	Time Frame	Success Indicators
1. To identify comprehension level of the pupils	- Conduct Group Screening Test	-PHIL-IRI Group Screening Test Reading Material.	-Teachers from Grade One to Grade Six, School Reading Coordinator, School Head,	Beginning of the School Year and/or upon enrolment	-Identified and recorded the reading comprehension level of the pupils
2. To inform parents, co-teachers and school head regarding the conduct of the intervention	-Include in the General Parent-Teacher Association meeting regarding the conduct.	-A letter addressed to parents.	-Class Advisers, School Head		-First month of the School Year
3. To conduct Pre-Test and identify reading problems each pupil has	-conduct Pre-Test	-PHIL-IRI Tool	-Class Advisers, Reading Coordinator, School Head	-First month of the School Year	-Identified reading problems every pupil has.
4. To download and install appropriate digital games for pupils according to their reading problems and grade level	-Search and download games that are applicable for the pupils.	- Smartphones and tablets	-Class advisers and School ICT Coordinator	Second month of the School Year	-Tablets and smartphones have already downloaded and installed the digital-games

5. To craft a scheduled activity regarding the usage of the tablets and smartphones	- Make a schedule of the usage of the devices.	-printer and laptop or PC	-Class advisers and School Head	-Second month of the school year after downloading the apps	-A well planned and set schedule is crafted.
6. To orient parents, and pupils in the use of the tablets and inform them about the schedule.	-conduct a meeting with parents	-Projector, laptop, letter addressed to parents.	- Parents, Class advisers, ICT Coordinator, Reading Coordinator, and School Head,	-Second month of the School year.	-Parents have signed a Memorandum of Agreement regarding the schedule.
7. To apply appropriate digital-games during reading intervention	-Conduct reading intervention based on the reading problems of each pupil using the installed and downloaded games. Example: Comprehension games for kids this is to develop reading comprehension, Offline-Digital Dictionary can be used to solve vocabulary problem	-Tablets and smartphones, anecdotal record notebook.	-Pupils and Class advisers,	-from third month to fifth month and seventh month up to ninth month of the School Year	-Applied digital-games during reading intervention.
8. To conduct a Post-Test	- conduct a post-test	- PHIL-IRI tool, anecdotal record notebook	- Pupils, Class Advisers, Reading Coordinator, and School Head	-Sixth and Tenth month of the School Year	-Conducted a Post-Test and recorded pupil's reading comprehension level - Consolidated report on reading comprehension.

IV. Conclusions

The Grade One to Grade Six teachers of Maglahug Elementary School rarely applied the digital-platforms. The games applied are based on the reading problems their pupils have. Games applied are according to the pupil's ability and reading status. Therefore, the games' effectiveness is determined by the said factors. In Maglahug Elementary School, reading problem is sometimes observed. This interpretation is next to always observed. Vocabulary and pronunciation are the two always observed reading problem since vocabulary refers to the words a pupil can understand. The lesser the vocabulary, the lesser the comprehension. Reading problems hindered the pupils, resulting to twenty-eight (28) pupils under frustration readers, twenty-seven (27) pupils under instructional, and only nineteen (19) pupils are independent readers.

V. Recommendations

Based on the areas of implementation, recommendations are included in the Proposed Teaching Plan. If there are researchers who will make this research as their basis, the researcher recommends the following:

1. The proposed digital-based intervention plan should be utilized by the teachers in order to apply digital-games in reading remediation, irradicate and/or lessen reading problem, and improve the reading comprehension of the Grade One to Grade Six pupils.
2. In conducting Group Screening Test for Grade One Pupils, teachers can use their own reading material appropriate for their pupils since there are no reading materials for English available in PHIL-IRI for the said grade level.
3. There was no reading comprehension level gathered from Grade One since English subject is taught in the third quarter, future researcher must assist the comprehension level of Grade One pupils early of the school year.
4. Future researchers should prepare and select any applicable games that are suited for their type of pupils, other than the games applied in the research.
5. The future researchers can use random selection for replication covering bigger population.
6. Increase the ratio of smartphones/tablet to every grade level or per learners.

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AUTHOR’S PROFILE



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