



December 2020

Reading Performance and Functional Reading Levels of ESL Learners in Print and Hypertexts

Lord Celeste Estomo Balo

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and Hypertexts
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**READING PERFORMANCE AND FUNCTIONAL READING LEVELS
OF ESL LEARNERS IN PRINT AND HYPERTEXTS**

A Thesis

Presented to the Faculty

of the College of Graduate Studies and Teacher Education Research

Philippine Normal University

Taft Avenue, Manila

In Partial Fulfillment

of the Requirements for the Degree

MASTER OF ARTS IN EDUCATION

with Specialization in English Language Teaching

LORD CELESTE ESTOMO-BALO

December 2020



APPROVAL SHEET

The thesis entitled **"READING PERFORMANCE AND FUNCTIONAL READING LEVELS OF ESL LEARNERS IN PRINT AND HYPertexts"** prepared and submitted by **LORD CELESTE E. BALO** in partial fulfillment of the requirements for the degree of **Master of Arts in Education with Specialization in English Language Teaching**, is hereby recommended for approval and acceptance.

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DEDICATION

This thesis is lovingly dedicated to my mother,

Panfila Estomo-Balo,

who is my constant source of inspiration. Without her love,

support, encouragement and genuine care,

this research endeavor would not

have been made

possible.

L. C. E. B.

ACKNOWLEDGEMENT

The journey towards the completion of this research endeavor was long and arduous, but through the invaluable assistance, encouraging guidance and academic advice of the following special people, this study was made possible.

The researcher wishes to express his deepest gratitude first to our **Creator, the Almighty God**, who is the source of life and strength of knowledge and wisdom, and for which this piece of work is heartily offered;

Dr. Merry Ruth M. Gutierrez, the ever-supportive and brilliant thesis adviser of the researcher, for her sincere encouragement, patience and guidance, and whose expertise and knowledge were generously shared, this thesis would not have reached its final form had it not been through her constant reminders and academic advice;

Dr. Adonis P. David, Dr. Arceli M. Amarles, Dr. Judy C. Bautista, and Dr. Cecilia F. Genuino, the esteemed, and scrupulous members of the oral examination committee of the researcher, for providing their constructive comments, guiding questions, and valuable recommendations, which contributed to the improvement of this research paper;

Dr. Apolonia P. Reynoso, SHS Principal of San Juan De Dios Educational Foundation, Inc., for allowing the researcher to conduct the study in the said learning institution, and **Prof. Christopher Allan Reballos**, SHS and College Instructor of San Juan De Dios Educational Foundation, Inc., for his assistance in the administration of the study and as statistics consultant of the researcher;

To the **64 Grade 12 STEM Strand students of San Juan De Dios Educational Foundation, Inc.** who took part as participants of this study, their important role and significant contributions in this study will never be forgotten and the researcher will always be grateful;

Msgr. Allen C. Aganon and Fr. Augusto C. Pulido, the School Directors of St. Andrew's School, for the prayers, support, and assistance to the researcher;

Mrs. Cheribin G. Cruz, Mr. Engelbert V. Romana, Mr. Herbert N. Hermoso, Mrs. Clarita L. Yangco, Mrs. Maria Christina B. Advincula, and Dr. Everlyn G. Santos, the valued friends and colleagues of the researcher at St. Andrew's School, for sharing their invaluable time and expertise to the researcher despite their numerous activities and full schedules in their work, their untiring support and encouragement motivated the researcher to continue in pursuing this undertaking;

Most importantly, the researcher is immeasurably grateful to his mother, **Panfila Balo**, and to his sister, **Karen Ariate**, his sources of inspiration and confidence, for the unconditional love, never-ending encouragement and support, and constant prayers provided to him.

Lastly, the researcher conveys his heartfelt gratitude to the unmentioned numerous friends and colleagues who expressed support for the completion and success of this research endeavor.

Lord Celeste Estomo-Balo

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ABSTRACT

Researcher : **Balo, Lord Celeste Estomo**

Title : **READING PERFORMANCE AND FUNCTIONAL
READING LEVELS OF ESL LEARNERS IN PRINT TEXT AND
HYPERTEXTS**

Key Concepts : Print text, Hypertexts, Reading comprehension performance,
Functional reading levels, ESL Learners

Degree : Master of Arts in Education (MAEd)

Specialization : English Language Teaching (ELT)

Adviser : Merry Ruth M. Gutierrez, Ph.D.

Schools and students are currently bombarded with loads of information coming from various reading modalities, particularly print and hypertext. This study aimed to find out the effect of these modalities on reading comprehension performance and functional reading levels of 64 Grade 12 STEM strand students in reading academic texts using the Counterbalanced Design under Quasi-Experimental research. The participants, which were equally divided into 2 (two) groups, experienced reading academic texts both in print and hypertext modalities, and answered a 10-item comprehension test after reading each academic text to determine reading performance and functional reading levels. Findings of the study revealed that interest, content knowledge, and text modality, be it print or hypertext, did not significantly influence the reading comprehension performance of the readers especially in reading academic texts; schema imposition impeded comprehension level and performance regardless of the media; many learners, despite being technology savvy or techie, still preferred print text, although a few preferred hypertexts in academic setting, and the text modality preference of the readers does not ensure better

comprehension performance of the readers; and visual presentations found on hypertexts could either be a distraction that may not significantly affect reading comprehension performance of a learner, or unique features of hypertexts that help readers better understand reading materials in hypertext modality, but may not directly affect the reading comprehension performance in reading hypertext. It is recommended that further studies be conducted on comprehension performance using narrative texts, instead of expository texts, with inclusion of development of skills on technology literacy in the curriculum, and on the effects of length of text on the comprehension performance in reading print and hypertexts.

CHAPTER I

The Problem and Literature Review

"No matter what the source, information is only powerful if students know what to do with it. As students are inundated with media messages, the challenge is not to amass more information, but to access, organize, and evaluate useful information from a variety of print and electronic sources."

- Kathleen Tyner, author, "Literacy in a Digital World"

Background of the Study

The advent of technology has changed dramatically the way of life of the people over the years. In any place, whether in office or at school, several products of technology can be observed to have been extensively utilized. With the various products of technology that are being invented, computer has always been its prime product. It is used by different sectors and definitely made all activities or work less laborious. The integration of technology, particularly the application of computer, has also created a vital shifting in the education sector, from a traditional to a more innovative strategy.

Technology has also redefined the concept of literacy and instruction. In the past, literacy was often viewed as only the ability to read and write (Teale & Sulzby, 1986). However, literacy today is viewed as more than just the ability to read and write. With the ability to find information at the click of a mouse, the concept of literacy extends into many different fields, and the meaning of "being literate" has become complicated. According to Blake (2014), the definition of literacy in the 21st century is difficult to articulate. 21st century literacy expects learners to be technology skilled, culturally aware, and able to analyze and evaluate information sources in addition to being

able to read and write. The definition of literacy has indeed evolved from how it was defined decades ago.

On the other hand in the area of instruction, several experimental studies including those conducted by Fuchs and Woessmann (2004), O'Dwyer, Russell, Bebell, and Tucker-Seeley (2005), Goldberg, Russell, and Cook (2003), and Navarro (2012) among others have proven the use and integration of technology in teaching as effective and stimulating to students; and thus, learning is achieved. School administrators have been encouraging their teachers to integrate technology in their instruction to this effect.

Additionally, the Department of Education (DepEd) has also reconstructed the present Basic Education curriculum by not only extending the number of years for basic education but also integrating technology, particularly ICT and computer technology in the curriculum, including its significance in the development of the 21st century skills of the learners today. In the latest update of DepEd on the K-12 Basic Education curriculum through department order no. 21, series of 2019, it highlights the development of the 21st century skills that include information, media and technology skills, as well as the promotion of ICT environment especially the integration of technology instruction as a powerful and important medium in delivering content. In fact, the new Senior High School program under the K-12 Basic Education curriculum provides a separate subject on Media and Information Literacy and is incorporated to introduce the learners to basic understanding of media and information as channels of communication and develop learners to be responsible users and competent producers of media and information (Media and Information Literacy Curriculum Guide, 2013).

In addition to this, Alexander and Singer (2017) in their article published on the World Economic Forum website reported that legislators in some states in the US such as California and

Florida passed laws requiring public schools to convert their textbooks to digital versions. Meanwhile in the Philippines, there is no law that requires schools either public or private to use the digital versions of textbooks. However, major academic publishers in the country for basic education instructional materials as well as major newspaper and magazine companies have been producing textbooks or reading materials in electronic form like e-books or electronic books and other reading materials that are available online and can be read through tablets or iPads for those schools who opt to use e-books. Diwa Learning Systems, Inc. for instance publishes the digital editions of its Salaguinto and Bato Balani science magazines (Peralta, 2002). As cited by Peralta (2002), Rosalinda Landicho, the manager for Product Development and Innovation of Diwa Learning Systems, Inc. told Business World that a good number of schools are already shifting from printed textbooks to e-books that are accessed through e-readers and tablet PC's. As a result of this development, more and more people, especially students, could be more exposed to hypertext reading materials shifting from traditional print texts reading.

In effect, this new form of reading materials or textbooks gradually replaces conventional books or reading materials. This shift from traditional print books to digital books or hypertext was also observed by Engbrecht (2018) in her research report. With the emergence of computer and internet, print text is no longer the only form of text most readers read at present. A new mode of reading now exists which is called Hypertext (Patterson, 2000).

Nevertheless, despite these developments in the field of reading, very few studies had been done and produced locally as to the impact of electronic reading materials or hypertexts in reading, given its distinct characteristics that are far different compared to conventional print text materials (Atchison, 2004). Hence, this proposed study intends to find out the effect of print text and

hypertext modalities on the comprehension performance and functional reading levels of ESL learners in reading academic texts.

From the term itself, print texts are reading materials that are printed in form or the traditional form; while hypertexts are electronic form. Hypertext is defined as the received term for most of the texts one may read on the internet (Bennett, 2007). Another substantial definition is provided by Salmeron, Canas, Kintsch, and Fajardo (2005) who define hypertexts as information systems with organized document contents in an interrelated network and established links that maintain the relationship among documents. Similarly, Patterson (2000) describes hypertext as the electronic linking of text often found on the internet. She added that hypertext, especially informational hypertext, placed readers in an environment where they had to read differently and perhaps more efficiently, than many of them had read before.

Because hypertext is a new form of reading material, it is expected that this may have differences and have elements that are not present in a traditional print text material. There can be special features of hypertext that can never be provided by a print text material and may affect the reading process and the comprehension of text. Whereas most print texts are linear, and can only be navigated in one direction, reading left to right and top to bottom, hypertexts is non-linear that can allow readers to move to different directions of their choice leading to a new webpage. In a way, there is a complexity in terms of the way hypertexts are formed and presented. If a reader is not familiar with hypertexts, it may result to disorientation on the part of the reader.

Also, hypertext environment is more interactive than a conventional print text. There are some reading strategies that are important to be developed to students. Metacognitive reading strategies play very important roles in comprehending hypertexts (Verezub & Wang, 2008). The researchers further explained that comprehending hypertexts can be a challenging task. They added

that successful reading comprehension and learning do not only require the application of the ability to select optimal strategies, but also to monitor the application of these strategies as well as the whole process of reading.

Through this study, it could provide people whose interest is reading with significant information in better understanding the concept of hypertext reading in contrast with the already widely-researched concept of print text reading. Specifically, it will help people whose interest is on reading to understand the implications of the results of the study to reading instruction, practice, and perspective in relation to hypertexts.

In reading instruction, this study will be useful to understand the instructional concerns in relation to reading hypertext and its effect to the reading comprehension of students, particularly in reading expository texts of Grade 12 students as they prepare for tertiary education, in which the nature of reading exposes them to a wide range of academic reading materials, which should be considered by the teachers and school administrators in teaching reading. With the results of this study, it provides teachers with sufficient information on how to approach electronic reading materials and what to consider as they utilize them in teaching reading academic texts and other types of texts.

In terms of curriculum, the curriculum designers and developers can reflect and consider the implications of the results of this study in the development of students' literacy skills. The results could give them information as to the other reading skills and competencies necessary to be added in the curriculum for students to master in order to better facilitate or assist students in reading hypertexts if found to have significant difference on the reading comprehension performance and comprehension level of readers in reading print and hypertexts.

In practice, it also benefits the school principals or school administrators with information that is to be considered whether to shift or not to the utilization of electronic reading materials to support instruction of teachers from the use of traditional books or reading materials from the traditional form of print text. Textbook developers also benefit from this study. It helps them understand and consider the kind of reading materials they will produce and the adjustment they will make in order for the material to suit to the reading abilities of target readers. The results of the study also give the parents the information as to the kind of parental support they could give to their children in order to help them develop the love for reading through reading electronic materials that include hypertext and hypermedia.

In terms of reading views, this study could help to view reading in another level. Since there is a new mode of reading used at present, reading should not be limited only to reading print texts, but must expand to reading hypertexts. The view on reading should also be upgraded to go with the developments brought by technology.

Given the benefits this study brings, the researcher found this study significant and necessary to be explored since hypertext is a different and unique mode of reading that should be explored and studied.

Literature Review

Reading

According to Smith (2012), reading is the most natural activity in the world. It happens when reader tries to discover how something relates to everything else that a reader knows to understand its relationship to him or her. This act of trying to make sense of any facet of the environment including print is a natural activity, he added.

He further explained that the word “reading” is properly employed for all manner of activities when a person endeavors to make sense of circumstances; its original meaning was “interpretation”. People have been reading-interpreting experience-constantly since birth and we all continue to do so (Smith, 2012). Indeed, reading is part of every individual’s life and daily activity, and that everything in the environment of a person involves reading.

In another definition of Urquhart and Weir (2013) on “Reading”, they described it as dealing with language messages in written or printed form, which can include semasiographic symbols (mathematical symbols or maps). These written or printed messages are then processed by a reader when they read forming meaning out of what the reader reads with the support of existing background knowledge of the reader. The definition was supported by Grabe and Stoller (2019) who defined reading as the ability to draw meaning from the printed page and interpret this information coherently.

However, Grabe and Stoller (2019) stressed that the definition is insufficient as a clear definition of reading should convey the idea that there are a number of ways to engage in reading, and that a reader has several possible purposes of reading, and each purpose emphasizes a somewhat different combination of skills and strategies. Additionally, the definition should reveal

the many skills, processes, and knowledge that act in combination to create the overall reading comprehension abilities that are commonly think of as reading. The definition of reading should include how reading is carried out as a cognitive process that operates under intense time constraints. Finally, they added that a definition of reading should include the social context in which reading takes place or the reasons why texts will be interpreted and used in differing ways.

The experts mentioned agree that reading involves interpretation of printed texts, which may include not just understanding of words and context with the assistance of one's prior knowledge, but also interpreting semasiographic symbols such as mathematical symbols and maps. This act of reading involves many processes and factors that may affect one's interpretation or comprehension of printed texts as explained by Grabe and Stoller (2019).

But with the emergence of digital reading, reading now is described as a more complex process. Children and youth nowadays do not only learn to read for meaning but also need to learn how to seek, sort, and evaluate the information they read because so much information is produced so quickly, and often with little verification or editing (Moje, et al. 2020). They added that because of the overwhelming information delivered digitally, sometimes one bit of information delivered in a particular medium conflict with other bits, requiring readers to make sense of these various forms simultaneously, and at a speed not required in reading print on paper.

It only goes to show based on the discussion above that the concept of reading has changed over time. From simply reading to make sense of what is read on the printed materials through interpretation, it has evolved to addition of other reading processes such as learning how to seek, sort, and evaluate the information one reads with the advent of other text modalities. Thus, it makes reading now a more complex process, which this development makes a game-changer in the field of reading education and reading research.

ESL Learners and Reading Comprehension

Several studies were conducted involving ESL learners and their reading comprehension. Since the medium is in L2, results of studies show that there are differences on the processes involved in L1 and L2 reading. In effect, there is a difference on the comprehension of L1 and L2 readers.

The difference between L1 and L2 reading was explained by Grabe and Jiang (2018) who said that L1 and L2 reading comprehension abilities involve the same set of component reading abilities such as phonological processing, word recognition, syntactic processing, text meaning integration, inferencing, background knowledge use. However, there are a number of very important differences between L1 and L2 reading according to them. These include linguistic proficiency differences, differences in amount of reading exposure, differences due to background knowledge, and differences due to motivational factors and sociocultural expectations. This means that as L2 proficiency increases, the impact of many of these differences decrease.

In another explanation by Pearson (n.d.), another differences in reading in L1 and L2 is linguistics and processing differences. L2 proficiency plays a very important role in L2 reading. As stated in the Language Threshold Hypothesis by Cummins (1976), language knowledge is more important than L1 reading abilities up to some point at which the learner has enough L2 knowledge to read reasonably fluently. This means that in L2 reading, language knowledge is a very important consideration in order to proceed with the process in L2 reading. Learners must have a sufficient amount of L2 knowledge to make effective use of skills and strategies in L2 reading.

In a study conducted by Jiang (2011), she examined the interrelationship of first language (L1) literacy, second language proficiency (L2), and L2 reading comprehension of 246 Chinese college students learning English. L1 literacy and L2 proficiency were measured with college

admission exams in Chinese and English. L2 reading comprehension was measured with the reading comprehension section of a TOEFL and a researcher-developed passage comprehension test. Based on the results of the study, L1 literacy was found to be moderately correlated with L2 language proficiency, as was L2 language proficiency with L2 reading comprehension. Regression analyses demonstrated that L2 language proficiency accounted for 27%-39% of variance in L2 reading comprehension, while L1 literacy accounted for less than 6% of the variance. These findings confirmed the assumption that L2 language proficiency contributes up to 30% of the variance in L2 reading performance, but failed to provide evidence that L1 literacy contributes up to about 20% of the variance in L2 reading. Thus, the researcher recommends further studies to be conducted with multiple languages that vary in linguistic distance from English in order to understand the impact of prior literacy experience on L2 reading development.

In another study by Gutierrez (2013) on teachers as ESL readers and their comprehension of an English expository text, she concluded the necessity of disciplined additional hours of self-selected pleasure and academic reading by the teachers for growth in vocabulary and context knowledge across disciplines. This is after she found out that what has been brought and done in facilitating an interactive processing in reading look insufficient to perform and succeed in reading an academic, informational text, which was self-rated as unfamiliar by almost all of the readers. This study only shows the significance of devoting time in pleasure and academic reading in order to improve one's vocabulary and knowledge of content across disciplines especially that the participants of this particular study were teachers.

Another investigation was also conducted by Brevik et al. (2016) on the relationship between L1 and L2 in reading comprehension by examining whether or not the reading proficiency in L2 can be explained by the reading proficiency in L1 using upper secondary school students as

participants of the study. Results showed that there is a significant and meaningful relationship between students' reading proficiency in the two languages. L1 reading was found to be the strongest predictor of L2 reading proficiency of the participants of the study based on the findings of the study. The results also revealed marked reading differences in reading proficiency in the two languages among poor readers. Clearly and as expected, reading proficiency in L1 contributes to the reading proficiency in L2 as revealed in this study.

On the other hand, Schwartz (2017) used Spanish as L1 and English as L2 in their study as they examine the efficacy of learning a text structure strategy (TSS) for improving reading comprehension and recall for second language (L2) learners, as well as to test for transfer of the strategy to the native language (L1). University L2 learners of English completed a five-session course on using the TSS to improve recall and comprehension of expository texts. All instructions and materials were in English, the L2. As part of learning the structure strategy, participants practiced identifying key words that signal the structure of text being read (called 'signal words'). At no point were these signal words ever translated into Spanish (L1) for the participants. At pre-test and post-test participants read and recalled two texts, one in Spanish and the other in English, while underlining areas of text that they deemed important. After completing strategy instruction, participants made significant gains in their ability to recall information from text in both English and Spanish, despite the fact that all instructions and practice were in English only. Analyses of underlining revealed an overall decrease in use of underlining at post-test for both English and Spanish texts, coupled with an increased tendency to underline signal words in both texts. Together the increases in recall and detection of signal words across languages indicate automatic transfer of the strategy across the learners' two languages.

Mikulec and Vuic (2019) in their more recent study have proven that readers' reading comprehension in L1 is better than in a foreign language. In their study, they aimed to test reading comprehension in both Croatian (L1) and English (L2) languages in a group of 83 university students, studying to become pre-service and primary school teachers. Reading comprehension tests and a background questionnaire were used as research instruments in this mixed-method research. Based on the results, participants of the study performed fairly low in the reading comprehension test in both L1 and L2 although the participants performed better in terms of reading comprehension in their L1 than in L2 as expected. It was also revealed in the study that there is a positive correlation only between the English language reading comprehension test and participants' self-assessed language knowledge and reading ability. The study has also proven that those participants whose reading comprehension skills were better in one language also had better comprehension skills in the other.

All the studies mentioned reveal that language, particularly proficiency in L1, is one of the key factors that affect the reading comprehension in L2. However, it should be emphasized that this is not the only factor when relationship between ESL learners and reading comprehension is discussed. Individual and experiential differences that involve differing levels of L1 reading abilities, motivation for reading in L2, amount of exposure to L2 reading, kinds of texts in L2 contexts, and language resources for L2 readers are worth considering too. In addition, socio-cultural backgrounds and institutional differences that involve differing socio-cultural backgrounds of L2 readers, ways of organizing discourse and texts, and expectations of L2 educational institutions are also factors that affect reading comprehension. More importantly, as the main focus of this study, the reading modality could also be a factor that affects reading comprehension.

Print Texts Comprehension

Studies were also conducted on the comprehension of print texts particularly on expository texts, and reading comprehension strategies.

In a study conducted by Morales (2010) on the promotion of reading comprehension of freshmen engineering students through interactive approach to content-based materials, she made use of expository texts in the content area of science as stimulus materials. The researcher sought to determine the effectiveness of content-based interactive pedagogy to the development of reading comprehension level of science texts and the development of compensatory strategies to help in improving attitude and motivation towards reading applying the quasi-experimental research design. Based on the results, there is no significant difference between the pre-test and post test scores of the control group. On the other hand, there is a significant difference on the scores of the experimental group from the result of the pre-test and post test scores. This means that the interactive pedagogy was effective on developing the experimental group's reading comprehension of content-based materials. It was also revealed in the study that the experimental group gave a more positive response in using compensatory strategies while reading.

In another study involving freshmen students, Gunobgunob-Mirasol (2015) investigated the relative effect of glossing instruction on the students' reading comprehension. The researcher also applied quasi-experimental research design using mixed method. Based on the result of the findings, it revealed that glossing instruction was effective in improving the experimental group's reading comprehension, specifically, in the reading comprehension test. However, it was found out that there is no significant difference between the post-mean scores of the control and experimental groups in the ability to write a summary. The qualitative analysis of the students revealed that students who have higher scores in the reading comprehension and summary output

made use of all the categories of glossing. The researcher inferred from the analysis that glossing instruction taught students to monitor and self-regulate their learning with the text.

Bonganciso (2016), on the other hand, conducted a study on the effects of contextualization of reading instruction on the reading comprehension performance of college students. The researcher attempted to determine the effects of Contextualized Teaching and Learning on reading comprehension performance of the learners. There were thirty-three (33) Bachelor of Science in Information Technology learners who participated in this quasi-experimental study. A researcher-made reading comprehension test was used to measure the learners' reading comprehension performance based on expository text related to information technology. Based on the results, it revealed that the reading comprehension performance of the learners during pre-test is within the average ($M=9.12$, $SD=2.56$), and the posttest result is above average rating ($M=12.91$, $SD=2.38$). Furthermore, there was a significant increase of the reading comprehension performance of the students from pretest to posttest. Hence, contextualizing the reading tasks of the learners has positive effects on their comprehension performance. Contextualized teaching and learning are recommended in helping learners improve their performance in reading.

The studies mentioned imply that the strategies employ by the teachers in teaching reading play a significant role on the better reading comprehension performance of students. Instead of applying traditional ways of teaching, teachers may explore other interactive teaching strategies that are discovered to be more effective in promoting reading comprehension of students.

Another study was conducted by Ilustre (2011) on reading comprehension in which she explored whether or not metacognitive reading strategies or beliefs about reading is a better predictor of text comprehension using college students as participants. In this study, the researcher developed a reading comprehension test using two expository texts as stimulus materials. Based

on the results of the study, it was found out that among the three subscales of metacognitive reading strategies, only problem-solving strategies correlated positively with text comprehension, with those students who reported to be using this strategy obtaining relatively higher scores in the reading tasks. The findings also show that active beliefs, and not passive beliefs about reading, were positively correlated with text comprehension. Moreover, the results suggest that, over the effects of active views about reading, problem solving reading strategies contributed to text understanding. Clearly, a reader's active views about reading and certain strategies in reading are factors that could influence understanding of texts.

On the other hand, Cornejo (2015) conducted a study which sought to determine the reading comprehension performance of Grade 6 pupils in social studies using informative text in both Filipino (L1) and English (L2). The researcher also compared the reading comprehension performance of the participants in both L1 and L2. The most important instrument of the study was the reading comprehension test that was designed by the researcher, but was also validated and evaluated by language, and content area experts. The results showed that there is a difference on the participants' reading comprehension performance; however, this difference is not significant. Surprisingly, the participants performed a little bit higher in L2 than in L1. The study revealed that the medium of instruction whether L1 or L2 has no effect on the students' reading comprehension performance. While previous studies showed that proficiency in L1 contributes to proficiency in L2, and a factor that affects the reading comprehension of a reader, this study proves otherwise and that language does not categorically affect reading comprehension performance.

Gumba and Alico (2015) conducted a study to identify if there is a relationship between reading comprehension and the reading anxiety level. In their study, seventy-eight (78) Grade 8 students were used as participants, and expository texts were also used as stimulus materials and

the basis for the formulation of reading comprehension tests. Based on the findings of the study, it showed that a great majority failed in the comprehension test and high level of reading anxiety exists, and three categories were identified as the causes of reading anxiety: top-down reading, bottom-up reading, and classroom reading. In addition, it was found out that there is a significant negative relationship between students' reading anxiety level and reading comprehension performance. With this, teachers are challenged to solve this reading problem through effective teaching strategies and interventions. It is further suggested that studies should be conducted to explore further this hindrance in English language learning. This study simply exposed that reading anxiety is a contributory factor that could affect the reading comprehension performance of a reader since a significant negative relationship between reading anxiety and reading comprehension performance. It also means that anxiety occurs while a reader is on the process of reading written texts.

From the studies presented, significant information can be useful in understanding print texts particularly expository text. First, effective teaching strategies in reading are essential in improving reading comprehension performance especially in reading printed expository texts. Second, language competence is a factor that could affect reading comprehension; however, its effect is not absolute as readers could also have better performance in L2 than in L1 as revealed in a study by Cornejo (2015). Third, reading beliefs, metacognitive reading strategies, and even anxiety levels are also factors that could affect the reading comprehension performance of readers in printed expository texts. Finally, all this significant information was considered in this study particularly on the part of the methods.

Hypertexts Comprehension

As an emerging reading modality, there have been several studies conducted abroad about hypertexts. In contrast, very few studies have been conducted in the Philippines about hypertexts.

The term hypertext was first coined in 1960s by Theodore H. Nelson and is defined as “Text composed of blocks of words (or images) linked electronically by multiple paths, chains, or trails in an open-ended, perpetually unfinished textuality” (Landow, 1997 from Nowak, 1998). According to Bennet (2007), reading hypertext is still reading. She explained that reading hypertext demands the same kind of reading that instructors of foreign languages, long accustomed to treating an eclectic variety of authentic materials as texts of study, have been teaching for decades. This means that those strategies teachers develop to students in reading print text can also be applied by students in reading hypertexts.

Meanwhile, Dudeney et al. (2013) as cited by Jose (2020) offer a more recent definition of hypertext literacy as one’s ability to use hyperlinks effectively – to decide which links to read and to process link contents in order to enhance one’s reading. Being hypertext literate ensures that a reader is able to navigate multiple sets of information linked to each other through multiple paths, and achieve successful comprehension. Jose (2020) further described hypertext as a collection of networked texts connected to each other through links. The networked texts or chunks of information are called nodes. There are no rules that specify the amount or type of information a node should contain (it can be text, video, audio, images, or any other) and there are no specifications as to what gets linked to what. This gives the hypertext the flexibility to link any text to potentially infinite texts, thus presenting a large amount of information linked to each other in multiple ways.

Several experts also described hypertexts as a different kind of reading environment that can take different forms. It can be characterized by several main features. First, hypertext is non-linear (Carusi, 2006). Hypertexts documents are interconnected by hyperlinks. Words on the screen can have hyperlinks and can bring the reader to another environment. This non-linearity may also affect the reading process (Gervais, 2007). Second, hypertext documents can include colored pictures, animation, sketchpad documents, forms and scripts, and of course links to other relevant hypertext materials (Burgiel, n.d.). Third, hypertexts offer a wide range of details that permits readers to explore to a breadth and depth that is simply not feasible in print. Because of these features of hypertexts, some experts argue that hypertext has brought radical change in reading, writing, and the organization of information since its unique properties allow texts to be freed from the constraints of traditional printed books (Fitzgibbons, 2008).

According to Afflerbach and Cho (2009), there is a difference in reading print text and hypertext because the reader in the latter faces a series of unknowns related to possible links, possible texts, possible decisions, and possible interactions. Although they agree that readers can apply the strategies that work in traditional forms, in hypertext, according to them, the reader – text(s) interactions may be more complex and demanding. In fact, they further explained that those students with fewer reading strategies (or less well-developed strategies) encounter difficulties when reading in hypermedia environment. This means that the complexity of interaction between the reader and the text(s) and the amount of reading strategies developed to readers affect their comprehension.

Tierney (2009) adds to the explanation by saying that as one shifts from meaning making with single texts to multiple texts or sources, and shifts through ideas toward developing one's own constructions or remixing those of others, the active role of the meaning makers and the need

for a different configuration of strategies and forms of self – direction seems apparent. With hypertext, according to Snyder (2006), meaning makers may be constrained by a kind of labyrinth and proceed from one text to the next and one link to the next gingerly – lest they become lost, at a dead end, or miss what they perceive to be a key item.

Also, Rustad (2004) explains that the complexity of reading does not increase as literature turned into digital codes utilizes newer technological affordances; but the technological features, as semiotic and aesthetic means, emphasize and prefigure modes of reading in ways which would not be present in print text. This can be observed in hypertext where links are uncategorized, that are organized in such a way that they do not reveal a specific order or sequence of reading, and invisible mouseovers. In this case, hypertext puts the reader in a never-ending interpretive machine. Bennett (2007) added that hypertext differs from a printed text in that the reader is, on occasion, offered the choice to leave an author's text so as to view and read another text, image, or sound.

It is important to bear in mind that several research studies have been conducted confirming that readers understand most easily from the texts with well-defined structures that clearly signal shifts between parts. This simply means that there is a big possibility that readers will perform better in terms of comprehension in print text than in hypertext due to the complexity of the latter considering the non-linearity of the structure.

DeStefano and LeFevre (2005) say that some features of hypertext can lead to poorer reading comprehension performance compared to traditional linear presentation; and that the reduced performance was linked to cognitive load. This means that cognitive load, which is associated to multiple links in the hypermedia, results to poor performance of readers and sometimes causes readers to feel the so-called disorientation.

Based on the information presented, experts agree that there is complexity on the features of hypertexts as compared to print texts. This complexity of the hypertexts may lead to poor reading comprehension performance as readers have to deal with other reading strategies in reading hypertexts compared to reading print texts given the difference on reading environment.

Some research studies support the argument that readers perform better in reading print text than in reading hypertext, especially in research studies conducted abroad comparing print text and hypertext reading. These studies found out the possible effects of reading hypertext to the reader's comprehension. For instance, Mangen et al. (2013) explored the effects of the technological interface on reading comprehension of seventy-two (72) 10th grade students. The students were grouped into 2, one group read the printed version and the other group read the PDF version of the same texts on a computer screen. A pre-test was administered in reading, and a multiple regression was carried out to investigate to what extent reading modality would influence the students' scores on the reading comprehension measure. Findings showed that students who read texts in print scored significantly better on the reading comprehension test than students who read the texts digitally. The researcher also found out that there are certain features of digitized text display that may impede aspects of reading comprehension.

In another study by Al-Seghayer (2017), he examined the effects of an electronic reading environment's structure on second language (L2) reading comprehension. In particular, this study explored whether clarifying the underlying structure of an electronic text, along with the ways in which its units or nodes are organized and interrelated results in better comprehension as well as whether L2 reading proficiency affects the comprehension of electronic text. 40 English as a second language (ESL) learners, grouped into proficient and less-proficient groups based on their scores on the Test of English as a Foreign Language's (TOEFL's) Reading section, were asked to

read two electronic texts using computerized programs classified as either “well structured” or “less structured.” To assess the efficacy of each type of reading environment, two tests—a multiple-choice test and a mapping of main ideas and details (MOMID) test—were developed and administered to the participants after they read each text. The results of these tests were analyzed using a paired-samples t-test and a two-way (proficiency level by computerized reading program) mixed-model analysis of variance (ANOVA). The findings revealed that well-structured electronic texts can aid ESL readers in developing a more coherent mental representation of the electronic texts’ content, thereby increasing their reading comprehension. Furthermore, well-structured electronic texts are more helpful for less-proficient readers than for more-proficient readers. These findings have significant pedagogical and technological implications for L2 reading instructors and instructional designers.

It may also be possible, however, that ESL readers of hypertexts can perform better than ESL readers of print texts. The study of Jose (2020) suggests that online texts can promote better reading comprehension than print texts in ESL readers disadvantaged by either lack of relevant background knowledge or low levels of language competence or both. When there is no challenge to formal schema, L2 readers were able to utilize hyperlink contents to overcome language and background knowledge deficits and actively engage with the text, effecting better comprehension than when reading print texts. This could mean that for readers who have good reading ability in L1, pre-structured online texts might facilitate transfer of reading ability from L1 to L2 reading contexts, supporting linguistic interdependence hypothesis (Cummins, 1978). In addition, the researcher also emphasized that expertise of readers in reading online texts or hypertexts cannot also be disregarded as a factor in reading comprehension performance. Pre-structured hypertexts, according to Jose (2020), encouraged exercise of cognitive flexibility to some extent – subjects of

this study were actively engaged with the text predicting link contents, deciding which links to be visited and which to be ignored, connecting link information with text already read, deciding when to stop reading link contents and return to the main text.

Abdi (2013) conducted a study on the effect of using hypertext materials on reading comprehension ability of learners. In this study, 49 EFL learners were randomly assigned to two experimental and control groups. A proficiency test was administered to assess the homogeneity of the group. Based on the findings, the participants in the experimental group assumed more gain in reading comprehension ability as a result of working with hypertext materials as compared to non-digital materials. In this study, it shows that hypertext materials have an effect on the reading comprehension performance of a reader. Reasons of the better comprehension performance of the participants in this study could be connected to those cited by Jose (2020).

However, in a local study conducted by Bolaños in 2007 among sixteen (16) female college freshmen selected randomly on good L2 readers' usage of comprehension strategies, he found out that good L2 readers of expository texts employ a "multistrategic approach to reading" which means that they use a wide repertoire of coordinated strategies when they process texts. Most importantly, the study reveals that the level of comprehension of the participants is the same regardless of environments. In addition, the results showed that there is no significant difference in terms of comprehension, suggesting that reading environments (print or hypertext environments) may not significantly affect or influence comprehension, its level, and quality.

Cho (2013) also conducted a study on adolescents' constructively responsive reading strategy use in a critical internet reading task. The purpose of the study was to examine the complexity of Internet reading strategies used by seven accomplished high school readers. Individual participants read on the Internet, with the goal of developing critical questions about

their chosen contemporary controversial topic. Internet reading strategies were analyzed using participants' verbal reports, triangulated with complementary data (e.g., computer screen recordings). The data described the nature and sequence of readers' strategies categorized into (a) realizing and constructing potential texts, (b) identifying and learning information, (c) evaluating and sourcing texts, and (d) monitoring and managing reading. Results demonstrated the role that these strategies play in constructing meaning from Internet texts, as well as the interactive patterns of strategy use in both open and closed Internet settings.

In another study on reading strategies in online reading conducted by Gilbert (2017), the researcher examined the metacognitive online reading strategies of intermediate and upper intermediate ESL students. Data were drawn from the researcher's observation notes, interviews with the participants, group discussions, and participant journals. The research methodology for the study was interpretive and qualitative. The findings suggest that language learners engage in characteristically different reading practices and strategies when reading web text and that there is a need for digital literacy skills to be taught in conjunction with the development of traditional literacy skills in the target language.

Studies mentioned found out that since digital reading presents a different reading environment compared to a more familiar reading environment presented in print texts, readers employ different strategies in reading hypertexts. The results also suggest that digital literacy skills must be further developed to readers simultaneously as they develop reading strategies in print texts reading.

Another local study was conducted by Peralta (2012), which assessed the effectiveness of electronic books on the reading comprehension of Grade 4 pupils. Based on her study, there was no difference on the reading comprehension of Grade 4 pupils. This means that no matter what

medium was used, the comprehension scores of the pupils remained almost the same. This led to the conclusion of the researcher that electronic books or e-books have the potential to replace the traditional print books in the classroom which may facilitate increased engagement with its additional function that will eventually lead to better reading comprehension.

In another study conducted by Moyer (2011), female college student participants read up to 6 pages of print text and read an equivalent amount of e-book, and listened to approximately 10 minutes of an audiobook. The researcher found no statistical differences in comprehension across print, e-book, and audiobook modalities. Moyer also found out that participants' level of comprehension for each text was the same regardless of the format in which it was received. There was also no difference in engagement across modalities; the amount of interest participants expressed in a text was the same regardless of the format which it was received. This simply implies, according to Moyer, that the text that was the least popular was also equally unengaging in all three formats.

In a more recent study by Singer and Alexander (2017), which explored the differences that might exist in comprehension when students read digital and print texts. Ninety undergraduate college students read both digital and print versions of newspaper articles and book excerpts on topics of childhood ailments. Prior to reading texts in counterbalanced order, topic knowledge was assessed and students were asked to state medium preferences. After reading, students were asked to judge under which medium they comprehended best. Results demonstrated a clear preference for digital texts, and students typically predicted better comprehension when reading digitally. However, performance was not consistent with students' preferences and outcome predictions. While there were no differences across mediums when students identified the main idea of the text, students recalled key points linked to the main idea and other relevant information better

when engaged with print. Also, no differences in reading outcomes or calibration were found for newspaper or book excerpts.

Apparently, results of the studies in terms of reading comprehension vary depending on the levels of the participants of the study. There are also no significant differences on the reading comprehension performance of participants of the studies after they experienced reading print texts and hypertexts.

Protopsaltis and Bouki (2009) also made a study on gender patterns in hypertext reading. Basically, the purpose of this study was to investigate the effect of gender in hypertext reading. Forty-two undergraduate students were the subjects of the study. Of the forty-two, twelve were self-identified as female, thirty as male. Participants were given two types of comprehension tasks - multiple-choice questions and short essay questions. The researcher found out that male and female web users do not significantly differ in their reading comprehension, reading times, coherent hyperlink selection, and hyperlink location. Finally, the researcher suggested that further empirical study be conducted to draw unambiguous conclusions on the effects that gender might have in online information processing.

Studies were also conducted about reading preference between print texts and hypertexts. One of which is a Malaysian study conducted by Samad and Abu Bakar (2009) among TESL undergraduate students to investigate the reading preference of the respondents between books and hypertexts. Since this study is nominal in nature, the researchers utilized a survey questionnaire. They found out that TESL undergraduate students preferred hypertexts compared to books. Based on their study, the reasons for this are encouragements from lectures, cost and time saving, easier and faster access, interactive and interesting, up to date, and more focused. However, researchers suggest that students must be taught, exposed and trained to select reliable reading materials. This

means that preference to hypertexts is due to the advantages that hypertexts bring to the readers, as compared to print texts.

However, in a study on the difference between digital hypertexts and traditional books by Fornaciari (2009), results confirmed that hyperlinks and hypertexts are not always user-friendly or self-explanatory. The researcher also found out that participants in the study consistently experienced the hypertextual reading as jumpy and uncomfortable. Statistics also showed that a significant relationship exists between literacy and the comprehension achieved when reading hypertexts. In the study, participants were exposed to two forms of text, one is linear text and the other is in hypertext form. This study provides information on the inconvenience hypertext reading may bring to the readers.

Another study on reading experiences of readers in reading hypertext was conducted by Gruspe et al. (2015). The research probed into the reading experiences of adult readers in their first language (L1) and second language (L2). Qualitative in nature, the investigation focused on twelve (12) adult readers, six (6) males and six (6) females, whose first language is Filipino. Data were gathered through interviews and focus-group discussions. Based on the data gathered, the participants are motivated to read when the materials given are in line with their interest (e.g. self-help and current events). They are also inclined to read L2 materials over L1. The participants' interests are not simply limited to the topics, but also to the language of the material. They feel strongly that a material written in L2 is more accessible and reliable. Although the reading process is highly personal, the participants showed that they adapt similar reading strategies when reading hypertexts which they modify to fit their needs, interest, exposure, and strategies.

In another study made by Cangoz and Altun (2012) on the effects of hypertext structure, presentation, and instruction types on perceived disorientation and recall performance, 80

volunteer adults were the participants and the sources of the data of this study. They were first subjected to the Visual-Aural Digit Span Test – Revised (VADS-B) in a silent computer laboratory at a university setting. Then, they were first rank ordered and then randomly assigned to eight groups of equal sizes based on their short-term memory span capacity measured by VADS-B. Word Stem Completion (WSC) Task, Perceived Disorientation Scale-Turkish (PDS-TR) were used as data collection tools. Findings indicated that WSC scores were affected by presentation and instruction types. Also, perceived disorientation was not affected by presentation and instruction types. Although the main effects of presentation and instruction type were found to be statistically significant, none of the other interaction effects was significant on participant's WSC scores. Finally, short-term memory, both in implicit and explicit conditions, functions independently from hypertext structure.

Given that attitude towards reading is also a factor that could influence reading comprehension performance, Eijansantos et al. (2020) conducted a study focusing on attitude toward print-based and electronic-based reading of 562 senior high school students (mean age = 17.71, standard deviation = 0.0889) sampled across 10 schools (4 of which are privately managed). The study employed a descriptive-quantitative-correlational design in determining the attitude of the respondents across reading versions, significant difference in attitude of the respondents toward print-based and digital reading, statistical difference in the attitude across the dichotomous variable gender, and the relationships between attitudes. Moreover, data gathering was realized through the use of a survey tool pilot tested (with reliability of Cronbach's alpha = 0.811). The analysis of the data revealed that the respondents harbor an attitude characterized as 'somehow negative' towards both versions of reading. In addition, there is a significant difference in the respondents' attitude toward print and e-reading favoring print text reading. Moreover, gender differences exist in the

attitude toward print reading with females exhibiting better attitudes. Last, there is a significant correlation between the respondents' attitude toward print and electronic reading.

The studies show that reading comprehension of readers in both print and hypertexts does not have significant differences. Likewise, studies also established that there is no relationship between gender and hypertexts reading, although readers use a different set of skills in reading hypertexts. Also, familiarity to the texts presented including interest to the topic and language are factors also that can affect reading comprehension performance. Finally, while hypertext offer advantages in reading, there are also inconveniences that reading hypertexts may bring to readers.

Reading Comprehension Level

Reading Comprehension Level refers to the degree of understanding the readers attain given a passage in which interpretation is based on correct responses supplied and categorized (Espejo, 2015). Several experts introduced different reading levels. One set was provided by Herber (1978) that includes literal comprehension level which is the first level, interpretive comprehension level which is the second level, and applied comprehension level which is the third level.

The other set is from the Philippine Informal Reading Inventory (Phil-IRI, 2017) which uses Functional Reading Levels known as independent, instructional, and frustration functional reading levels. According to Caldwell (2002), a reader under independent functional reading level can read and comprehend without assistance. For a reader under instructional functional reading level, he or she can read and comprehend with assistance, and for the frustration functional reading

level is when a reader is unable to read with adequate word identification accuracy and comprehension.

Various studies used either of the two sets of reading comprehension levels depending on the purpose of use or application. Labarrete (2019) for example used Herber's reading comprehension level in his study that aimed to assess the reading comprehension level and study skills competence of the Alternative Learning System-Accreditation and Equivalency (ALS-A&E) students. Data were obtained from various adopted reading passages. Of the four reading dimensions, the ALS students registered a good performance in the literal level but poorly performed in the inferential, evaluative, and creative dimensions. As to their study skills competencies, outlining and semantic mapping were their top concerns but they were nevertheless good in locating thesis statement and very good in book parts familiarization. Considering these findings, it was imperative for the ALS implementers to revisit their pedagogic practices relative to the teaching of reading as a macro language skill especially on the areas where their students need instructional related interventions.

Columna (2013) conducted a correlational study on Grade 3 pupils' comprehension levels in Filipino and English reading texts. In this study, the researcher used a different set of comprehension levels according to performance, labeling readers as good or poor readers. Findings revealed that respondents performed better in comprehending texts in their L1 than in their L2. The researcher found the result as understandable incidence since they have a greater exposure to Filipino than in English. On the contrary, their experience with English language is quite limited; thus, hindering them from understanding texts in English. This means that language is a factor for the difference on the comprehension levels of the respondents of the study.

In another study conducted by Adversario (2014), he applied the functional reading levels in his study that aimed to determine the senior college ESL students' reading comprehension levels of a technical text, and to identify the effect of prior knowledge on students' reading comprehension. Findings of this study showed that majority of the samples even though they are in the collegiate level still fall on the borderline of reading comprehension, and very few are in independent and instructional levels. The researcher attributed the difference on the reading level on the degree of prior knowledge of the readers. Hence, prior knowledge or schema of the readers influence their comprehension levels based on the study.

The study of Espejo (2015), on the other hand, applied the functional reading levels as basis. In her study, she aimed to assess the comprehension level of Grade 4 pupils vis-a vis text and test types in Filipino. Results showed that there is a slight correlation between text types, where an increase in narrative text comprehension level slightly increased the comprehension level of expository texts. The study also concluded that text types (expository or narrative texts) partially influence readers' comprehension levels in Filipino, but not the test types.

Soriano (2018) on the other hand utilized Herber's reading comprehension levels when she conducted a study that aimed to determine the reading interest and comprehension levels of Grade 7 ESL learners. Based on her findings, it showed that comprehension level of students was dominantly inclined in literal level, which gave an implication that they are good in understanding the idea and information explicitly presented in the reading material. The reading interest of Grade 7 respondents in L2 reading is not significantly attributed to the development of their reading comprehension ability.

The study of Fulgueras (2019) on the effect of flipped classroom in enhancing the critical thinking and reading comprehension of the learners utilized a different set of comprehension

levels. In his study, the two approaches (flipped classroom approach and lecture-discussion) helped the learners improve their critical thinking and reading comprehension levels.

In a foreign study on reading comprehension levels conducted by Burns (2007), he made use of the functional reading levels in determining the difficulty levels of the passages. A single-subject, multi-element design was used to examine the effects of the reading activities on individual students' time on task and reading comprehension. Based on the results of his study, it suggested that students demonstrated improved time on task while completing tasks at the instructional level, compared to tasks at the frustration and independent levels. It was also revealed that comprehension was highest at the independent level and lowest at the frustration level.

With the studies above, the researcher applied the functional reading comprehension levels of the Philippine Informal Reading Inventory (Phil-IRI) for the participants of this study on print and hypertext comprehension of ESL learners. Additionally, the researcher based the functional reading comprehension levels of the participants from the reading comprehension performance in the reading comprehension tests.

All the foregoing related literature and studies were most helpful in providing the researcher with the necessary background for this study on the effect of print and hypertext modalities on the reading comprehension performance and functional reading levels of Grade 12 students in reading academic texts.

Synthesis

This study is similar to the research of Bolaños (2007) which focused on the effect of print and hypertext environments on the reading strategies employed by the readers in the collegiate level. He pointed out in his study that readers use a variety of coordinated strategies when they process texts. Although hypertexts are more complicated in terms of text organization, readers use almost the same reading strategies in both text environments or modalities.

In connection to the previous study, it emphasizes the reading strategies employed by the learners in the processing of texts in both print and hypertexts environments. While the reading strategies used by the learners are almost the same in both text environments, the researcher attempted to find out whether or not the use of the same reading strategies in both text environments could not influence reading comprehension of readers and functional reading levels.

The researcher noted that the functional reading levels were not used as basis for the classification of the reading levels of the participants in the study by Bolaños. His categories and/or reading levels were adjectival descriptions, while the current study interpreted reading performance in accordance with the localized functional reading levels as recommended by the Philippine Informal/Individual Reading Inventory (Phil-IRI, 2017).

The researcher also observed that most of the previous studies use elementary or college students as participants of research on reading print and hypertexts, their reading comprehension performance as well as reading comprehension levels. Apparently, there was limited or unpublished local study on hypertext involving secondary level students based on local literature reviews. This was the basis of the researcher for involving secondary education level students, particularly, Grade 12 senior high school students as the participants for this, which is a new addition in the K-12 curriculum of the Department of Education of the Philippines. Results of this

study could provide data on whether or not the findings that there is no difference on reading comprehension of readers in elementary and collegiate level students observed in previous studies could also yield the same results in the secondary level students, particularly senior high school students.

Moreover, another gap observed from previous studies is that participants have homogenous classification of students in terms of reading abilities and gender classification. The study of Bolaños, for example, involved all female participants who were good L2 readers of expository texts, while the current study explored heterogeneous grouping of participants in terms of reading ability or proficiency and gender representation. As such, results of this study could provide data on whether or not there would still be the same reading comprehension performance of participants in heterogeneous groupings.

Therefore, the findings of the study are not only contributory to the larger body of knowledge in reading comprehension and reading levels in print and hypertexts, but also a credible source of information for school administrators and teachers on the use of reading materials in hypertext or digital forms, as well as curriculum developers and academic publishers of Basic Education learning materials.

Conceptual Framework

This study is anchored on the reading comprehension theory that views reading as an interactive process involving the construction of meaning and the flexibility of knowledge in connection to understanding a text.

Reading is characterized as not just mere decoding of words or being able to identify words. Cooper (2007) equates reading to comprehension or being able to understand what one reads. This means that being able to read is not equivalent to being able to decode words, but being able to understand what one is reading. Comprehension, according to Cooper, is a strategic process by which readers construct or assign meaning to a text by using the clues in the text and their own prior knowledge. This definition of reading comprehension is used in this present study as its guiding principle.

Since this study adheres to the interactive nature and definition of reading, it is anchored on the model of reading espoused by Rumelhart (1994) referred to as Interactive Model of Reading. This model emphasizes that meaning is not fully present in the text waiting to be decoded. Rather, meaning is created by utilizing the information provided by the text which comes from the reader's prior knowledge.

In addition, this study was also anchored on the transaction model of reading introduced by Rosenblatt (1977) who states that readers bring a text to life; which means that the reader is the central player in the text. Readers must write the text for themselves, and in the reader's mind the text shifts through previous experiences as the reader goes through the meaning-making process, which is accurate not only in print text but also in hypertext as asserted by Patterson (2000). This only means that readers construct or assign meaning by interacting with the text, which was supported by Anderson and Pearson (1984).

In relation to the concept of hypertext, this was first coined in the 1960s by Nelson and defined it as “text composed of blocks of words (or images) linked electronically by multiple paths, chains, or trails in an open-ended, perpetually unfinished textuality” (Landow, 1997).

Hypertext theory is based on postmodernism and post-structuralism (Carusi, 2006); but it also grows out of the world of the printed text and often exists in comparison to print forms (Nowak, 2008). More recently, DeStefano and LeFevre (2007) define hypertext broadly as “a collection of documents containing links that allow readers to move from one chunk of text to another” (p. 48).

Currently, literary scholars are interested in the potential and theory of hypertext. Authors such as Bolter, Landow, and Lanham, among others, have been influential in the development of the field of hypertext theory (Miall & Dobson, 2001; Zambare, 2005).

According to Shapiro and Niederhauser (1999), a number of theories of reading and learning may explain the cognitive underpinnings of the process of hypertext-based learning/reading. These two models that have the greatest impact on research, as they described, are the Construction Integration Model (Kintsch, 1988) and Cognitive Flexibility Theory (Spiro, Coulson, Feltovitch, & Anderson, 1988; Spiro, Feltovitch, Jacobson & Coulson, 1992).

The Construction Integration Model (CIM) of text processing (Kintsch, 1988) suggests a three-stage process of text comprehension. The first is character or word decoding, which is invariant across media. The second is the construction of a *textbase*. This is a mental model of the factual information presented directly in the text. The process of textbase construction is also thought to be invariant across media. The third stage in the process is the creation of the *situation model*. It is this stage that is highly relevant to the understanding of learning from hypertext. A

situation model is constructed when prior knowledge is integrated with new information from a text (the textbase). According to CIM, the integration of prior knowledge with new information is necessary to achieve a deep understanding of new material. In other words, if no situation model is formed, no meaningful learning has been achieved (Kintsch, 1994).

As a model of learning, the CIM has had a substantial influence on the way in which researchers think about learning in general, including Hypertext-Assisted Learning (HAL). It is common to find references to the construction of text bases and situation models in authors' discussions of HAL. In fact, these concepts are woven so deeply into many people's understanding of HAL that they are often referred to in research articles, even when no explicit reference is made to the CIM itself. This way of thinking about mental representations has become many hypertext researchers' standard framework for understanding Hypertext Reading (Shapiro and Niederhauser, 1999).

On the other hand, Spiro et. Al (1998 & 1992) have proposed Cognitive Flexibility Theory (CFT), a constructivist theory of learning from various media. Like the CIM, CFT proposes the application of prior knowledge to go beyond the information given. This model of learning is based on the supposition that real-world cases are each unique and multifaceted, thus requiring the learner to consider a variety of dimensions at once. This being the case, the prior knowledge necessary to understand new knowledge cannot be brought out from intact memories of other single cases or experiences. Rather, stored knowledge derived from aspects of a variety of prior experiences must be combined and applied to the new situation. The implication of this model is that advanced learning takes place not only as a consequence of active learning and prior knowledge use, but also as a consequence of constructing knowledge anew for each novel problem.

This perspective of learning is relevant to hypertext-based learning and reading because hypertext offers the possibility of coming at a topic from various perspectives. Because a learner can access a single document from multiple other sites, he or she will come to that document with multiple perspectives, depending on the point of origin or learning goal. In this way, *CFT predicts that the mental representations resulting from repeated, ill-structured hypertext use will be multifaceted, and one's ability to use that knowledge should theoretically be more flexible.* A number of studies have supported this perspective for advanced learners.

In sum, the CIM and CFT each take different approaches to the task of explaining the cognitive processes underlying hypertext reading and learning, but both offer enlightenment. The CIM offers a detailed description of how stable mental representations are created during reading or learning. There is a great deal of support for the CIM in the literature, and it successfully predicts some of the conditions under which hypertext reading succeeds or fails. CIM is informative to hypertext research because it offers an explanation of the relevance of user behavior.

According to Shapiro and Niederhauser (1999), CFT offers an explanation of meaningful learning on the part of advanced learners. It successfully explains why the exploration of identical texts can result in more flexible, transferable knowledge from a hypertext than a traditional text. It adds to the understanding of hypertext reading because it offers a unique explanation of how mental representations are constructed, reconstructed, and altered by exposure to dynamic information structures.

All these models of reading and comprehension were the guiding principles of this study in understanding hypertext and its implications to comprehension performance and functional reading levels of ESL learners.

The diagram shows the framework of this study:

Figure 1

Conceptual Framework of the Study

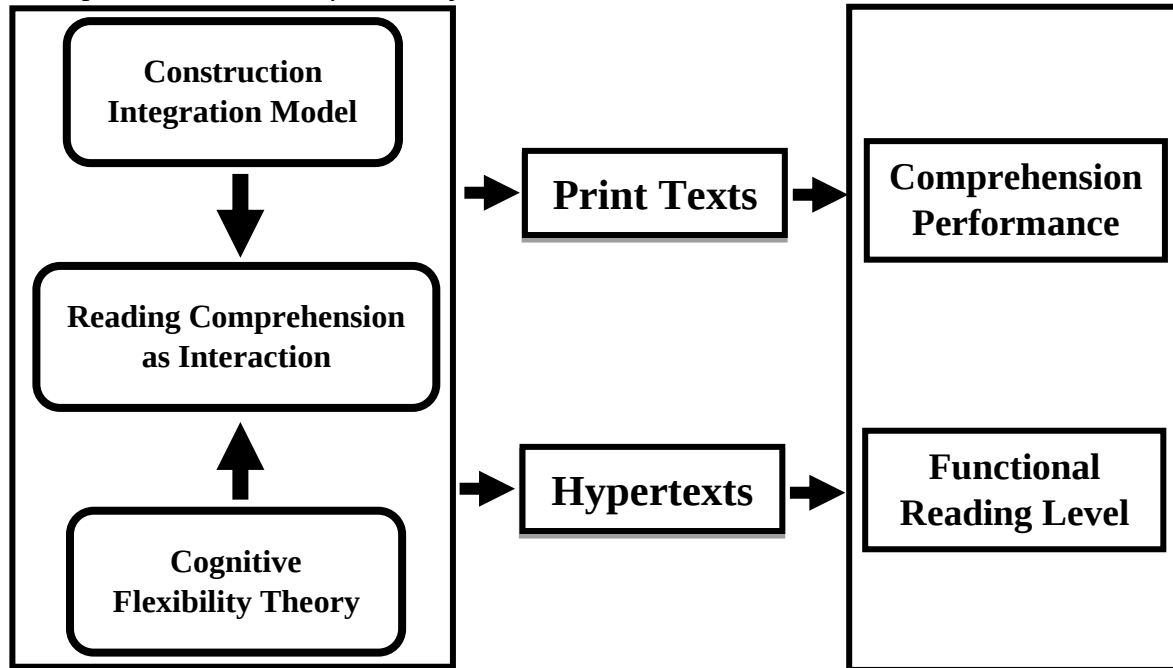


Figure 1 illustrates the theories in reading and learning by which this study was anchored. As illustrated on the figure, reading comprehension is an interaction as espoused by Rumelhart (1994), believing that it is the process of meaning-making, supported by Construction Integration Model (CIM). CIM believes that one uses prior knowledge to be able to interact with the author; and the process of interaction helps in the construction of meaning. The process also requires cognitive flexibility (CFT) because one learns from the interaction. To learn one has to adjust to assimilate or to accommodate what one has understood. Hence, there is flexibility.

This process also explains the connection of reading comprehension and functional reading level to the modality of text, which could be print or hypertext. These two modalities are different kinds because print is traditional in nature and linear in form. On the contrary, hypertext is non-linear and has features that are non-existent in print texts. The modality or the kind of reading text

modality could add to the flexibility and the construction of meaning, and is believed to influence the reading comprehension performance and functional reading level of learners, which in this case are ESL learners.

Research Problems

The main purpose of the study is to determine the effect of print and hypertext modalities on the reading comprehension performance and functional reading levels of Grade 12 students in reading academic texts.

Specifically, it attempts to answer the following questions:

1. What is the reading comprehension performance and functional reading level of the participants in:
 - a. print texts?
 - b. hypertexts?
2. Is there a significant difference on the reading comprehension performance in print and hypertexts?
3. What are the experiences of the participants when reading:
 - a. print texts?
 - b. hypertexts?

Scope and Limitations

The study covered selected Grade 12 Senior High School students under the STEM strand from a private Catholic school in Pasay City. They were subjected to reading academic texts in print and hypertexts modalities and were asked to answer reading comprehension tests based on what they have read. They were also asked to answer an interview questionnaire in order to get their experiences in reading hypertexts. The Grade 12 students were chosen to be the participants of this study because it is the transition level from Senior High School to College in which students have more academic reading texts to read.

The study was delimited to sixty-four (64) participants of Grade 12 Senior High School STEM strand students from the total population of Grade 12 students of a private Catholic school and did not include other grade level students in the senior high school department of the school. The sixty-four (64) participants were divided into two (2) equal groups, Group A and Group B, who both experienced to read the two text modalities: Print Text and Hypertexts. The study only intended to find out the effect of print text and hypertext modalities on the reading comprehension performance and functional reading levels of Grade 12 students in reading academic texts, and to describe their experiences in both modalities.

Definition of Terms

The following terms are defined either conceptually or operationally for ease of understanding the main concepts of the study:

ESL Learners. This refers to learners who use English as a second language in their studies. In this study, it refers to Grade 12 SHS STEM strand students.

Functional Reading Level. It refers to the category of a reader based on the score the reader obtained from the reading comprehension test. The readers are identified or characterized as on independent, instructional, or frustration level. The following are the functional reading levels based on the Philippine Informal Reading Inventory (Phil-IRI, 2017):

Independent Level – It is the highest level at which a reader can read independently and with ease without the help or guidance of a teacher. These are participants who obtained a score of 8 to 10 correct answers.

Instructional Level – It is the level at which a reader can profit from instruction. These are participants who obtained a score of 6 to 7 correct answers.

Frustration Level – This is the lowest level in which a reader shows withdrawal from reading situations by refusing to read. These are participants who obtained a score of 5 and below.

Hypertext. It is conceptually defined as text composed of blocks of words (or images) linked electronically by multiple paths, chains, or trails in an open-ended, perpetually unfinished textuality (Nelson, 1960). In this study, it refers to a text modality that has motion pictures, colorful images, and links, which can be read on computer screen or tablet/iPad.

Print Texts. These are texts or images that are produced on paper or other material by printing. In this study, it refers to a text modality read in books or any other printed materials.

Reading Comprehension. It is making sense of print through the interaction of text and the reader. Operationally, this is defined as not just the ability to decode letters or words but also the ability to comprehend a text read.

Reading Experience. It refers to the experiences of the participants who undergo reading of both print and hypertext modalities.

Reading Performance. This refers to the score obtained by a reader in the reading comprehension tests that reflect specific skills used as instrument in this study. The following are the six reading skills assessed in the study as stipulated in the Table of Specifications (See on page 56.)

Determining the author's purpose and intended readers – This skill assesses reader's ability to identify the purpose of the writer for writing the text and its intended readers based on the details available.

Identifying facts, opinions, and incorrect information – It refers to the skills that assesses reader's ability to identify if a given information or statement from a text is factual, opinion, or an incorrect information or statement.

Identifying the author's tone and point of view –It assesses the reader's ability to determine the writer's tone in writing the text and the point of view of the text as written.

Identifying the main idea and supporting details – It assesses the ability of the

reader to determine the main point of the paragraph and the most important thought about the topic. Also, it assesses the ability of the reader to determine the minor details in the paragraph that support the main idea.

Noting significant details – It refers to the skill about the reader's ability to identify important details from the academic reading text being read.

Using different vocabulary development techniques – It refers to the

application of vocabulary development skills such as using context clues, identifying synonyms and antonyms, and identifying words with multiple meanings.

Text Modality. It refers to a particular way of text presentation or the form of text that a reader reads. In this study, there are two text modalities: Print Text and Hypertexts.

CHAPTER II

Methods

This chapter presents the research design, sample and sampling technique as well as the instrumentation, data gathering procedure, and statistical treatment utilized in this study.

Research Design

This study used a Counterbalanced Design under Quasi-Experimental research to find out the significant difference on the reading performance and functional reading levels of ESL learners in reading academic print and hypertexts of selected Grade 12 STEM strand students. As a research design, Counterbalanced Design allows subjects to try out all the experimental treatments but in a different sequence (Adanza, 1995).

Figure 2 below shows the counterbalanced design as applied in the study.

Figure 2

Counterbalanced Design as applied in the study

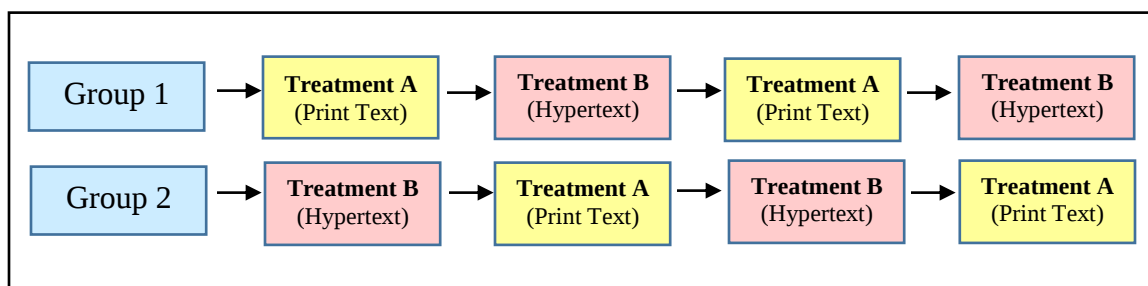


Figure 2 illustrates that there were two groups of participants involved in this study. These two groups of participants were exposed to both treatments: Print Texts and Hypertexts for four consecutive days in alternate way. On the first day, Group 1 read the print text form while Group

B read the hypertext form. On the second day, Group 1 this time read the hypertext form while Group B read the print text form. The process in day 1 and day 2 were repeated in days 3 and 4.

Shuttleworth (2008) explained that experiments conducted with a counterbalanced measures design are one of the best ways to avoid the limitations of standard repeated measures designs, where subjects are exposed to all treatments. Hence, the researcher opted to apply the counterbalanced design for this quasi-experimental study.

Sampling and Participants

The participants of this study were sixty-four (64) STEM strand students, which composed the two (2) equal groups of participants from the total population of 397 Grade 12 Senior High School students in a private Catholic school in Pasay City. Adanza (1995) suggests that thirty (30) subjects per group should be considered the minimum for experimental research. Hence, the total of thirty-two (32) participants each group in this study is within the acceptable number of participants for this experimental research.

This study also applied simple random sampling as technique in identifying the participants of this study, which were grouped equally into two. As a sampling technique, the simple random sampling is the most commonly used method of selecting a probability sample (Kumar, 2011). As the name suggests, this is the simplest type of random sampling because within a designated population all elements have an equal chance of inclusion. It is also considered fair, and therefore allows findings to be generalized (O'Leary, 2004). Adanza (1995) added that using Probability Sampling such as Simple Random Sampling makes the findings of a study more valid.

The subject of this study were only the STEM strand students, and did not include students from other SHS academic strands such as ABM, HUMSS, and GAS students. Hence, the sampling

procedure was only applied to all STEM strand students. This quasi-experimental study requires two (2) groups. Since all STEM strand students were already grouped by the school into four (4) classes or sections with class size between 42 to 43 number of students prior to the study, the researcher applied the simple random sampling in selecting the two (2) groups of participants, which served as Group A and Group B of the study. The random selection of the two (2) groups of participants was conducted through fishbowl draw wherein each of the four groups was numbered in slips of paper, put in a box, and picked the two groups of participants without looking. After the two groups were selected, random selection was also applied through fishbowl draw in selecting the equal number of participants for each of the two (2) groups. Thirty-two (32) participants for each of the two groups remained to be the final number of participants after some of them were not able to participate in the entire process of the research, and some were not able to secure parental consent. All participants are computer literate since they have their computer subjects in the school as part of its course offerings. Aside from the class grouping, the researcher also identified the level of interest and content knowledge of the two groups of participants. The survey was conducted as prerequisite to reading academic reading selections in both text modalities and answering of the reading comprehension tests of the participants. Finally, both groups of participants experienced reading print and hypertext modalities and answered the reading comprehension tests thereafter.

Level of Interest to the Topic of the Participants

In terms of the interest of the participants towards the topic of each selection presented and read, it is essential that this information is obtained to ensure that reading interest of the participants will not be a factor that could influence the reading comprehension performance of the participants.

Studies by Ross (2009) and Squires (2014) revealed that reading interest is one of the factors that affect the reading comprehension of readers. Hence, it is important that the level of interest of the two groups of participants is established in order not to have influence in the reading comprehension of the participants.

According to Ross (2009), “Reading Interest” refers to what a reader wants to read “about” as expressed by a list of topics or subject areas or genres that the reader reads by preference; or the elements in a text, sometimes referred to as appeal factors, that engage a particular reader with a text. Given the text’s appeal factor that influences engagement of reader with a text, it could influence the comprehension of the reader in reading a particular text as revealed in various studies on the impact of reading interest to comprehension. In addition, Sanford (1971) explained that even when the material is easy in terms of vocabulary and structure; it could remain incomprehensible to the reader who is not interested.

In the preliminary survey, the participants in both groups responded to the question, “How interested are you in the topic?” based on the title of the selection and on a given short description. The data were gathered to establish what students brought to the reading process, which could influence their comprehension performance later on when they answered the 10-item reading test.

Table 1 shows the summary of the level of interest of the participants in the two participating groups in connection to the topics of the selections read.

Table 1

Level of Interest to the Topic of the Participants

Topic	Group A		Group B	
	Interest	Interpretation	Interest	Interpretation
S1. Einstein’s Theory of Relativity	2.88	Interested	2.97	Interested
S2. CO ₂ Pollution	3.18	Interested	3.19	Interested
S3. Radio Waves from Deep Space	2.63	Interested	2.93	Interested
S4. Climate Change	3.03	Interested	3.13	Interested

The mean of the interest of the participants to the topic ranges from $\bar{X}=2.63$ to $\bar{X}=3.19$. Based on Table 1, Group A has a mean score of 2.88 interpreted as “Interested” for the first topic about Einstein’s Theory of Relativity; while Group B has a mean score of 2.97 interpreted also as “Interested” for the same topic. The second topic has the highest interest rating based on the data gathered. Group A has a mean score of 3.18 interpreted as “Interested”; while Group B has a mean score of 3.19 interpreted also as “Interested” in the second topic. Meanwhile, the third topic on Radio Waves from Deep Space has the lowest mean score for both groups at $\bar{X}=2.63$ and $\bar{X}=2.93$ respectively, both were interpreted as “Interested”. In the last topic on Climate Change, Group A has a mean score of 3.03 interpreted as “Interested” while Group B has a mean score of 3.13 that is also interpreted as “Interested”.

The data show that both groups of participants have consistent and similar level of interest based on the topic of each of the four selections. This shows that the participants in both groups were of same level of interest, and this could be disregarded as a factor in this study that could influence the comprehension of the participants as they read the selections and answered the comprehension test. However, it could be expected that the result of the reading level of the participants might be within instructional or independent level; and that there could be no difference on the comprehension performance of both groups of participants if only their level of interest to the topic was the only variable in reading performance, which was not the perspective of this paper.

Content Knowledge of the Participants

In connection to Content Knowledge of the participants, this was also surveyed by the researcher before the participants read the academic reading selections and answered the reading comprehension test. Content Knowledge refers to the background knowledge or schema of the reader in connection to the text being presented. It is important that the background knowledge that a reader brings to the text is measured in order to ensure that it could not affect the result of the reading comprehension performance of the participants in this study. As explained by Fisher (2016), background knowledge has profound influence on the ability of a reader to comprehend what is read, in which effects can be direct, such as knowledge of the topic, as well as indirect, such as the ability to resolve problems when meaning is lost. Thus, background knowledge plays a vital role in the reading process. A reader is on the advantage if he/she has extensive background knowledge on the text being presented, while a reader is on the disadvantage if she has little background knowledge on the text being presented.

The purpose, therefore, for the inclusion of the survey on content knowledge in the study is to check the readers' appropriate specific background knowledge and familiarity of the readers with the content of the selection since it has influence on the reading comprehension of the readers. Data were gathered in order to establish baseline data on this, owing to the idea that this could be a variable in their reading performance and functional reading level.

The participants in both groups responded to the question, "How well do you know the content of the selection?" based on the five (5) statements taken from each selection. The researcher would like to find out the extent of background knowledge of the participants based on the given statements taken from the texts.

Table 2*Summary of Participants' Level of Content Knowledge*

Topic	Group A		Group B	
	Content Knowledge	Interpretation	Content Knowledge	Interpretation
S1. Einstein's Theory of Relativity	2.00	A Little Knowledgeable	2.19	A Little Knowledgeable
S2. CO ₂ Pollution	2.38	A Little Knowledgeable	2.55	Knowledgeable
S3. Radio Waves from Deep Space	1.53	A Little Knowledgeable	1.68	A Little Knowledgeable
S4. Climate Change	2.24	A Little Knowledgeable	2.41	A Little Knowledgeable

Note. VK-Very Knowledgeable (3.51-4.00), K-Knowledgeable (2.51-3.51), LK-A Little Knowledgeable (1.51-2.50), NVK-Not Very Knowledgeable (1.00-1.50)

Based on Table 2, results show that the content knowledge of the participants in both groups ranges from “A Little Knowledgeable” to “Knowledgeable”. Participants in Group A have content knowledge scores that range from 1.53 to 2.38, which are all within the interpretation of “A Little Knowledgeable” in all four selections. On the other hand, complication on the results of the Content Knowledge Survey is evident in Group B. In selections 1, 3, and 4, content knowledge scores in Group B range from 1.68 to 2.55 which are interpreted as within “A Little Knowledgeable” level; while there is an increase on the Content Knowledge of the participants in Group B in selection 2, which is at 2.55 interpreted as “Knowledgeable”.

Thus, there was no foreseen effect in terms of content knowledge and familiarity to the comprehension of the participants in Groups A and B in selections 1, 3, and 4. Meanwhile, in the comprehension of the participants in selection 2, it was foreseen that a possible difference on the mean of the comprehension test score might be observed, and Group B might have higher comprehension test score compared to Group A, given that Group A has content knowledge interpreted as “A Little Knowledgeable” compared to Group B whose content knowledge is “Knowledgeable”.

Nevertheless, the results of both the interest to the topic of the participants and the content knowledge suggest that both were not anticipated to influence the reading comprehension performance as well as functional reading levels of the participants in general, except in selection 2 where there was a difference on the level of content knowledge.

Research Instrument(s)

There were four main instruments that this study utilized: the preliminary survey instrument, the academic reading texts, the reading comprehension tests, and the reading experience questionnaire.

Preliminary Survey

This is a self-developed rating scale to survey the interest of participants towards the topic, and their knowledge of textual content. The preliminary survey was divided into two (2) parts: Part 1. Level of Interest to the Topic of the Participants; and Part 2. Level of Content Knowledge of the Participants. The rating scale ranged from 1 to 4.

Part 1: Interest to the Topic. The purpose of this survey was to determine the eagerness of the participants in reading about the topic. It also serves as a baseline data that might account for the comprehension performance and functional reading levels of students. The participants responded to the question, “How interested are you to the topic?” by checking the column that corresponds to their response whether they (4) are very much interested (VMI); (3) interested (I); (2) not interested (NI); and (1) not very much interested (NVIN) based on the given title of the text and the short description about the content.

Table 3 shows the guide for interpreting scores to determine the level of interest to the topic of the participants as adopted from the study of Gutierrez (2013).

Table 3

Guide for Interpreting Scores on Participants' Interest to the Topic

Score	Interpretation	Abbreviation
3.51 – 4.00	Very Much Interested	VMI
2.51–3.50	Interested	I
1.51 – 2.50	Not Interested	NI
1.00 – 1.50	Not Very Interested	NVIN

Adapted from Gutierrez, 2013

Part 2: Content Knowledge Survey. This is a rating scale on content knowledge of participants, which is in the form of an anticipation guide, that was used to check the readers' appropriate specific background knowledge and familiarity with the content of the selection, the purpose of which was to gain baseline data that might later on influence their comprehension performance.

Anticipation guide is a strategy to determine knowledge of students in relation to the text. It gets key points from the text and presents these into statements that make students respond by any of the following to indicate their content knowledge of the given text: Answer with YES or NO; draw a smiley; and use the ratings scale as shown in the sample.

DIRECTIONS: How well do you know the content of the selection? The statements below are taken from the selection you are about to read. Based on your knowledge, check the appropriate column and tell whether:

- 4 - you know the given statement.**
- 3 - you guess you know the given statement.**
- 2 - you do not know the given statement.**
- 1 - you really do not know the given statement.**

Table 4*Sample Anticipation Guide*

STATEMENTS	4	3	2	1
1. Albert Einstein introduced the Theory of Relativity.				
2. The mission of the 'Microscope' orbiter is to test the basis for our modern understanding of gravity.				
3. It is possible to study the relative motion of two bodies in almost perfect and permanent free fall aboard an orbiting satellite in space.				
4. Einstein's theory suggests that in perfect free-fall, the two objects should move in exactly the same way.				
5. The 'Microscope' orbiter is part of the 3.8-billion-euro (\$4.3-billion) Copernicus project.				

The complete samples of Anticipation Guides used in this study are found on pages 119, 124, 131, and 138.

The table below shows the guide for interpreting scores of the participants' content knowledge.

Table 5*Guide for Interpreting Scores on Participants' Content Knowledge*

Score	Interpretation	Abbreviation
3.51 – 4.00	Very Knowledgeable	VK
2.51 – 3.50	Knowledgeable	K
1.51 – 2.50	A Little Knowledgeable	LK

This preliminary survey helped the researcher to counter factors such as participants' schema, content knowledge, and interest that may affect the results of the comprehension tests, which was given to both groups of participants.

In order to ensure appropriateness of the instrument in connection to its purpose, the preliminary survey instrument of each selection was validated by three experts (See sample validation tool on page 116).

Stimulus Texts: Academic Reading Selections

The stimulus materials for this study were composed of four academic reading selections in English in print and hypertext formats. Academic reading selections were chosen as main instruments for this study because these are the text types that are most commonly used in the classroom (Kent, 1984); and are also the text types utilized in several studies on reading hypertexts using adult readers as cited in the literature review. Since the participants of the study were Grade 12 students, the results of the reading comprehension tests were expected to reveal the preparedness of the participants for college in which students are more exposed to academic reading texts.

The researcher used four (4) science-related articles, which the students can relate with since they are Grade 12 STEM strand students. The selections were also available online for public consumption and topics from the chosen selections include: Matter, Climate Change, Environment, and Space. Also, the selections were used as basis and guide in order to identify the reading comprehension performance of the participants.

To ensure that the chosen texts were free from biases such as (gender, class, ethnic, and cultural), the sets of academic reading texts were validated through the examination of three (3) experts using an evaluation instrument that was created by the researcher, and was also validated by three (3) experts. In addition to the validation of reading experts, the reading texts also underwent the readability test through the Fry Readability Index and Flesch and Kincaid Grade Level Readability Formula to ensure that the texts read were appropriate to the level of the target participants.

Table 6 below indicates the range of readability index from Grades 11 to 12. Though texts appeared to have a grade level lower than the target, these were still considered appropriate since the subjects where these could be used may be offered in Grade 11 or Grade 12.

Table 6

Readability Results of the Stimulus Materials based on Flesch-Kincaid Readability Formula

Title	Word Count	Sentence Count	Readability Index
1. Einstein's Theory of Relativity faces Satellite Test	313	15	12.5
2. New phase of globalization could worsen CO2 pollution – study	681	29	12.7
3. Wind turbines contribute to climate change – study	319	19	11.3
4. 'Repeating' radio waves from deep space baffle scientists	568	27	11.9

The following are the criteria which guided the researcher in determining the appropriate hypertexts used in this study as described by Carusi (2006), Gervais (2007), and Burgiel (n.d.):

1. The hypertexts should be electronic in form.
2. The information is organized in non-linear form and there is the presence of hyperlinks.
3. There is the presence of colored pictures, animation, sketchpad documents, and forms and scripts, or links to other relevant hypertext materials.
4. It offers a wide-range of details that are either relevant or irrelevant to the text presented.

Comprehension Test

The researcher used a reading comprehension test to identify the comprehension performance and functional reading level of the participants in a form of an objective-type test (Multiple-Choice), which is composed of ten (10) items. The content of the comprehension test

was based on the competencies or reading skills from the Senior High School curriculum guides in English-Reading. The weight of each skill was based on the instructional days allotment as stipulated on the curriculum guide: the more the instructional days, the more the questions; the lesser the instructional days, the lesser the questions.

Table 7 below shows the table of specifications that served as blueprint for the reading comprehension test.

Table 7

Table of Specifications for the Reading Comprehension Test

Skills/Tasks/Objectives	Weight %	No. of Items	Item Placement
A. Using the different vocabulary development techniques	20 %	2	1-2
B. Noting significant details	20 %	2	3-4
C. Determining the author's purpose and intended readers	20 %	2	5-6
D. Identifying the author's tone and point of view	10 %	1	7
E. Identifying facts, opinions and incorrect information	10 %	1	8
F. Identifying the main idea and supporting details	20 %	2	9-10
	100%	10	

The comprehension test was administered after both groups read the academic reading texts in print or hypertexts in alternate manner in four consecutive days. In the administration of the comprehension test, the readers read first the academic reading text and answer the multiple-choice comprehension test after.

The Comprehension Test was developed following the procedure by Sevilla (2008):

1. Content Validation

The researcher developed first the table of specifications based on the competencies included in the SHS subjects Reading and Writing Skills and English for Academic and Professional Purposes. After which, the researcher consulted experts in connection to table of specifications and test item writing. Finally, the researcher started the formulation of the reading comprehension test items based on the selections and the tables of specifications.

2. Face Validation

In this phase of reading comprehension test development, the researcher conducted test item inspection. Thereafter, the researcher administered a trial run of the reading comprehension test.

3. Item Analysis

After the trial run, the researcher conducted an analysis of the test items. The frequency of correct responses, the difficulty index as well as the discrimination index were determined based on the results of the trial run. The sample item analyses were provided on page 118.

4. Evaluation of the Test

Finally, the evaluation of test reliability and test validation were conducted after the trial run. In order to ensure content validity and reliability of the reading instrument, the researcher requested three (3) experts or reading specialists to evaluate the content of the reading comprehension test. For reliability, Parallel Forms Method was applied as this is considered as the most appropriate for educational test. Reliability of Scale was computed and the result was .311, which is interpreted as unbiased; and, therefore the test is reliable.

In determining the functional reading level of the participants based on the scores obtained after answering the reading comprehension test, Table 8 shows the basis for score interpretation.

Table 8

Basis for Determining the Functional Reading Level Based on the Scores Obtained

Functional Reading Level		Score in the Comprehension Test	
The level at which a reader performs well without assistance	Independent (High)	80 % - 100 %	8 – 10
The level at which a reader performs a task with teacher assistance	Instructional (Average)	59 % - 79 %	6 – 7
The level at which a reader struggles in performing a reading task even with teacher assistance	Frustration (Low)	below – 58%	5 and below

Reading Experience Questionnaire

The last instrument that was used in this study is a Reading Experience Questionnaire in a form of an open-ended question. Each of the participants was asked about their experience after reading the academic texts in two different modalities. They were asked to respond to the questions, “After reading both print text and hypertexts, which of the two text forms (Print Text or Hypertexts) did you prefer? Why?”

After which, the researcher consolidated and analyzed the responses of the participants as well as their justification. Thereafter, the researcher summarized the number of participants who answered print texts and those who answered hypertexts.

In the second question for the justification on text preference of the participants, the researcher grouped, coded, categorized the responses based on the key words repeatedly mentioned and similar ideas, though expressed differently, and finally, analyzed to formulate a theme.

Expert Validators

The criteria for selecting the validators included educational qualifications, teaching experience, field of expertise in measurement and evaluation and/or English language education. Two male and four female faculty members in a higher education institution served as expert validators of the instruments used in the study.

Data Gathering Procedure

The researcher followed the procedure below in the conduct of the study:

Phase 1: Preparation

- 1. Write a letter of permission to the School Principal as regards the plan to conduct the study.** Before the study proceeded, the researcher sought first the approval of the School Principal that a study was to be conducted to Grade 12 students of the school.
- 2. Look and examine the academic reading texts in print and hypertext forms to be adapted.** The researcher searched for articles in which topics are related to Science. The articles found were tested in terms of its readability through the use of two readability tools. Further, the articles or stimulus materials were evaluated by three (3) experts to ensure validity.
- 3. Develop the preliminary survey and the reading comprehension test based on the chosen and readability tested academic reading texts.** Once the academic reading texts passed the readability tools and found to be appropriate to the level of the participants, and considered by experts as valid after their evaluation, the researcher developed the preliminary survey based on the articles and constructed the 10-item multiple choice

reading comprehension test based also on the article and on the table of specifications prepared by the researcher from the DepEd curriculum guide.

4. **Request three (3) reading experts to validate the preliminary survey, the academic reading texts in print and hypertext forms to be adapted, and the 10-item multiple choice reading comprehension test.** Once the preliminary survey instruments on interest to the topic of the participants and their content knowledge were constructed and ready, the researcher asked three (3) reading experts to evaluate the preliminary survey instrument using experts-validated instrument that was created by the researcher.
5. **Pilot the research instrument to ensure validity and reliability.** The researcher pilot-tested the expert-validated research instruments to another set of Grade 12 STEM students to ensure validity and reliability of the instruments. The result of the pilot testing was analyzed.

Phase 2: Data Gathering

1. **Conduct a sampling procedure to identify the student-participants of the study.** The researcher applied simple random sampling as technique in identifying the two groups of Grade 12 STEM strand students who served as the participants of the study. Since the STEM strand students were already grouped prior to the administration of this study by the school, the researcher decided to apply simple random sampling in selecting the two (2) groups of participants of the study from the existing four (4) classes already formed by the school. This random selection was conducted through fishbowl draw, wherein each of the four groups was numbered in slips of paper, put in a box, and the two groups of participants were picked without looking.

2. **Identify the participants based on the results of the sampling conducted, and assign as Group A and Group B.** Based on the results of simple random sampling, the researcher finalized the list and group of participants for the study, which was divided into two equal groups consisting of 32 students per group and assigned as Group A and Group B.
3. **Write a letter of consent to the parents of the student-participants in the study.** The researcher distributed a consent letter to the parents of the identified participants of the study to make sure that they approved the participation of their children.
4. **Provide consent to participate in a research study to the target participants.** The participants, in compliance to research ethics standards, had the choice not to participate in the study if they chose to, even in the middle of the conduct of the study, and was just replaced by any available student to participate if it happened.
5. **Administer the research instruments to the participants.** The researcher administered first the preliminary survey, followed by the reading of the academic texts, and finally, the reading comprehension tests to both groups of research participants in alternate manner. Group A read first the academic reading texts in print modality, while Group B read all academic reading texts in hypertexts format. On the second day, Group A read the reading text in hypertext format and Group B read the reading text in print text format. On the third day, Group A read again a reading text in print text format and Group B in hypertext format. On the fourth day, Group A read again a reading text in hypertext format, and Group B read a reading text in print text format.
6. **Give the reading experience questionnaire to the participants.** The researcher asked both groups of participants to provide their experiences after reading the academic texts in both print and hypertext formats. They provided their response as regards their preference

between print and hypertexts. After which, they write a sentence to three sentences to justify their preference.

7. **Check the answer sheets of the participants.** Once all instruments were administered and the needed data were gathered, the researcher checked the answer sheets of the participants.

In summary, the data gathering was conducted within one (1) week or five (5) days for at least 30 minutes per session or a total of 150 minutes for one week per group of participants.

Phase 3: Analysis, Sharing, and Storage of Data

1. **Compute the scores of the participants based on the answer sheets.** After checking the answer sheets of the participants, the researcher computed the scores of the participants.
2. **Compare the scores of the participants in both groups in print and hypertexts.** Once the scores of the participants in both groups were identified, the researcher compared the scores of the two groups of participants.
3. **Apply the corresponding statistical treatment.** After comparing the scores of both groups of participants, the researcher applied the appropriate statistical treatment as stipulated under statistical treatment.
4. **Analyze the results obtained.** Once the appropriate statistical treatments were applied, the researcher analyzed the results obtained.
5. **Share the research results.** Once the final results of the study were obtained, the researcher requested for approval from the school head to hold a meeting to the faculty concerned. In the meeting, the researcher shared and discussed the results of the study including some recommendations to the school administration. Through the approval of

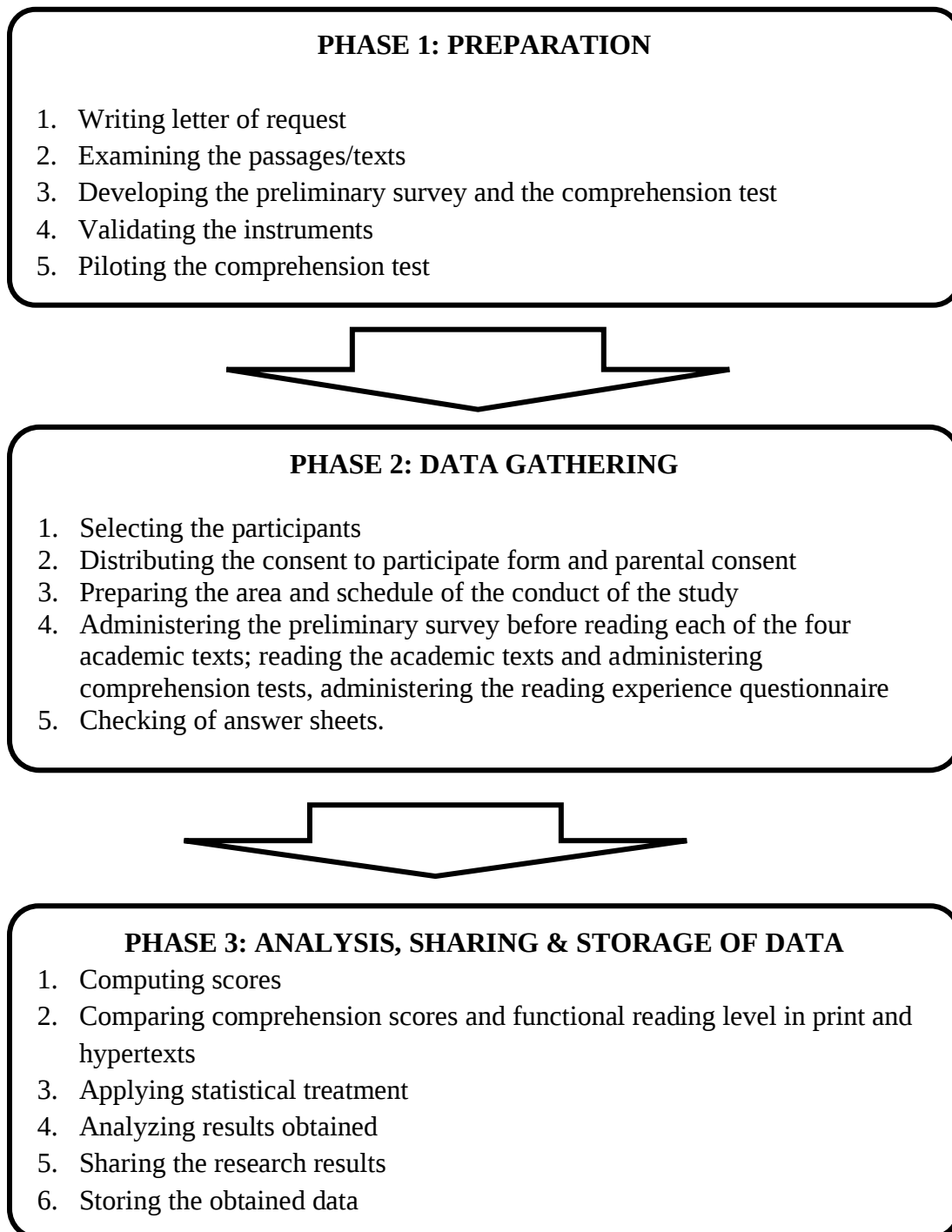
the school head, the researcher likewise shared the results of the study. Also, the participants were given access to the individual results of the study if they wish to find out the results of the study.

- 6. Store the obtained data and ensure confidentiality of data and privacy of the participants.** The researcher ensured confidentiality of data and privacy of the results of the study of the participants. Only the participants are given access to their own results when they request and the researcher provides and maintains a locked-casing of hard copies which are password-protected.

Figure 3 on the next page titled the Data Gathering Process illustrates the process that the researcher followed in the conduct of this study.

Figure 3

Data Gathering Process of the study



Statistical Treatment(s)

The research used the following statistical treatments to analyze and interpret the results via SPSS, a statistical software package that can perform highly complex data manipulation and analysis, which was operated by a Math expert:

1. **Mean** – This was used to get the average of the reading comprehension performance of the participants from the comprehension tests after reading the texts in both reading modalities. The mean scores also served as the basis for determining the functional reading level of the participants.
2. **Standard Deviation** – This was used to identify the degree of dispersion among the scores of the participants in the reading comprehension test.
3. **T-test for Independent Samples** – This was utilized to identify whether there is or there is no significant difference on the reading comprehension performance of participants.
4. **Percentage** – This was used to get the actual frequency of participants under a particular functional reading level, and the frequency of preference of the participants.

Ethical Considerations

There are some potential ethical issues in relation to the conduct of this study that were needed to be addressed. These included informed consent, confidentiality, privacy and anonymity, the possible harm that the study might bring to the participants, and conflict of interest. The abovementioned potential ethical issues were addressed by the researcher before, during, and after the conduct of the study.

Moral and values within the study are highly regarded by the researcher. In connection to stimulus materials that were used in this study, they were all articles from an online news site that are open for reading or viewing by all readers or audiences, or for public consumption. Thus, the researcher found it unnecessary to inform the source of the use of their articles or request for their approval to use the articles for the study. However, the researcher indicated and acknowledged the source of the articles in the study. On the other hand, the researcher wrote a letter of request to the school head for which this study was conducted and waited for the approval of the school head. Only after the approval of the school head that the researcher proceeded with the administration of the study.

Since the participants of this study were Grade 12 students, securing informed consent from parents as well as the concurrence of the participants to participate in the study were necessary before the administration of the study commenced. The parents of the Grade 12 participants of the study were given informed consent so that they were properly informed on the nature of participation of their children in this study. Participants who were not able to provide or present the informed consent from their parents were excluded from participating in the study. Meanwhile, the participation of the participants was on voluntary basis. Participants were provided with the consent to participate form. Those participants who did not return the consent to participate form

were not allowed to participate in the study. It was also made clear to the participants that their participation has no grade equivalent or financial return neither to the participants nor to their relatives. The researcher assured that there was no money involved in this study between the researcher and the participants of the study. Furthermore, the participants had the right to withdraw from participating in this study if they chose to withdraw even in the middle of its data gathering.

The confidentiality of any information or data from the participants that were obtained from this study were also assured. The researcher provided and maintained a locked-casing of hard copies which were password-protected. Moreover, electronically produced data were secured in a software that was also password-protected. Meanwhile, participants have the right to access their own results when they request.

Privacy and anonymity of the participants were also assured in this study. Although names were asked in the research instruments, names and other information of the participants in the research report were not provided to ensure privacy and anonymity of the participants. The researcher used a general term to indicate the source of the response in the text modality preference justification.

As safety and protection of the participants are also the topmost priority concerns, the researcher ensured the safety and protection of the students all throughout the conduct of the study. A safe classroom that is familiar to the students and is free of any hazards from within the school was used as the location of the study. For the administration of reading hypertexts and testing of hypertext comprehension of the participants, it was likewise administered in a computer laboratory from within the school campus that is also safe, free of any hazards and is familiar to the students. The researcher was also assisted by the computer teacher of the school to ensure safety and protection of the students as they used the laboratory for the study.

The researcher also ensured the absence of conflict of interest of any parties or individual. No part of the study was meant for sale or for commercial purposes and did not benefit the researcher in any amount.

CHAPTER III

Results and Discussion

This chapter provides the presentation of the data gathered through the research instruments used. The interpretation and analysis of those data are likewise discussed in this chapter.

Problem 1: What is the reading comprehension performance and functional reading level of the participants in a.) print texts, and b.) hypertexts?

A. Selection 1: “Einstein’s Theory of Relativity faces Satellite Test”

Table 9 presents the mean scores of both groups of participants after the administration of the comprehension test. In selection 1 titled “Einstein’s Theory of Relativity faces Satellite Test”, Group A read the print text form of the selection, while Group B answered the hypertext form.

Table 9

Mean Scores of the Participants in the Reading Comprehension Test for Selection 1

Participants	N	Mean
Group A (Print Text)	32	7.8125 (8)
Group B (Hypertext)	32	7.2500 (7)

Based on Table 9, results show that Group A or those who read using the print text modality has a mean score of 7.81 or equivalent to 8 when rounded off. On the other hand, Group B or those

who answered the hypertext form had a mean score of 7.25 or equivalent to 7 when rounded off. The data indicate that Group A performed better in selection 1 compared to Group B.

In Table 10, it presents the data on the number of participants according to functional reading level and its equivalent percentage.

Table 10

Frequency of Functional Reading Level of the Participants in Selection 1

Functional Reading Level	Group A (Print Text)		Group B (Hypertext)	
	Frequency	Percentage	Frequency	Percentage
Independent	20	63 %	17	53 %
Instructional	10	31 %	11	34 %
Frustration	2	6 %	4	13 %
Total	32	100 %	32	100 %

Based on the table, it reveals that for Group A, 6 out of 10 participants are in independent functional reading level, 3 out of 10 participants are in instructional functional reading level, while only around 6 % of the participants are in frustration functional reading level. Meanwhile, 5 out of 10 participants have independent functional reading level in Group B or those who read the hypertext form, 34 % are in instructional functional reading level, and only 13 % of the participants are in frustration functional reading level. Consistent with the result of the comprehension performance of both groups of participants in selection 1, result on the functional reading level for both groups of participants revealed that those who are in Group A who read the print text indeed performed better than in Group B who read the hypertext form.

B. Selection 2: “New Phase of Globalization could worsen CO₂ Pollution – study”

The succeeding table presents the results of the comprehension test for selection 2 titled “New Phase of Globalization could worsen CO₂ Pollution – study”. In this selection, the participants in Group A read the selection in hypertext form, while the participants in Group B read the selection in print text form.

Table 11

Mean Scores of the Participants in the Reading Comprehension Test for Selection 2

Participants	N	Mean
Group B (Print Text)	32	5.0313 (5)
Group A (Hypertext)	32	6.3125 (6)

Table 11 shows that Group A or those who read the selection in hypertext form have a mean score of 6.3125 or equivalent to 6 when rounded off. On the other hand, those who read selection 2 in print text form have a mean score of 5.0313 or equivalent to 5 when rounded off. This suggests that those who read the hypertext did better in the comprehension test compared to those who read the print text form. The result also revealed that the same group of participants performed better in selections 1 and 2.

In terms of functional reading level of the participants in selection 2, Table 12 presents the number of participants according to functional reading level and the corresponding percentage.

Table 12*Frequency of Functional Reading Level of the Participants in Selection 2*

Functional Reading Level	Group B (Print Text)		Group A (Hypertext)	
	Frequency	Percentage	Frequency	Percentage
Independent	1	3 %	4	12 %
Instructional	13	41 %	22	69 %
Frustration	18	56 %	6	19 %
Total	32	100 %	32	100 %

For selection 2, there were more participants in both groups who were under instructional functional reading level. 41 % of the participants in Group B were under the instructional functional reading level, while there were more participants in Group A who were under instructional functional reading level at 69 %. On the other hand, majority of the participants in Group B or those who read the print text form were under frustration functional reading level at 56 %, only one in Group B was under independent functional reading level. Meanwhile, very few in Group A or those who read the hypertext form were under the frustration functional reading level at 19 %, while only 4 of the participants in Group A or 12 % were under frustration functional reading level.

Similar to selection 1, the participants in Group A who read the hypertext form in selection 2 have higher reading comprehension performance than Group B who read the print text form in selection 2, and have more number of participants under instructional functional reading level compared to Group B who read the print text form.

C. Selection 3: “‘Repeating’ radio waves from deep space baffle scientists”

In selection 3 titled “‘Repeating’ radio waves from deep space baffle scientists”, Group A read the print text form, while Group B read the hypertext form. Table 13 presents the mean scores of the participants in the reading comprehension test for selection 3.

Table 13

Mean Scores of the Participants in the Reading Comprehension Test for Selection 3

Participants	N	Mean
Group A (Print Text)	32	6.5938 (7)
Group B (Hypertext)	32	5.9688 (6)

As presented in Table 13, Group A has a mean score of 6.5938 or when rounded off is equivalent to 7. On the other hand, participants in Group B have a mean score of 5.9688 or equivalent to 6 when rounded off. Based on the table, result indicates that Group A performed better once again in selection 3 compared to the participants in Group B. It also revealed that the participants in Group A showed consistency of better performance in the reading comprehension test compared to Group B regardless of text modality.

For the frequency of functional reading level of the participants in selection 3, Table 14 presents the results on the number of participants according to the functional reading level of the participants and the corresponding percentages.

Table 14*Frequency of the Functional Reading Level of the Participants in Selection 3*

Functional Reading Level	Group A (Print Text)		Group B (Hypertext)	
	Frequency	Percentage	Frequency	Percentage
Independent	12	38 %	6	19 %
Instructional	11	34 %	15	47 %
Frustration	9	28 %	11	34 %
Total	32	100 %	32	100 %

In the table, it shows that there were more participants in Group A under independent functional reading level at 38 % followed by 34 % of participants under instructional functional reading level, and those under frustration functional reading level were only 28 %. The result in Group A is rather different compared to Group B. In Group B, there were more participants under instructional functional reading level at 47 %, followed by 34 % under frustration functional reading level, and only 19 % of the participants are under the independent functional reading level.

In this particular selection, the participants in Group A indeed performed better in the reading comprehension test compared to those participants in Group B. This is as revealed in the data in both the reading comprehension performance where Group A scored higher than Group B, and the functional reading level where Group A recorded more participants under independent functional reading level compared to Group B where there are more participants under instructional functional reading level than those under independent functional reading level.

D. Selection 4: “Wind Turbines contribute to Climate Change – study”

For the last selection titled “Wind Turbines contribute to Climate Change – study”, the participants in Group A once again read the hypertext form of selection 4 while the participants in Group B read the print text form of selection 4. Table 15 presents the mean scores of the participants in both groups after they answered the reading comprehension test for selection 4.

Table 15

Mean Scores of the Participants in the Reading Comprehension Test for Selection 4

Participants	N	Mean
Group B (Print Text)	32	5.6875 (6)
Group A (Hypertext)	32	5.7813 (6)

Based on Table 15, it indicates that the participants in Group A or those who read the hypertext form obtained a mean score of 5.7813. The mean score of Group A is relatively higher than the mean score of the participants in Group B who read the print text form and obtained a mean score of 5.6875. However, the mean scores of both groups of participants are the same when the mean scores are rounded and are both equal to 6. It appears in this last selection that Group A still performed better than those in Group B, and the result is similar to the previous three selections in which Group B performed better than Group A in the reading comprehension test.

Relative to functional reading level of the participants in both groups of participants in selection 4, Table 16 presents the data on the number of participants according to functional reading level as interpreted based on their performance in the comprehension test.

Table 16*Frequency of Functional Reading Level of the Participants in Selection 4*

Functional Reading Level	Group B (Print Text)		Group A (Hypertext)	
	Frequency	Percentage	Frequency	Percentage
Independent	2	6 %	3	9 %
Instructional	17	53 %	19	60 %
Frustration	13	41 %	10	31 %
Total	32	100 %	32	100 %

Figures in Table 16 presents that both groups have majority of participants under instructional functional reading level. 60 % of participants were under the instructional functional reading level in Group A, followed by 31 % of participants in frustration functional reading level, and 9 % of participants in independent functional reading level. On the other hand, participants in Group B with a total of 53 % were under the instructional functional reading level, followed by 41 % under the frustration functional reading level and only 6 % or 2 participants were under the independent functional reading level. Based on the data, it appears that there are more participants who are reading performers in terms of functional reading level in Group A compared to Group B although there is no difference on the ranking of the functional reading level in terms of the most number of participants for both groups.

E. Overall Reading Comprehension Result

In table 17, it presents the data on the overall reading comprehension performance of participants according to text modality.

Table 17

Overall Reading Comprehension Performance of Participants Based on Text Modality

Participants	N	Mean
Print Text	128	6.2813 (6)
Hypertext	128	6.3281 (6)

Table 17 shows that the mean score for print text is at 6.2813 or equivalent to 6 when rounded off. On the other hand, the mean score for hypertext is at 6.3281 or equivalent to 6 when rounded off. From the data, it reveals that there is a difference on the reading comprehension performance but the difference is minimal. In fact, the reading comprehension performance is the same when the mean scores are rounded off.

Based on the findings of the reading comprehension performance per selection, they reveal that the participants who belonged to Group A did better compared to the participants in Group B in all four selections regardless of text modality. Meanwhile, results of the functional reading level also show consistency with the result of the reading comprehension performance in which majority of the participants in Group A are under either instructional or independent functional reading levels regardless of text modality.

The pattern of the better performance of those who belong to Group A and their functional reading level in the four reading selections regardless of text modality preference appears to suggest that those participants who belong to Group A is likely composed of participants with better cognitive abilities than those participants in Group B. This is despite the fact that both groups

of participants were grouped heterogeneously in the school for which this study was conducted as described in the previous chapter of this paper.

The statement that the participants in Group B have better cognitive abilities may have influence their engagement with the text they read regardless of modality. Hill (2017) explained that cognitive abilities are major factors in reading ability that could influence reading comprehension. In a quantitative study on the cognitive strategies and reading comprehension, Wahyono (2019) found out that there is a correlation between cognitive strategies and reading comprehension. He further explained that cognitive strategies play an important role in the reading comprehension that could influence the latter. Because the group likely has better cognitive abilities, they may have exhibited and used more effective cognitive reading strategies allowing them to be flexible and adjust in reading texts of different modality such as hypertexts. This cognitive flexibility by Spiro et.al. (1991) could have contributed to the concerned group's better performance in the reading comprehension tests regardless of text modality. Cognitive Flexibility Theory explains that learners grasp the nature of complexity of the text in this situation more readily by being presented with multiple representations of the same information in different contexts.

It only means that in terms of reading comprehension performance in this study, text modality is not a factor that influence reading comprehension but more of cognitive reading strategies.

Problem 2: Is there a significant difference on the reading comprehension performance in print and hypertexts?

The summary of the reading comprehension tests mean scores as well as the standard deviation and the interpretation on the difference on the reading comprehension performance is presented in Table 18. T-test of independent samples was used as statistical tool in determining the significant difference on the reading comprehension performance of the participants of the study.

Table 18

Summary of Results on the Comparison of Reading Comprehension Performance Based on Text Modality

Selection Number	Text Modality	Reading Comprehension		t-crit	p	Interpretation	Functional Reading level
		Mean	Standard Deviation				
1	Print Text	7.81 (8)	1.26	1.653	0.103	No Significant Difference	Independent
	Hypertext	7.25 (7)	1.46				Instructional
2	Print Text	5.03 (5)	1.84	-3.319	0.02*	With Significant Difference	Frustration
	Hypertext	6.31 (6)	1.18				Instructional
3	Print Text	6.59 (7)	2.03	1.238	0.220	No Significant Difference	Instructional
	Hypertext	5.96 (6)	2.01				Instructional
4	Print Text	5.68 (6)	1.49	-0.297	0.767	No Significant Difference	Instructional
	Hypertext	5.78 (6)	1.44				Instructional
Overall	Print Text	6.28 (6)	1.96	-0.207	0.836	No Significant Difference	Instructional
	Hypertext	6.32 (6)	1.64				Instructional

Based on the results presented in Table 18, comparison shows that there is no significant difference on the reading comprehension performance of the participants in both groups for selection 1 using T-test as statistical tool. Similar results also were revealed in selections 3 and 4 in which there is no significant difference on the reading comprehension performance between

both groups of participants when the mean scores were compared using T-test as statistical tool. Furthermore, the level of interest, as well as the content knowledge of the participants, did not affect the reading comprehension processing, and the reading comprehension performance of the participants after reading both text modalities.

Surprisingly, there is a significant difference on the reading comprehension performance of the participants in selection 2. Although both groups of participants who experienced reading of two text modalities registered the same level of interest, the results of the reading comprehension performance and functional reading level are contradictory in selection 2. It can be recalled in the previous chapter that the level of content knowledge of the participants of those who read the print text in selection 2 scored higher content knowledge and are “Knowledgeable” compared to those who read the hypertext in selection 2 and are only “A Little Knowledgeable”. Given the result of the content knowledge survey of the participants in selection 2, it could be expected that Group B or the group who read the print text form could be within “Instructional” or “Independent” functional reading level; yet, they were on “Frustration” functional reading level based on the final result of the comprehension test for selection 2.

Such result could be attributed to schema imposition of the reader in his or her engagement with the text. There is no argument as to the significant role of background knowledge in reading comprehension and previous studies (Alexander, Kulikowich, & Schulze, 1994; Shapiro, 2004) show that background knowledge plays an enormous role in reading comprehension. In addition, Neuman (2014) simplify the explanation about the role of background knowledge in reading as the more you know about a topic, the easier it is to read a text, understand it, and retain the information.

However, background knowledge or schema could also be a factor that could lead to low reading comprehension. This factor is called schema imposition, which could be the source of low reading performance in selection 2. As a factor that contributed to the low reading performance of readers in the selection, the background knowledge or schema of the reader dictates his or her understanding of text, disregarding the new information that can be acquired from the selection to be read. Apparently, the results show that the readers imposed their knowledge in the processing and understanding of text to be read and have contributed to their lower performance than the readers of hypertext modality who had less knowledge of the topic.

This explains that content knowledge is still one of the primary factors that affect the reading comprehension of a reader in a particular text. Furthermore, it also explains that the adequacy or over adequacy of information and knowledge of text influences the reading process, which consequently somehow affects the reading performance.

In addition, this situation in selection 2 could also be due to the possibility that the participants in Group A who read the hypertexts form in selection 2 could be more strategic readers who are able to adapt and show flexibility in reading the 2 text modalities. It can be recalled in the data on the reading comprehension performance of the participants in Group A that they performed better compared to the participants in Group B in all four selections regardless of text modality. Although the participants in Group A had “A Little Knowledgeable” content knowledge level and participants in Group B had “Knowledgeable” content knowledge level, it is likely that the participants in Group A are more strategic readers than those participants in Group B. Group A may have a little background knowledge or experience with the text to be read as revealed on the content knowledge survey, but with the use of more effective reading strategies, they were able to have better reading comprehension performance.

Erler and Finkbeiner (2007) and Paris, Lipson, and Wixson (1994) described reading strategies as self-directed actions where readers flexibly take control with a certain degree of awareness to retrieve, store, regulate, elaborate, and evaluate textual information to achieve reading goals. In addition, the use of readers' strategy while reading demonstrates readers' interaction with written texts, and effective use of strategies can improve their reading efficiency and text comprehension according to Carrel (1989) as cited by Wang (2016). It only reveals that the cognitive flexibility in reading as a strategy could have helped readers in Group A who read the hypertext form to perform better than Group B who read the print text form.

Wang (2016) conducted a study on reading strategies and reading comprehension performance of ESL freshmen students. In her study, results revealed that between more successful and less successful readers, the most successful readers scored higher on the comprehension questions and had performed think-aloud better than the least successful ones. Based on the study, the contributing factor on the difference of the reading comprehension performance of readers is the use of effective reading strategies.

In another study on reading strategies vis-a vis reading print and hypertext of good L2 readers, Bolaños (2007) found out positive relationship between strategy use and level of comprehension. This implies that the more frequently and/or effectively the appropriate strategies are used, the better and/or more effective the comprehension becomes.

Hence, it is important in future studies with similar purpose to establish actual reading ability for homogeneity of the participants to serve as basis for grouping them so as to determine how such homogenous grouping influences comprehension. It is because it could be a possible factor on reading comprehension performance in both print and hypertext modalities as it appeared

in the result of the reading comprehension performance of the participants in selection 2 of this study.

Finally, it was revealed in the overall results that there is no significant difference on the overall reading performance of the participants in both text modalities when compared using T-test as statistical tool. Similarly, there is also no difference on the functional reading level of the participants in which both groups registered “Instructional” in either of the reading text modalities, despite the significant difference on the results of the reading comprehension performance as well as the difference on the functional reading level of participants in selection 2.

Results suggest that reading of hypertext does not necessarily result to low reading comprehension performance. Despite the non-linear organization, and the presence of images, motion pictures and hyperlinks in hypertext reading modality, these did not affect the reading comprehension performance of the readers. As explained by Jose (2020), it is in fact possible that readers of hypertexts can perform better than those readers of print texts if hypertext readers have better abilities or strategies in reading hypertexts or are more familiar in hypertexts environment. Hence, the hypothesis that hypertext reading modality has significant effect on the reading comprehension performance is rejected.

The results obtained above complemented the study conducted by Peralta (2012) in which she found out that there is no difference on the reading comprehension of the participants of her study, and that comprehension scores remained almost the same no matter the text modality used. Also, the results backed up the study of Moyer (2011) in which the researcher found no statistical differences on the comprehension of participants across print, e-book, and audiobook modalities.

The result also supports the local study conducted by Bolaños (2007) on hypertext reading, revealing that there is no significant difference in terms of comprehension of the readers, and that

reading environment (print or hypertext environments) may not affect or influence comprehension, its level, and quality significantly.

Furthermore, the result of the reading comprehension performance showing that those who read the hypertext modality scored higher in terms of mean scores than those who read print modality only reveals that the medium is not the factor that influences processing; not even the interest to the text of the reader, or the background knowledge or experience of the reader about the text, but apparently the reading strategy that a reader utilizes in his or her engagement promotes better understanding of the text. This means that the more strategic a reader is, the better reader's comprehension performance. In fact, the result could also imply that reading of hypertext could help readers in the reading process.

Problem 3: What are the experiences of the participants when reading print texts, and hypertexts?

Reading experience in this study refers to the experiences of the readers as they undergo reading of texts in two modalities: print text and hypertexts. Finding out the experiences of the readers after reading text in both modalities justifies their preference for either of the modalities.

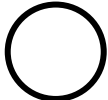
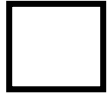
It can be recalled that the sixty-four (64) participants in this study were grouped into two equal halves in order to obtain the desired quantitative data for this study. Both groups experienced reading texts in two modalities (print texts and hypertexts) following the same length of text and time frames. In this data gathering part of the study, the participants in both groups answered questions after experience of reading texts in both modalities. The questions they answered were: After reading both print texts and hypertexts, which of the two texts forms did you prefer more?

Why? Responses from the questionnaire were gathered, combined, coded, categorized, and analyzed according to their preference.

As regards the question on text modality preference of the participants that justifies their preference, Tables 19 and 21 show the summary of justification of their text modality preference that describes the reading experience of the participants in both text modalities. The responses of the participants, which are usually one-sentence long to three-sentence long were coded with symbols, grouped, and categorized according to sub-themes based on keywords repeatedly mentioned or similar ideas though expressed differently, analyzed, and thematized. The symbols that were used in the process of coding the responses of the participants were adopted from the study of Santos (2013). However, the meaning of the codes was researcher-generated based on keywords, as stated earlier.

Table 19

Induced Key Points and Theme on Print Text Preference of Participants

Preference to Print Texts		
Coding Symbols	Induced Key Points (Sub-Theme)	Frequency
	Fewer Distractions and Easy to Focus	14
	Easy to Read and Understand	14
	Comfortable to Read	7
	Convenient to Read	2
Theme	Absence of visual distractions in reading	37

Based on Table 19, participants who preferred print texts explained that the absence of visual distraction in texts is the primary reason for their preference over the hypertexts. The theme ‘absence of visual distractions in reading’ is justified by induced key points: fewer distractions and is easy to focus, easy to read and understand, comfortable to read, and convenient to read.

Table 20 below presents the verbal samples for each induced key point in relation to participants who preferred reading print text after reading both print and hypertext reading modalities.

Table 20

Verbal Samples for Each Induced Key Point on Print Text Preference of Participants

Induced Key Points	Verbal Samples
Fewer distractions and easy to focus	“I prefer print text because I can easily remember the selection or the content in the print text than hypertext and can easily know the position of the answer of being asked. In terms of distraction, I can easily get distracted in using mobile phones or computer because of social media” (Participant 2). “Print text, because it’s easier to follow the text, fewer distraction, eye to paper contact is easier to comprehend” (Participant 8.) “In print text I can’t see any advertisement that’s why I’m more focused in using the print text rather than hypertext” (Participant 15.)
Easy to read and understand	“I prefer reading print texts because I like it more to read with physical things like papers and books” (Participant 5). “I prefer to use print text because for me it is easier and you will not need any internet just to read it unlike in the hypertext” (Participant 11). “I understand more what I am reading using print texts” (Participant 12).

Comfortable to read and convenient to read	“I prefer print text more than hypertext because I can read it comfortably and effectively while I gain information and knowledge” (Participant 4).
	“I prefer reading in Print Text because I’m more comfortable in reading the text when I am holding it” (Participant 18).
	“Print text because when I used computer to read the hypertext my eyes was irritated so that I can’t understand what I’ve read” (Participant 37).

In summary, the participants preferred reading print texts because of the absence of visual distractions, and found reading to be more convenient and comfortable in this modality because of fewer distractions. Consequently, the participants can concentrate more on the actual content of the text to be read. Thus, participants find it easy to read and understand texts or reading materials that are in print modality. The result in this study on the preference of the participants to print text over hypertext corroborates the study of Fonaciari (2009) showing that the participants consistently experienced jumpy reading and discomfort in reading hypertext over print text, which was found to be more comfortable by the participants of the study.

On the other hand, Table 21 shows the induced key points and theme of responses of participants who preferred the hypertext modality.

Table 21

Induced Key Points and Theme on Hypertext Preference of Participants

Preference to Hypertexts		
Coding Symbols	Induced Key Points (Sub-Theme)	Frequency
	Easy to Read and Understand	12
	Accessibility	4

	Easily Catches Attention	3
	Keeps the Readers Awake	2
	More Comfortable	2
	Convenient	2
	Interactive	1
	Enhances Technology Skills	1
Theme	Easy to read and understand due to accessibility and visual presentations	27

Table 21 summarizes the responses of the participants who preferred reading hypertexts over print texts. The formulated theme for choosing hypertext by the participants based on the induced key points is because hypertext is easy to read and understand due to accessibility and visual presentations. This theme was justified through the induced key points formulated: easy to read and understand, accessibility, easily catches attention, keeps the readers awake, more comfortable, convenient, interactive, and enhances technology skills.

In the coding process of this part, it can be noticed that the researcher used some of the codes already reflected on the responses of those favoring print texts because of the similarity of their written responses. Table 22 presents the verbal samples for each induced key point in relation to participants who preferred reading hypertext after reading both print and hypertext reading modalities.

The result on the reason for the preference to hypertexts is similar to that of the study of Samad and Abu Bakar (2009) in which participants of the study preferred reading digital books than printed books because of the advantages of digital books. Some advantages that were identified are cost and time saving, easier and faster access, interactive and interesting, up to date, and more focused.

Table 22

Verbal Samples for Each Induced Key Point on Hypertext Preference of Participants

Induced Key Points	Verbal Samples
Easy to Read and Understand	“It is easier to see and to understand [in hypertext] because images are provided and texts are more readable especially for those who have eye sight problems” (Participant 40).
Accessibility	“I prefer reading in hypertext form because it is easily accessible and I don’t really consider myself as bookworm person who’s into printed ones.” (Participant 41).
Easily Catches Attention	“It’s attracts my attention even more. and less boring to me.” (Participant 38)
Keep the Reader’s Awake.”	“I prefer hypertext form because it makes me less sleepy.” (Participant 39)
More Comfortable	“Hypertext is the more that I prefer because I’m more comfortable reading and answering using the technology” (Participant 7).
Convenient	“Hypertext because even though it affects my eyes it is more convenient for me to do rather than the Print Text” (Participant 64).
Interactive	“I prefer hypertext because they are more interactive and provide visual content that helps the readers” (Participant 63).
Enhances Technology Skills	“I prefer hypertext because I want to enhance my skills when it comes to technology and also it will help me to my chosen course” (Participant 52).

For those who preferred hypertext over print text modality, the primary reason of the participants is easy accessibility to links and visual images that attract the readers and help them to easily understand the hypertexts. Participants found comfort and convenience in reading hypertexts because of access to links and other web pages. In addition, the visual effects and images also caught the attention of the participants that make them awake and less bored when reading hypertexts.

In summary, visual presentation on the texts is a major consideration of the participants in their preference of text modality.

Participants who preferred the print texts considered images and other visual effects found in hypertexts as distractions to their concentration in reading. According to them, they become less focus on the contents of the texts because of the visual presentations found on hypertext. On the other hand, those who preferred hypertexts responded that visual presentation and the easy access to related links provide them convenience and comfort in reading hypertext.

Thus, visual presentation and hyperlinks of hypertexts were viewed by the participants as support to their reading of selection, but the same reasons served as distractions that impede the concentration of students who preferred print modality. This seems to suggest that learning style is the factor for the preference of the participants rather than text modality itself as can be inferred from the justification of the participants.

Furthermore, there are also commonalities of their reasons for text modality preference. Some of these are that participants who preferred either print text or hypertext modality found it easy to read and understand, convenient, and/or comfortable. In contrast, there are unique reasons for those who preferred reading hypertexts who found it interactive, accessible to other links,

catches the readers' attention and make them awake, and that it enhances the readers' technology skills.

Supplemental Analysis

This section of this chapter presents data that were obtained in addition to the findings that provided answers to the research problems of this study. Data include reading skills of participants who answered the items incorrectly, and the text modality preference of the participants.

A. Readings Skills of Participants

As stipulated in the Table of Specification in chapter 2, there were six (6) reading skills included in the reading comprehension test. Each of the skill had either 1 or 2 items allotment. These reading skills were also operationally defined in the definition of terms in chapter 1.

In the succeeding discussion, the items relative to the reading skills used in the reading comprehension test were presented and analyzed. The participants who answered the items incorrectly were identified in terms of frequency. It is important that the skills with the most number of participants who answered incorrectly be identified so that the classroom might be advised to focus on these skills, or schools to hold enhancement classes to ensure the development of the reading skills.

Table 23 shows the reading skills and the number of participants who answered each item **incorrectly**:

Table 23

Reading Skills, Text Modalities, and corresponding Percentage of Incorrect Responses

Reading Skill	Print Text		Hypertext	
	%	Rank	%	Rank
Noting significant details	44%	1.5	45%	3 rd
Identifying facts, opinions and incorrect information	44%	1.5	46%	2 nd
Using vocabulary development techniques	43%	3 rd	50%	1 st
Identifying the main idea and supporting details	40%	4 th	41%	4 th
Determining the author's purpose and intended reader	26%	5 th	20%	5 th
Identifying the author's tone and point of view	19%	6 th	7%	6 th

In Table 23, it shows that the reading skills with the most number of participants who answered incorrectly in print text are in the skills of “Noting significant details” and “Identifying facts, opinion, and incorrect information”, both having 44% of participants who committed mistakes. On the other hand, “Using vocabulary development techniques” is the skill with the most number of participants in hypertexts who answered incorrectly with 50% of participants.

Meanwhile, the reading skills with the lowest number of participants who answered the items incorrectly in both text modalities is the skill “Identifying the author's tone and point of view” with 19% of participants for print text and 7% for hypertext. Notably, reading skills such as identifying the main idea and supporting details, identifying the author's purpose and intended reader, and identifying the author's tone and point of view have the same ranking.

The result reveals that text modality once again was found to be not a factor that can affect reading comprehension in terms of reading skills such as identifying the main idea and supporting details, identifying the author's purpose and intended reader, and identifying the author's tone and point of view. The reasons for the differences in scores in reading skills based on text modalities may be explored in another study, probing on reasons for this. This study focused on the performance, and not on the skills per se; yet the results on this were presented as this could be a springboard to pursue in future research endeavors.

B. Text Modality Preferences of Participants

Table 24 shows the summary of responses of the participants in terms of text modality preference after reading experience.

Table 24

Text Modality Preferences of the Participants after Reading Experience

Text Modality	No of Participants	Percentage
Print Text	37	(58%)
Hypertext	27	(42%)
Total	64	(100%)

Table 24 reveals the frequency (percentage) distribution of text modality preference of the participants after reading the texts in either print text or hypertext modality. It shows that more participants still preferred print text modality with a total of 37 or 58 % of the total participants of the study. On the other hand, 27 participants or 42 % preferred reading texts in hypertext modality.

In summary, almost 6 out of 10 participants preferred reading texts in print over hypertext modality as far as academic reading in the classroom is concerned. This is understandable as there

is apparently no difference on the reading comprehension performance and level of the participants. This is despite the participants' generation that is described as more tech savvy and open to change (West, 2019). It could be that the participants prefer hypertext for pleasure reading, but not when reading academic texts or classroom reading. The data presented in this supplemental analysis only show that preference on the reading modality does not ensure better comprehension performance of the readers. This is after readers between print and hypertexts did not reveal better comprehension performance in reading print text, which is the most preferred modality based on the result of the survey.

CHAPTER IV

Summary, Conclusion, and Recommendations

This chapter presents the summary, conclusions, and recommendations of the study.

Summary of the Study

The study intended to determine the effect of print text and hypertext modalities on the reading comprehension performance of Grade 12 students in reading academic texts. It is concerned with identifying the reading comprehension performance of the participants, who are two (2) groups of Grade 12 STEM students at thirty-two (32) students per group, as they read four texts in either print text or hypertext modalities. The scores of the participants were compared and analyzed using T-test as the statistical tool to identify whether or not there is a significant difference on the reading comprehension performance of the participants. After which, participants were asked as to their preference between the two (2) reading modalities, and their reason for their preference.

Summary of the Findings

The results of the study became the basis for determining whether or not there is effect of print text and hypertext modalities on the reading comprehension performance of Grade 12 students in reading academic texts.

1. The comprehension level of those who read the print texts modality varies from Independent to Frustration Levels; but in the overall, the comprehension level of participants for print texts modality is in Instructional Level. In terms of those who read

the hypertext modality, the comprehension level of participants is consistently on Instructional Level.

2. On the reading comprehension performance of the participants in both print and hypertext reading modalities, there is no significant difference on the comprehension performance between the two (2) groups of participants in selections 1, 3, and 4, except in selection 2. However, there is no significant difference on the reading comprehension performance of the participants in the overall results.
3. With regard to reading modality preference after experience, 6 out of 10 participants or 58% preferred reading texts in print text modality, while a total of 42% preferred reading text in hypertext modality. The main consideration for the preference of the participants is visual presentation found on a hypertext modality, which includes images, effects, advertisements and hyperlinks.
4. Those who preferred print rationalized that it was because of the absence of visual distractions in reading that contributed to their preference in reading print text. On the other hand, those who preferred the hypertext explained that they favored reading texts in hypertext modality because they found it easy to read and understand due to accessibility of other links and visual presentations.
5. The theme “Absence of visual distractions in reading” was explained by key points ‘fewer distractions and easy to focus’, ‘easy to read and understand’, ‘more comfortable’, and ‘convenient’.
6. The theme “Easy to read and understand due to accessibility of other links and visual presentations” was explained by key points ‘easy to read and understand’, ‘accessibility’,

‘easily catches attention’, ‘keeps the reader’s awake’, ‘more comfortable’, ‘interactive,’ and ‘enhances technology skills’.

Conclusions

Based on the findings of the study, the following conclusions are drawn:

1. Interest, content knowledge and text modality, be it print text or hypertext, did not significantly influence reading comprehension performance of the readers especially in reading academic texts.
2. Schema imposition impeded comprehension level/performance regardless of the media. It also hinders the use of appropriate strategies, consequently considered detrimental to comprehension performance.
3. Many learners, despite being technology savvy or techie, still preferred print text, although a few preferred hypertexts in academic setting. Preference on text modality does not ensure better comprehension performance of the readers.
4. Visual presentations found on hypertexts such as images, visual effects, advertisements, and hyperlinks could either be a distraction that may not significantly affect reading comprehension performance of a learner, or unique features of hypertexts that help readers better understand reading materials in hypertext modality; but these may not directly affect the reading comprehension performance and functional reading level in reading hypertext.

Recommendations

As offshoot of the conclusions, the following recommendations are provided:

1. Explore the possibility of using e-books as instructional materials for the teachers and as reference materials for the students.
2. Encourage learning institutions to use technological support for teaching and learning to avoid using papers for print text; thus, they come to implement healthy and environment-friendly school practices.
3. Conduct studies that can extend what we know from the results of the present study. For instance, studies that seek to determine the effect of length of text on the comprehension performance of the readers in reading text in print and hypertexts modalities, or studies that aim to determine the effect of text modality on the reading comprehension performance using narrative texts, instead of expository texts.

References

- Abdi, R. (2013). The effects of using hypertext materials on reading comprehension ability of EFL learners. *SciVerse Science Direct*, 83, 557-562
- Adanza, E. G. (1995). *Research methods: Principles and applications*. (1st ed.). Rex Bookstore, Inc.
- Adversario, J. C. S. (2014). *Senior high school ESL students' reading comprehension level of a technical text* [Unpublished master's thesis]. Philippine Normal University-Manila.
- Afflerback, P. & Cho, B. (2009). *Identifying and describing constructively responsive comprehension strategies in new and traditional forms of reading*. Taylor & Francis
- Al-Seghayer, K. (2017). Effects of electronic reading environments' structure on L2 reading comprehension. *English Language Teaching*, 10(12), 88-106
- Anderson, R. C. (1994). *Role of the reader's schema in comprehension, learning, and memory*. International Reading Association
- Beins, B. V. & Beins, A. M. (2012). *Effective writing in psychology* (2nd ed.). John Wiley & Sons, Inc.
- Bennett, P. (2007). *Connecting through text: Reading hypertext at the first-year college level*
- Brevik, L. M., Olsen, R. V. & Hellekjær, G. O. (2016). The complexity of second language reading: Investigating the L1-L2 relationship. *Reading in a Foreign Language*, 28(2), 161-182.
- Bolaños, E. A. (2007). *Reading print and hypertexts: A comparative study of good L2 readers' comprehension strategies* [Unpublished doctoral dissertation]. De La Salle University-Manila.
- Bonganciso, R. T. (2016). Effects of contextualization of the reading comprehension performance of Filipino learners. *Asia Pacific Higher Education Research Journal*, 3(1), 1-13.
- Brown, H. D. (2001). *Teaching by principles: An interactive approach to language pedagogy* (2nd ed.). Addison Wesley Longman
- Burns, M. K. (2007). Reading at the frustration, instructional, and independent levels: The effects on students' reading comprehension and time on task. *School Psychology Review*, 36 (1), 159-166.

- Caldwell, J. S. (2002). *Reading assessment: A primer for teachers and tutors*. The Guilford Press
- Cangoz, B. & Altun, A. (2012). The effects of hypertext structure, presentation, and instruction types on perceived disorientation and recall performances. *Contemporary Educational Technology*, 3(2), 81-98.
- Cho, B. (2013). Adolescents' constructively responsive readings strategy use in a critical internet reading task. *Reading Research Quarterly*, 48(4), 329-332.
- Columna, G. C. (2013). *Grade 3 pupils' comprehension levels in Filipino and English reading texts: A correlational study* [Unpublished master's thesis]. Philippine Normal University-Manila.
- Cooper, J. D. (1997). *Literacy: Helping children construct meaning* (3rd ed.). Houghton Mifflin Company
- Cornejo, R. D. (2015). Reading comprehension performance of grade 6 pupils in social studies using informative text in Filipino (L1) and English (L2). *DLSL-Integrated School Research Journal*, 3(1), 29-38.
- DeStefano, D. & LeFevre, J. (2005). Cognitive load in hypertext reading: A review. *Computers in Human Behavior*, 23, 1616-1641.
- Eijansantos, A. M., Alieto, Ericson, O., Dela Rama-Morgia, J. & Ricohermoso, C., (2020). Print-based texts or digitized versions: An attitudinal investigation among senior high school students. *Asian EFL Journal*, 27(2.3), 308-339
- Engbrecht, J. R. (2018). Digital textbooks versus print books. *Culminating Projects in Teacher Developments*, 35, 19-20.
- Espejo, C. T. (2015). *The comprehension level of grade 4 pupils vis-a vis text and test types in Filipino* [Unpublished master's thesis]. Philippine Normal University-Manila.
- Fitzgibbons, M. (2008). Implications of hypertext theory for the reading, organization, and retrieval of information. *Philosophy and Practice*. 1-6
- Fornaciari, F. (2009). Digital hypertext vs. traditional books: An inquiry into non-linearity. *International Journal of Social and Human Sciences*, 3, 645-662.
- Fulgueras, M. J. V. (2019). *ESL learners' critical thinking and reading comprehension levels in a flipped classroom*. [Unpublished master's thesis]. Philippine Normal University-Manila.

- Gilbert, J. (2017). A study of ESL students' perceptions of their digital reading. *The Reading Matrix: An international Online Journal*, 17(2), 179-195
- Grabe, W. & Jiang, X. (2018). First language and second language reading. *The TESOL Encyclopedia of English Language Teaching*, <https://doi.org/10.1002/9781118784235.eelt0476>
- Grabe, W. & Stoller F. L. (2019). *Teaching and researching reading* (3rd ed.). Taylor & Francis
- Gruspe, M. A. M., Mariñas, C. J. L., Villasin, M. N. F., Villaueva, A. J. T. R. & Vizconde, C. J. (2015). Comparing hypertext reading in L1 and L2: The case of Filipino adults. *Journal on English Language Teaching*, 5(1), 19-34.
- Guimba, W. D. & Alico, J. C. (2015). Reading anxiety and comprehension of grade 8 Filipino learners. *International Journal of Humanities and Social Sciences*, 44-58.
- Gunodgunod-Mirasol, R. (2015). The relative effect of glossing instruction on college students' reading comprehension. *Procedia-Social and Behavioral Sciences*, 82-90.
- Gutierrez, M. R. M. (2013). *Teachers as ESL readers: Their comprehension processing of an English expository text* [Unpublished doctoral dissertation]. Philippine Normal University-Manila.
- Ilustre, C. A. (2011). Beliefs about reading, metacognitive reading strategies and text comprehension among college students in a private university. *Philippine ESL Journal*, 7, 28-47.
- Israel, S. E. & Duffy, G. G. (2009). *Handbook on reading comprehension*. Taylor & Francis
- Jiang, X. (2011). The role of first language literacy and second language proficiency in second language reading comprehension. *The Reading Matrix*, 11(2), 177-190.
- Johnson, B. & Christensen, L. (2004). *Educational research: Quantitative, qualitative, and mixed approaches* (2nd ed.). Pearson Education, Inc.
- Jose, K. (2020). Effects of language and prior knowledge levels on hypertexts reading comprehension. *Advance. Preprint*. <https://doi.org/10.31124/advance.11914509.v1>
- Kintsch, W. (1994). *The role of knowledge in discourse comprehension: A construction-integration model*. International Reading Association

- Labarrete, R. A., (2019). Reading comprehension level and study skills competence of the Alternative Learning System (ALS) clientele. *PUPIL: International Journal of Teaching, Education and Learning*, 3(1), 220-229.
- Leslie, L. & Caldwell, J. (2009). *Formal and informal measures of reading comprehension*. Taylor & Francis
- Lichtman, M. (2010). *Qualitative research in education: A user's guide* (2nd ed.). SAGE Publications, Inc.
- Mangen, A. (2008). Hypertext fiction reading: Haptics and immersion. *Journal of Research in Reading*, 31(4), 404–419.
- Mangen, A., Walgermo, B. R. & Bronnick, K. (2013). Reading linear texts on paper versus computer screen: Effects on reading comprehension. *International Journal of Educational Research*, 58, 61-68.
<https://doi.org/10.1016/j.ijer.2012.12.002>
- McNabb, M. (2006). Navigating the maze of hypertext. *Association for Supervision and Curriculum Development*, 63(4), 76-79.
- Mikulec, A., & Vuić, B. (2019). The relationship between L1 and L2 reading comprehension and language and reading proficiency at the tertiary level. *Journal of Language and Education*, 5(4), 54-65. doi: <https://doi.org/10.17323/jle.2019.9773>
- Moje, E. B., Afflerbach, P. P., Enciso, P. & Lesaux, N. K. (2020). Game changer in reading research. In Moje, E. B., Afflerbach, P. P., Enciso, P. & Lesaux, N. K. (Eds), *Handbook of reading research, volume 5*, (1st ed., pp. 2-14). Taylor & Francis
- Morales, K. N. (2010). Promoting the reading comprehension of Freshmen Engineering students through an interactive approach to content-based materials. *Philippine ESL Journal*, 5, 58-82.
- Moyer, J. E. (2011). Digital literacies: What does it really mean to “Read” a text? *Journal of Adolescent and Adult Literacy*, 55 (3), 253-256.
- Neuman, S. (2014). Building background knowledge. *The Reading Teacher*, 68(2), 145-148.
- Nowak, L. (2008). Digital reading theory and its relationship to academic reading practices. *SCROLL*, 1(1).
- Pearson, P. D. & Camperell, K. (1994). *Comprehension of text structure*. International Reading Association

- Peralta, C. A. (2012). *An assessment of the effectiveness of electronic books on the reading comprehension of grade 4 pupils* [Unpublished seminar paper]. Philippine Normal University-Manila.
- Protopsaltis, A. & Bouki, V. (2009). Gender patterns in hypertext reading. *The Ergonomics Open Journal*, 2, 104-113.
- Ruddel, M. R. (2008). *Teaching content reading and writing* (5th ed.). John Wiley & Sons, Inc.
- Rumelhart, D. E. (1994). *Toward an interactive model of reading*. International Reading Association
- Rustad, Hans K. (2004). *Semantisation, exploration, self-reflection and absorption. Four modes of reading hypertext fiction*. Hedmark University College
- Samad, A. & Abu Bakar, D. (2009). *UTM TESL undergraduates' reading preference: Between hypertexts and books*.
- Santos, E. G. (2013). *Analysis and synthesis of roles from women: Towards emerging leadership* [Unpublished doctoral dissertation]. The National Teachers College-Manila.
- Schwartz, A. I., Mendoza, L. & Meyer, B. (2017). The impact of text structure reading strategy instruction in a second language: Benefits across languages. *The Language Learning Journal*, 45(3), 263-281. <https://doi.org/10.1080/09571736.2013.837092>
- Shapiro, A. & Niederhauser D. (1999). *Learning from hypertext: Research issues and findings*.
- Singer, L. M. & Alexander, P. A. (2017). Reading across mediums: Effects of reading digital and print texts on comprehension and calibration. *The Journal of Experimental Education*, 85(1), 155-172.
- Smith, S. (2012). *Understanding reading: A psycholinguistic analysis of reading and learning to read* (6th ed.). Routledge
- Soriano, J. G. (2018). *Reading interest and comprehension levels of grade 7 ESL learners* [Unpublished master's thesis]. Philippine Normal University-Manila.
- Spiro, R. J. et.al. (1994). *Cognitive flexibility theory: Advanced knowledge acquisition in ill-structured domains*. International Reading Association
- Szuchman, L. T. & Thomlison, B. (2008). *Writing with style: APA style for social work*. (3rd ed.). Thomson Brooks/Cole.

- Tierney, Robert J. (2009). *The agency and artistry of meaning makers within and across digital spaces*. Taylor & Francis
- Urquhart, A. H. & Weir, C. J. (2013). *Reading in a second language: Process, product and practice* (2nd ed.). Taylor & Francis
- Wang, Y.-H. (2016). Reading strategy use and comprehension performance of more successful and less successful readers: A think-aloud study. *Educational Sciences: Theory & Practice*, 16, 1789–1813.
- West, S. (2018, June 28). *Meeting millennial expectations in these four areas of technology* Forbes Technology Council. <https://www.forbes.com/sites/forbestechcouncil/2018/06/28/meeting-millennial-expectations-in-these-four-areas-of-technology/?sh=3539cb8b4ffc>

Appendices

APPENDIX A

REQUEST LETTER FOR VALIDATION OF EVALUATION INSTRUMENT FOR STIMULUS MATERIAL

Dear _____,

Greetings of Peace of Christ!

I am Lord Celeste E. Balo, presently enrolled in Thesis Writing under the program Master of Arts in Education with specialization in English Language Teaching (ELT) with my thesis titled “*Print and Hypertexts: Reading Comprehension Performance of ESL Learners*” which aims to find out the reading comprehension performance of Grade 12 STEM students in print and hypertexts modalities.

With this, may I humbly request your assistance to be a validator of the attached evaluation instrument for the stimulus materials of this study. With your knowledge and expertise, I am certain that your evaluation will be valuable in finalizing said stimulus materials that will be used for the data gathering of my study.

Please feel free to write your comments and suggestions to improve the evaluation instrument. Your participation and significant contribution in this study as validator will certainly help not just the success of this study, but also the enhancement of academic research. Be assured that ethical practices will be observed especially on respect, beneficence, and justice. Your anonymity and the data that will be gathered will be kept with utmost confidentiality.

I look forward to your positive feedback regarding this request. For questions, you may reach me through 0917-678-9227 or through email at lordcelestebalo07@gmail.com.

Thank you very much in advance.

Yours sincerely,

Lord Celeste E. Balo

MA Ed ELT Candidate

Noted:

Dr. Merry Ruth M. Gutierrez

Thesis Adviser

APPENDIX B

VALIDATION TOOL FOR THE EVALUATION INSTRUMENT FOR THE STIMULUS MATERIAL

Adapted from Rubio, Berg-Weger, Tebb, Lee and Rauch (2003)

Validator's Profile:

Name: _____
Highest Educational Attainment: _____
Specialization: _____
School Working at: _____
Position: _____

Instructions:

This tool is designed to evaluate the content validity of the instrument that will be used for the evaluation of text for the study. Please rate each item as follows:

I. Factors

Factors are the criteria included in the instrument that serve as basis for the evaluation of texts. They refer to readability, text content and complexity, and authenticity.

Rate the level of acceptability of the given factor as criterion in evaluating a text to be used as stimulus material for the study on a scale of 1 to 4 with the following descriptions.

- 1 – Factor is not acceptable.
- 2 – Factor needs improvement.
- 3 – Factor is acceptable.
- 4 – factor is very much acceptable.

To guide your rating on factors, ask the question “**Is a given factor the right criterion to evaluate a text?**”

After the table, feel free to give your comments and suggestions after your rating to improve the criteria.

Criterion	1	2	3	4	Remarks
Factor 1: Readability					
Factor 2: Text Content and Complexity					
Factor 3: Authenticity					

A criterion is appropriate as basis for evaluation of text as material for this study if it gets a rating of 3 – (Acceptable) or 4 – (Very Much Acceptable).

Comments and Suggestions:

II. Indicators

Indicators are items related to the factors to be considered in the evaluation of text as stimulus material.

- A. **Representativeness** is defined as the suitability of an indicator to a given factor. Rate the level of representativeness on a scale of 1 to 4, with 4 being the most representative by placing a check mark on the space that corresponds to your rating.

- 1 – Indicator is not representative.
- 2 – Indicator needs major revisions to be representative.
- 3 – Indicator needs minor revisions to be representative.
- 4 – Indicator is representative.

To guide you in your rating, ask the question “**Does the indicator represent the given factor?**” If you do not think the item belongs to any factor specified, please put a check mark on number 4 and write a factor that may be more suitable on the space beside it.

- B. **Clarity** is the quality of an item of being easy to understand and accurate in representing the idea. Rate the level of clarity for each indicator, also on a four-point scale by placing a check mark on the space that corresponds to your rating.

- 1 – Indicator is not clear.
- 2 – Indicator needs major revisions to be clear.
- 3 – Indicator needs minor revisions to be clear.
- 4 – Indicator is clear.

- C. Finally, evaluate the comprehensiveness of the tool per factor by indicating items that should be deleted or added in the comment/suggestion space provided. Thank you for your time.

Criteria/Indicator	Representativeness				Clarity			
	1	2	3	4	1	2	3	4
A. Readability								
1. Language is correct, clear and simple.								
2. Instructions are direct, clear, concise and easy to follow.								
3. Format/layout is reader friendly and not confusing.								
4. The face validity of the material is accurate and appropriate to the target Grade 12 readers.								
5. The text is written within the instructional level of the reader (90-95% of the words are known to the reader).								

Comments and Suggestions:

Criteria/Indicator	Representativeness				Clarity			
	1	2	3	4	1	2	3	4
B. Text Content and Complexity								
1. The material is age and level aligned to the target Grade 12 readers.								
2. The material is free from biases (e.g. gender, class, ethnic, cultural)								
3. The level of the material does not go beyond the level of the target Grade 12 readers.								
4. The interest, needs and background of the reader are considered in the topic of the text.								
5. The material is either informational in nature or is non-fiction which constitute an expository text.								

Comments and Suggestions:

Criteria/Indicator	Representativeness				Clarity			
	1	2	3	4	1	2	3	4
C. Authenticity								
1. The materials are encountered daily such as those found in (but not limited to) magazines, newspapers, website articles and reference materials								
2. The material is less complicated by using mostly general terms, avoiding terms not relevant to the target Grade 12 readers.								
3. The relevance of content to the target Grade 12 readers are considered in the material.								
4. The topic is considered to be related to the reader's general knowledge.								
5. The organizations of ideas/items are logical.								

Comments and Suggestions:

Validator's Signature

APPENDIX C

SUMMARY OF VALIDATORS' COMMENTS & SUGGESTIONS

Validator 1: Dr. Jhona Acuña	
Comments & Suggestions	Action Taken
A-4. Remove the phrase “face validity”.	The statement was revised. <i>“The material is accurate and appropriate to the target Grade 12 readers.”</i>
B-3. Revise the item to follow parallelism. Consider: <i>“The material is not beyond the level of Grade 12 readers.”</i>	The statement was removed as it is the same with statement B-1.
B-4. Revise the item to follow parallelism. Consider: <i>“The material focuses on topics based on the interest and background of the readers.”</i>	The statement was revised as suggested.
C-1. Rephrase: <i>“The materials encountered daily are found in magazines, newspapers, online articles, and references.”</i>	The statement was further improved. <i>“The material is not intended for academic use such as those found in magazines, newspapers, online articles, and references.”</i>
C-3. Rephrase: <i>“The material’s content is relevant to Grade 12 readers.”</i>	The statement was revised as suggested, but transferred to Factor B. Text Content and Complexity.
C-4. Rephrase: <i>“The material’s topic is relevant to the reader’s general knowledge.”</i>	The statement was revised as suggested, but transferred to Factor B. Text Content and Complexity.
C-5. Rephrase: <i>“The material’s organization of ideas/items are logical.”</i>	The statement was revised as suggested, but transferred to Factor A. Readability.

Validator 2: Dr. Arceli Amarles	
Comments & Suggestions	Action Taken
B. Text Content and Complexity Typographical errors on the figures/rating scale	The typographical errors were corrected.
Statements B-1 and B-3 were found to be the same.	The statement B-3 was removed as indicator for Factor B. Text Content and Complexity.
Statement C-2 should be under Factor B. on Text Content and Complexity.	The statement was transferred to Factor B. on Text Content and Complexity as suggested.
To provide more specific info/details to mean “authenticity”, not just using the term “relevant”.	Statement C-3 was removed. Statements on authenticity of text were added.
C-5. Should not be under authenticity.	The statement was transferred to Factor A. Readability.

Validator 3: Prof. Antonio Dacanay	
Comments & Suggestions	Action Taken
Statements B-1 and B-3 were found to be the same.	The statement B-3 was removed as indicator for Factor B. Text Content and Complexity.

Prepared:

Lord Celeste E. Balo
MA Ed ELT Candidate

APPENDIX D

REQUEST LETTER FOR EVALUATION OF STIMULUS MATERIALS

Dear _____,

Greetings of Peace of Christ!

I am Lord Celeste E. Balo, presently enrolled in Thesis Writing under the program Master of Arts in Education with specialization in English Language Teaching (ELT) with my thesis titled “***Print and Hypertexts: Reading Comprehension Performance of ESL Learners***” which aims to find out the reading comprehension performance of Grade 12 STEM students in print and hypertexts modalities.

With this, may I humbly request your assistance to be an evaluator of the attached stimulus materials of this study. With your knowledge and expertise, I am certain that your evaluation will be valuable in finalizing said stimulus materials that will be used for the data gathering of my study.

Please feel free to write your comments and suggestions on the space provided. Your participation and significant contribution in this study as evaluator will certainly help not just the success of this study, but also the enhancement of academic research. Be assured that ethical practices will be observed especially on respect, beneficence, and justice. Your anonymity and the data that will be gathered will be kept with utmost confidentiality.

I look forward to your positive feedback regarding this request. For questions, you may reach me through 0917-678-9227 or through email at lordcelestebalo07@gmail.com.

Thank you very much in advance.

Yours sincerely,

Lord Celeste E. Balo
MA Ed ELT Candidate

Noted:

Dr. Merry Ruth M. Gutierrez
Thesis Adviser

APPENDIX E

EVALUATION INSTRUMENT FOR THE STIMULUS MATERIALS

Instructions:

1. Fill out the Evaluator's Profile.
2. Evaluate the attached Research Tools using the rating scale below with the following descriptions:
 - 4 – Excellent
 - 3 – Good
 - 2 – Fair
 - 1 – Needs Improvement
3. Check the appropriate column that corresponds to your rating, and feel free to give your comments and suggestions.

I. Evaluator's Profile:

Name: _____
Highest Educational Attainment: _____
Specialization: _____
School Working at: _____
Position: _____

II. Evaluation Proper:

Title: _____

Criteria	4	3	2	1	Remarks
A. Readability					
1. Language is correct, clear and simple.					
2. Instructions are direct, clear, concise and easy to follow.					
3. Format/layout is reader friendly and not confusing.					
4. The organization of ideas/ items is logical.					
5. The material is accurate and appropriate to the target Grade 12 readers.					
6. The material is written within the instructional level of the reader (90-95% of the words are known to the reader).					

Criteria	4	3	2	1	Remarks
B. Text Content and Complexity					
1. The material is age and level appropriate to the target Grade 12 readers.					
2. The material is free from biases. (e.g. gender, class, ethnic, cultural)					
3. The material focuses on topics based on interest and general background of the readers.					
4. The material is less complicated by using mostly general terms, avoiding terms not relevant to the target Grade 12 STEM readers.					
5. The material is either informational in nature or is non-fiction which constitutes an expository text.					
C. Authenticity					
1. The material is representative of the real world.					
2. The material is not intended for academic use such as those found in magazines, newspapers, online articles and references.					
3. The material is an original publication, and has not been altered in content or form.					

III. Comments and Suggestions:

Interpretation:

The material is evaluated to be appropriate for the reading level of Grade 12 students if it gets an average rating of **3 – (Good) or 4 (Excellent)**.

Validator's Signature

APPENDIX F

REQUEST LETTER FOR VALIDATION OF RESEARCH INSTRUMENT

Dear _____,

Greetings of Peace of Christ!

I am Lord Celeste E. Balo, presently enrolled in Thesis Writing under the program Master of Arts in Education with specialization in English Language Teaching (ELT) with my thesis titled “*Print and Hypertexts: Reading Comprehension Performance of ESL Learners*” which aims to find out the reading comprehension performance of Grade 12 STEM students in print and hypertexts modalities.

With this, may I humbly request your assistance to be a validator of the attached evaluation instrument of this study. With your knowledge and expertise, I am certain that your evaluation will be valuable in finalizing said stimulus materials that will be used for the data gathering of my study.

Please feel free to write your comments and suggestions to improve the research instrument. Your participation and significant contribution in this study as validator will certainly help not just the success of this study, but also the enhancement of academic research. Be assured that ethical practices will be observed especially on respect, beneficence, and justice. Your anonymity and the data that will be gathered will be kept with utmost confidentiality.

I look forward to your positive feedback regarding this request. For questions, you may reach me through 0917-678-9227 or through email at lordcelestebalo07@gmail.com.

Thank you very much in advance.

Yours sincerely,

Lord Celeste E. Balo

MA Ed ELT Candidate

Noted:

Dr. Merry Ruth M. Gutierrez

Thesis Adviser

APPENDIX G

RATING SCALE FOR THE VALIDATION OF RESEARCH INSTRUMENT

Validator's Profile:

Name: _____
Highest Educational Attainment: _____
Specialization: _____
School Working at: _____
Position: _____

Instructions:

Please evaluate the attached research instrument composed of A. Interest to the Topic Instrument, B. Content Knowledge Instrument, and C. Reading Comprehension Test. Use the rating scale from 1 to 4 in evaluating the instrument as described below:

- 1 – Not Acceptable
- 2 – Needs Improvement
- 3 – Acceptable
- 4 – Very Much Acceptable

Please check the column that corresponds to your rating, and feel free to give your comments and suggestions.

A. Interest to the Topic

Criterion	1	2	3	4	Remarks
1. Language is correct, clear and simple.					
2. Instructions are direct and easy to follow.					
3. Format/layout is reader friendly and not confusing.					
4. Organizations of ideas/items are logical.					
5. Content is correct and relevant					

Comments and Suggestions:

B. Content Knowledge

Criterion	1	2	3	4	Remarks
1. Language is correct, clear and simple.					
2. Instructions are direct and easy to follow.					
3. Format/layout is reader friendly and not confusing.					
4. Organizations of ideas/items are logical.					
5. Content/statements are correct, relevant, factual, and based on the selection.					

Comments and Suggestions:

C. Reading Comprehension Test

Criterion	1	2	3	4	Remarks
1. Language is correct, clear and simple.					
2. Instructions are direct and easy to follow.					
3. Format/layout is reader friendly and not confusing.					
4. Organizations of ideas/items are logical.					
5. Items are correct based on the TOS and the indicated reading skills.					

Comments and Suggestions:

Validator's Signature

APPENDIX H

SAMPLE ITEM ANALYSES

A. Reading Comprehension Test for Selection 1

Question No.	Correct Answer	Frequency of Correct Response		Difficulty Index		Discrimination Index		Decision
		Upper	Lower	Value	Interpretation	Value	Interpretation	
1	20	12	8	0.83	Very Easy	0.33	Reasonably Good	Retain
2	17	10	7	0.71	Easy	0.25	Marginal	Revise/Reject
3	15	9	6	0.63	Easy	0.25	Marginal	Revise/Reject
4	12	7	5	0.50	Average	0.17	Poor	Reject
5	18	10	8	0.75	Very Easy	0.17	Poor	Reject
6	8	6	2	0.33	Difficult	0.33	Reasonably Good	Retain
7	18	10	8	0.75	Very Easy	0.17	Poor	Reject
8	14	8	7	0.63	Average	0.08	Poor	Reject
9	12	9	3	0.50	Average	0.50	Very Good	Revise
10	10	7	4	0.46	Average	0.25	Marginal	Revise/Reject

B. Reading Comprehension Test for Selection 2

Question No.	Correct Answer	Frequency of Correct Response		Difficulty Index		Discrimination Index		Decision
		Upper	Lower	Value	Interpretation	Value	Interpretation	
1	15	10	5	0.68	Average	0.45	Very Good	Revise
2	17	10	7	0.77	Easy	0.27	Marginal	Revise/Reject
3	12	6	6	0.55	Very Difficult	0.00	Poor	Reject
4	3	3	0	0.14	Very Easy	0.27	Marginal	Revise/Reject
5	21	11	10	0.95	Very Easy	0.09	Poor	Reject
6	21	11	10	0.95	Very Easy	0.09	Poor	Retain
7	21	11	10	0.95	Easy	0.09	Poor	Reject
8	16	10	6	0.73	Easy	0.36	Reasonably Good	Retain
9	11	9	2	0.50	Average	0.64	Very Good	Revise
10	18	9	9	0.82	Easy	0.00	Poor	Reject

APPENDIX I

INSTRUMENT 1 (PRINT TEXT FORM)

NAME: _____ AGE: _____
GR/SEC.: _____ STRAND: _____

I. INTEREST TO THE TOPIC

DIRECTIONS: The selection that you are about to read is titled “**Einstein’s Theory of Relativity faces Satellite Test**” an article about an experiment that tests Albert Einstein’s Theory of Relativity. **How interested are you to this topic?** Put a **CHECK MARK (✓)** on the column that corresponds to your answer.

Very Much Interested	Interested	Not Interested	Not Very Much Interested

II. CONTENT KNOWLEDGE

DIRECTIONS: **How well do you know the content of the selection?** The statements below are taken from the selection you are about to read. Based on your knowledge, check the appropriate column and tell whether:

- 4 - you know the given statement.
- 3 - you guess you know the given statement.
- 2 - you guess you do not know the given statement.
- 1 - you really do not know the given statement.

STATEMENTS	4	3	2	1
1. The mission of the 'Microscope' orbiter is to test the basis for our modern understanding of gravity.				
2. Scientists will use a kit to measure how two different pieces of metals behave in orbit.				
3. It is possible to study the relative motion of two bodies in almost perfect and permanent free fall aboard an orbiting satellite in space.				
4. Einstein’s theory suggests that in perfect free-fall, the two objects should move in exactly the same way.				
5. The ‘Microscope’ orbiter is part of the 3.8-billion-euro (\$4.3-billion) Copernicus project.				

III. SELECTION 1: Matter & Numbers

DIRECTION: Read the selection carefully.

Einstein's Theory of Relativity faces Satellite Test

The **mission** of the 'Microscope' orbiter is to test the basis for our modern understanding of gravity.

CAYENNE, France – Einstein's theory of general relativity is to be put to the test by a newly launched satellite in an experiment that could upend our understanding of physics.

The French "Microscope" orbiter will try to poke a hole in one of Einstein's most famous theories, which provides the basis for our modern understanding of **gravity**.

Scientists will use the kit to measure how two different pieces of metal – one titanium and the other a platinum-rhodium alloy – behave in orbit.

"In space, it is possible to study the relative motion of two bodies in almost perfect and permanent free fall aboard an orbiting satellite, shielded from perturbations encountered on Earth," said Arianespace, which put the satellite into orbit on Monday, April 25.

Einstein's theory suggests that in perfect free-fall, the two objects should move in exactly the same way. But if they are shown to behave differently "the principle will be violated: an event that would shake the foundations of physics," Arianespace added.

Also aboard the Russian Soyuz rocket launched from French Guiana was an Earth-observation satellite equipped with radar to monitor the planet's surface to track climate and environmental change and help in disaster relief operations.

That satellite, along with another launched two years ago, is part of the 3.8-billion-euro (\$4.3-billion) Copernicus project, which will ultimately boast 6 orbiters in all.

Three previous launches from Arianespace's Spaceport in French Guiana, an overseas territory that borders Brazil, were delayed by poor weather and technical issues.

A countdown on Sunday, April 24, was halted after scientists observed an "anomaly", the agency said in an earlier statement, while adverse weather conditions had thwarted other attempts. – **Rappler.com**

Source:

<https://www.rappler.com/science-nature/matter-numbers/130868-einstein-theory-general-relativity-satellite-test>

Einstein's theory of relativity face X +

→ X https://www.rappler.com/science-nature/matter-numbers/130868-einstein-theory-general-relativity-satellite-test

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Einstein's theory of relativity faces satellite test

The mission of the 'Microscope' orbiter is to test the basis for our modern understanding of gravity

Agence France-Presse

@afp

Published 6:05 PM, April 26, 2016

Updated 6:05 PM, April 26, 2016



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LIFT-OFF. A handout picture taken on April 25, 2016 and released by the European Space Agency (ESA) shows a Soyuz VS14 rocket lifting off from the European space center at Kourou, French Guiana. Photo by S. Martin/AFP

CAYENNE, France – Einstein's theory of general relativity is to be put to the test by a newly launched satellite in an experiment that could upend our understanding of physics.

The French "Microscope" orbiter will try to poke a hole in **one of Einstein's most famous theories**, which provides the basis for our modern understanding of gravity.

Scientists will use the kit to measure how two different pieces of metal – one titanium and the other a platinum-rhodium alloy – behave in orbit.

"In space, it is possible to study the relative motion of two bodies in almost perfect and permanent free fall aboard an orbiting satellite, shielded from perturbations encountered on Earth," said Arianespace, which put the satellite into orbit on Monday, April 25.

Einstein's theory suggests that in perfect free-fall, the two objects should move in exactly the same way. But if they are shown to behave differently "the principle will be violated: an event that would shake the foundations of physics," Arianespace added.

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Source: <https://www.rappler.com/science-nature/matter-numbers/130868-einstein-theory-general-relativity-satellite-test>

IV. READING COMPREHENSION TEST

DIRECTION: Choose the letter of the correct answer and write it in the blank.

Identifying the synonym of the given word

1. In the first sentence of the article, which word is the synonym of the word **mission**? 1. ____
A. Calling B. Delegation C. Task D. Vocation

Identifying the meaning of jargons through context clues

2. In the third sentence of the article, which of the following is the meaning of the word **gravity**? 2. ____
A. The weight of something
B. Speaking with solemnity of manner in an occasion or event
C. The natural force that causes things to fall toward the earth
D. A situation of extreme or alarming importance or seriousness

Noting significant details

3. Which newly-launched satellite will test the basis for our modern understanding of gravity based on the article? 3. ____
A. Arianspace Orbiter C. Einstein Orbiter
B. Copernicus Project D. Microscope Orbiter
4. In which country was the new satellite launched based on the article? 4. ____
A. Brazil B. French Guiana C. France D. Russia

Identifying the author's purpose and intended audience

5. What is the purpose of the author in this article? 5. ____
A. To entertain B. To inform C. To narrate D. To persuade
6. Who are the intended readers of this article? 6. ____
A. The Science teachers C. The government officials
B. The general public D. The scientists

Identifying the author's tone or point of view

7. What is the tone of the writer in this article? 7. ____
A. Amused B. Excited C. Informative D. Overwhelmed

Identifying facts, opinions, and incorrect information

8. All the following statements are true based on the article, except: 8. ____
A. French Guiana is an overseas territory that borders Brazil.
B. In a perfect free-fall, the two pieces of metals should move in opposite way.
C. The purpose of the space expedition is to test the basis for our modern understanding of gravity.
D. Titanium and platinum-rhodium alloy will be tested by the scientists on how they behave in orbit.

Identifying the main idea and supporting details

9. Based on the article, which idea will contradict the theory of relativity of Albert Einstein once the experiment is made? 9. ____
- A. The 'Microscope' orbiter will try to poke a hole in Einstein's theory.
 - B. The two objects move differently in a perfect free-fall during an experiment.
 - C. The two metallic objects behave in exactly the same way in a perfect free-fall.
 - D. Scientists will use the kit to measure how two different pieces of metals behave in orbit.
10. Which of the following is the main idea of the selection? 10. ____
- A. The space expedition will test our modern understanding of physics.
 - B. It is possible to study the relative motion of two bodies in perfect free-fall.
 - C. Albert Einstein's Theory of Relativity will be put to test in a space mission.
 - D. Several space missions have been conducted to test Einstein's famous theory.

******End of the Reading Comprehension Test. Thank you very much******

APPENDIX J

INSTRUMENT 2 (PRINT TEXT FORM)

NAME: _____

AGE: _____

GR/SEC.: _____

STRAND: _____

I. INTEREST TO THE TOPIC

DIRECTIONS: The selection that you are about to read is titled “**New phase of globalization could worsen CO2 pollution**” an article on the possible effects of CO2 pollution as a result of modern globalization. **How interested are you to this topic?** Put a **CHECK MARK (✓)** on the column that corresponds to your answer.

Very Much Interested	Interested	Not Interested	Not Very Much Interested

II. CONTENT KNOWLEDGE

DIRECTIONS: **How well do you know the content of the selection?** The statements below are taken from the selection you are about to read. Based on your knowledge, check the appropriate column and tell whether:

4 - you know the given statement.

3 - you guess you know the given statement.

2 - you guess you do not know the given statement.

1 - you really do not know the given statement.

STATEMENTS	4	3	2	1
1. Countries such as Vietnam and Indonesia manufacture textiles, apparel, and basic electronics.				
2. Global warming has been caused mainly by burning oil, gas and especially carbon-rich coal.				
3. The 196-nation Paris climate treaty will take effect in 2020.				
4. Global temperatures have risen a full degree Celsius since the mid-19 th century.				
5. China is increasingly investing in coal-fired power plants abroad.				

III. SELECTION 2: Environment

DIRECTION: Read the selection carefully.

New phase of globalization could worsen CO2 pollution – study

*As Asia's giants move up the globalization food chain, many of the industries that helped **propel** their phenomenal growth are moving to Vietnam, Indonesia and other nations investing heavily in a coal-powered future EMISSIONS. Since the start of the Industrial Revolution, global warming has been caused mainly by burning oil, gas and especially carbon-rich coal.*

PARIS, France – The shift of low-value, energy-hungry manufacturing from China and India to coal-powered economies with even lower wages could be bad news for the fight against climate change, researchers cautioned Monday, May 14.

As Asia's giants move up the globalization food chain, many of the industries that helped propel their phenomenal growth – textiles, apparel, basic electronics – are moving to Vietnam, Indonesia and other nations investing heavily in a coal-powered future.

Since the start of the Industrial Revolution, global warming has been caused mainly by burning oil, gas and especially carbon-rich coal.

"This trend may seriously undermine international efforts to reduce global greenhouse gas emissions," said Dabo Guan, a professor of climate change economics at the University of East Anglia in Britain and co-author of a study in Nature Communications.

"The carbon intensity of the next phase of global economic development will determine whether ambitious climate targets such as stabilizing at two degrees Celsius (3.6 degrees Fahrenheit) will be met," he told Agence France-Presse.

The 196-nation Paris climate treaty, which goes into effect in 2020, calls for capping global warming at "well under" 2 C, and 1.5 C if possible.

Global temperatures have already risen a full degree Celsius since the mid-19th century, enough to disrupt weather patterns and boost deadly storms, droughts and floods.

Scientists have roughly calculated the amount of fossil fuels humanity can burn without exceeding those limits. On current trends, this "carbon budget" will be used up in a matter of decades and Earth will likely hot up another two or 3 degrees by century's end.

The study, led by Jing Meng at the University of Cambridge, details a "new phase of globalization" in which trade between developing countries expanded 3 times faster from 2005 to 2015 than international trade as a whole, which grew by 50%.

Coal still booming

In 2014, this so-called "South-South" trade stood at \$9.3 trillion (7.8 trillion euros).

This rapid growth "reflects a fragmenting of global supply chains," Guan said.

"The early-production stages of many industries have relocated from China and India to lower-wage economies, a trend that has accelerated since the global financial crisis of 2008."

...continuation

The ability to reign in global warming, he warned, may depend on curbing the growth in coal-based energy in countries poised to take off by filling this link in the supply chain.

"The future of climate change mitigation is, to an important degree, in the hands of South-South cooperation," he said by phone.

The point is driven home by a second study showing that the planned expansion of coal-fired energy in Turkey, Indonesia, Vietnam and other 2nd-generation emerging economies could wipe out efforts in China and India to slow coal consumption.

Beijing and New Delhi have each cancelled more than 50% of planned coal-fired power plants, yet global coal investment continues to soar.

New coal-fired power in Turkey and Vietnam, for example, would see their CO2 emissions from coal increase 4 and ten fold, respectively, from 2012 to 2030, according to the study, published in Environmental Research Letters.

Money earmarked for coal development in Egypt has increased eightfold since 2016, while it has nearly doubled in Pakistan.

"Although the costs of renewables have recently fallen, they still can't compete with cheap coal in many parts of the world," said co-author Jan Steckel, a researcher at the Mercator Research Institute on Global Commons and Climate Change in Berlin.

*The study also notes that China is increasingly investing in coal-fired power plants abroad. – **Rappler.com***

Source:

<https://www.rappler.com/science-nature/environment/202561-new-phase-globalization-worsen-co2-pollution>

New phase of globalization could worsen CO2 pollution – study

As Asia's giants move up the globalization food chain, many of the industries that helped propel their phenomenal growth are moving to Vietnam, Indonesia and other nations investing heavily in a coal-powered future

Agence France-Presse
@afp

Published 2:29 PM, May 15, 2018
Updated 2:29 PM, May 15, 2018



EMISSIONS. Since the start of the Industrial Revolution, global warming has been caused mainly by burning oil, gas and especially carbon-rich coal. Image from Shutterstock.

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"This trend may seriously undermine international efforts to reduce global **greenhouse gas emissions**," said Dabo Guan, a professor of climate change economics at the University of East Anglia in Britain and co-author of a study in Nature Communications.

"The **carbon intensity** of the next phase of global economic development will determine whether ambitious climate targets such as stabilizing at two degrees Celsius (3.6 degrees Fahrenheit) will be met," he told Agence France-Presse.

The 196-nation Paris climate treaty, which goes into effect in 2020, calls for capping global warming at "well under" 2 C, and 1.5 C if possible.

Global temperatures have already risen a full degree Celsius since the mid-19th century, enough to disrupt weather patterns and boost deadly storms, droughts and floods.

Other Stories

Small ponds have outsized impact on global warming – study

Scientists in Britain find that small natural ponds gradually lose the capacity to soak up one kind of greenhouse gas and give off even more of another.

Scientists debunk global warming 'pause'

A reported pause in global warming between 1998 and 2014 was false, according to US-British research confirming the findings of a controversial US study on ocean warming

Global warming: Earth in 'uncharted territory'

'This represents an important marker as the world continues to warm due to human influence,' the Met Office says

Scientists have roughly calculated the amount of fossil fuels humanity can burn without exceeding those limits. On current trends, this "carbon budget" will be used up in a matter of decades and Earth will likely hot up another two or 3 degrees by century's end.

The study, led by Jing Meng at the University of Cambridge, details a "new phase of globalization" in which trade between developing countries expanded 3 times faster from 2005 to 2015 than international trade as a whole, which grew by 50%.

Coal still booming

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This rapid growth "reflects a fragmenting of global supply chains," Guan said.

"The early-production stages of many industries have relocated from China and India to lower-wage economies, a trend that has accelerated since the global financial crisis of 2008."

The ability to reign in global warming, he warned, may depend on curbing the growth in coal-based energy in countries poised to take off by filling this link in the supply chain.

"The future of climate change mitigation is, to an important degree, in the hands of South-South cooperation," he said by phone.

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Beijing and New Delhi have each cancelled more than 50% of planned coal-fired power plants, yet global coal investment continues to soar.

New coal-fired power in Turkey and Vietnam, for example, would see their CO2 emissions from coal increase 4 and ten fold, respectively, from 2012 to 2030, according to the study, published in Environmental Research Letters.

Money earmarked for coal development in Egypt has increased eightfold since 2016, while it has nearly doubled in Pakistan.

"Although the costs of renewables have recently fallen, they still can't compete with cheap coal in many parts of the world," said co-author Jan Steckel, a researcher at the Mercator Research Institute on Global Commons and Climate Change in Berlin.

The study also notes that China is increasingly investing in coal-fired power plants abroad. – **Rappler.com**

Source: <https://www.rappler.com/science-nature/environment/202561-new-phase-globalization-worsen-co2->

IV. READING COMPREHENSION TEST

DIRECTIONS: Choose the letter of the correct answer and write it in the blank.

Identifying the synonym of the given word

1. In the third paragraph of the article, which word is the synonym of the word **propel**? 1. ____
A. Control B. Drive C. Regulate D. Sustain

Identifying the meaning of unfamiliar words through context clues

2. In the first paragraph of the article, which of the following is the meaning of the word **emissions**? 2. ____
A. Automobile B. Industry C. Production D. Revolution

Noting significant details

3. What countries in Asia are referred to as Asia's giants in the article? 3. ____
A. Japan and Turkey C. Indonesia and Vietnam
B. Indonesia and China D. China and India
4. Based on the article, how many degree Celsius is enough to disrupt weather patterns? 4. ____
A. 0.5 degree Celsius C. 1.5 degree Celsius
B. 1 degree Celsius D. 2 degrees Celsius

Identifying the author's purpose and intended audience

5. What is the purpose of the author in this article? 5. ____
A. To entertain B. To inform C. To narrate D. To persuade
6. Who are the intended readers of this article? 6. ____
A. Businessmen C. The government officials
B. Environmentalists D. All of the above

Identifying the author's tone or point of view

7. What is the tone of the writer in this article? 7. ____
A. Alarmed B. Hopeful C. Positive D. Reflective

Identifying facts, opinions, and incorrect information

8. Which of the following is an opinion based on the article? 8. ____
A. Paris Climate Treaty will take effect in year 2020.
B. China is investing in coal-fired power plants abroad.
C. 2nd-generation emerging economies slow coal consumption.
D. The new phase of globalization could increase global temperature.

Identifying the main idea and supporting details

9. Based on the article, which of the following details does not support the idea that coal is still booming especially in 2nd-generation emerging economies? 9. ____
A. Pakistan has nearly doubled its coal development.
B. Coal development in Egypt has increased eightfold since 2016.
C. Beijing has cancelled more than 50% of planned coal-fired power plants.

D. There are plans to expand coal-fired energy by 2nd-generation emerging economies.

10. Which of the following is the main idea of the selection?

10. ____

- A. Use of coal is still growing among 2nd-emerging economies.
- B. The world agreed to reduce global greenhouse gas emissions.
- C. The new period of globalization could aggravate global CO₂ pollution.
- D. Increase in global temperature to at least a degree Celsius disrupts weather patterns.

******End of the Reading Comprehension Test. Thank you very much******

APPENDIX K

INSTRUMENT 3 (PRINT TEXT FORM)

NAME: _____ AGE: _____
 GR/SEC.: _____ STRAND: _____

I. INTEREST TO THE TOPIC

DIRECTIONS: The selection that you are about to read is titled “**Repeating radio waves from deep space baffle scientists**” an article about ‘repeating’ radio waves from space in which source puzzles scientists. **How interested are you to this topic?** Put a **CHECK MARK (✓)** on the column that corresponds to your answer.

Very Much Interested	Interested	Not Interested	Not Very Much Interested

II. CONTENT KNOWLEDGE

DIRECTIONS: **How well do you know the content of the selection?** The statements below are taken from the selection you are about to read. Based on your knowledge, check the appropriate column and tell whether:

- 4 - you know the given statement.
- 3 - you guess you know the given statement.
- 2 - you do not know the given statement.
- 1 - you really do not know the given statement.

STATEMENTS	4	3	2	1
1. The world’s most powerful radio telescope is known by its acronym CHIME.				
2. CHIME is a powerful radio telescope that is spread an area as big as a football pitch.				
3. There are around 50 scientists from five institutions involved in the research on radio waves outside the galaxy.				
4. British Columbia is the place where CHIME is located.				
5. CHIME is composed of 4, 100-meter long half-pipe cylinders of metal.				

III. SELECTION 3: Space

DIRECTION: Read selection carefully.

'Repeating' radio waves from deep space baffle scientists

PARIS, France – Astronomers in Canada have detected a mysterious volley of radio waves from far outside our galaxy, according to two studies published Wednesday, January 9, in Nature.

What corner of the universe these powerful waves come from and the forces that produced them remain unknown.

The so-called repeating fast radio bursts were identified during the trial run last summer of a built-for-purpose telescope running at only a fraction of its capacity.

Known by its acronym CHIME, the world's most powerful radio telescope – spread across an area as big as a football pitch – is poised to detect many more of the enigmatic pulses now that it is fully operational.

"At the end of the year, we may have found 1,000 bursts," said Deborah Good, a PhD student at the University of British Columbia and one of 50 scientists from 5 institutions involved in the research.

Fast radio bursts (FRBs) flash only for a micro-instant, but can emit as much energy as the Sun does in 10,000 years.

Exactly what causes these high-energy surges of long waves at the far end of the electromagnetic spectrum remains the subject of intense debate.

More than 60 bursts have been catalogued since 2007, but only one other – observed in 2012 at the Arecibo Observatory in Puerto Rico – was a repeater.

"FRBs, it seems, are likely generated in dense, turbulent regions of host galaxies," Shriharsh Tendulkar, a corresponding author for both studies and an astronomer at McGill University, told Agence France-Presse.

Cosmic convulsions created by the turbulent gas clouds that give rise to stars, or stellar explosions such a supernovae, are both possible incubators.

But consecutive radio bursts are a special case.

No little green men

"The fact that the bursts are repeated rules out any cataclysmic models in which the source is destroyed while generating the burst," Tendulkar added.

"An FRB emitted from a merger of two neutron stars, or a neutron star and a black hole, for example, cannot repeat."

It is not yet clear whether the breeding grounds of repeating bursts are different from those that produce only a single radio pulse.

...continuation

Significantly, the 2012 and 2018 "repeaters" have strikingly similar properties.

CHIME – Canadian Hydrogen Intensity Mapping Experiment – also spotted a dozen single burst radio waves, but with an unusual profile.

Most FRBs spotted so far have wavelengths of a few centimeters, but these had intervals of nearly a meter, opening up a whole new line of inquiry for astronomers.

Could these enigmatic radio pulses point to intelligence elsewhere in the Universe? Might they be messages in a bottle?

"It is extremely, extremely unlikely," said Tendulkar.

"As a scientist I can't rule it out 100%. But intelligent life is not on the minds of any astronomer as a source of these FRBs."

Constructed in British Columbia, CHIME is composed of 4, 100-meter long half-pipe cylinders of metal mesh which reconstruct images of the sky by processing the radio signals recorded by more than a thousand antennas.

"This signal processing system is the largest of any telescope on Earth," the researchers said in a communique.

*The other institutions with leading roles are the University of Toronto, the National Research Council of Canada, and the Perimeter Institute. – **Rappler.com***

Source:

<https://www.rappler.com/science-nature/earth-space/220664-repeating-radio-waves-deep-space-baffle-scientists>

'Repeating' radio waves from deep space baffle scientists

https://www.rappler.com/science-nature/earth-space/220664-repeating-radio-waves-deep-space-baffle-scientists

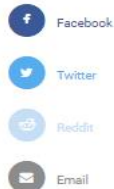
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'Repeating' radio waves from deep space baffle scientists

What corner of the universe these powerful waves come from and the forces that produced them remain unknown

Agence France-Presse
@afp

Published 10:45 AM, January 10, 2019
Updated 10:45 AM, January 10, 2019



RADIO WAVES. CHIME, the world's most powerful radio telescope is poised to detect many more of the enigmatic pulses now that it is fully operational. CHIME file photo from Wikipedia

PARIS, France – Astronomers in Canada have detected a mysterious volley of radio waves from **far outside our galaxy**, according to two studies published Wednesday, January 9, in *Nature*.

What corner of the universe these powerful waves come from and the forces that produced them remain unknown.

The so-called repeating fast radio bursts were identified during the trial run last summer of a built-for-purpose telescope running at only a fraction of its capacity.

Known by its acronym CHIME, the world's most powerful radio telescope – spread across an area as big as a football pitch – is poised to detect many more of the enigmatic pulses now that it is fully operational.

"At the end of the year, we may have found 1,000 bursts," said Deborah Good, a PhD student at the University of British Columbia and one of 50 scientists from 5 institutions involved in the research.

Fast radio bursts (FRBs) flash only for a micro-instant, but can emit as much energy as the Sun does in 10,000 years.

Exactly what causes these high-energy surges of long waves at the far end of the electromagnetic spectrum remains the subject of intense debate.

More than 60 bursts have been catalogued since 2007, but only one other – observed in 2012 at the Arecibo Observatory in Puerto Rico – was a repeater.

Other Stories

Radio flash came from galaxy 6B light-years away – study

The team says their breakthrough also sheds light on another long-standing science question – that of the 'missing matter'

Radio drama actor Augusto Victoria dies

The actor also appeared in 'Gulong ng Palad'

World's largest radio telescope starts operating in China

(3rd UPDATE) The Aperture Spherical Radio Telescope will explore space and search for signs of intelligent life

"FRBs, it seems, are likely generated in dense, turbulent regions of host galaxies," Shriharsh Tendulkar, a corresponding author for both studies and an astronomer at McGill University, told Agence France-Presse.

Cosmic convulsions created by the turbulent gas clouds that give rise to stars, or stellar explosions such as supernovae, are both possible incubators.

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"An FRB emitted from a merger of two neutron stars, or a neutron star and a black hole, for example, cannot repeat."

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"This signal processing system is the largest of any telescope on Earth," the researchers said in a communique.

The other institutions with leading roles are the University of Toronto, the National Research Council of Canada, and the Perimeter Institute. – **Rappler.com**

Source: <https://www.rappler.com/science-nature/earth-space/220664-repeating-radio-waves-deep-space-baffle-scientists>

IV. READING COMPREHENSION TEST

DIRECTIONS: Choose the letter of the correct answer and write it in the blank.

Identifying the synonym of the given word

1. As used in the title of the article, which word is the synonym of the word **baffle**? 1. ____
A. Amaze B. Enlighten C. Excite D. Puzzle

Identifying the meaning of unfamiliar word through context clues

2. Based on the 5th paragraph of the article, which of the following is the meaning of the word **enigmatic**? 2. ____
A. Automatic or spontaneous C. Preposterous or unbelievable
B. Enlightening or educational D. Difficult to interpret or understand

Noting significant details

3. What baffles the scientists about the ‘repeating’ radio waves? 3. ____
A. The specific wavelengths of the ‘repeating’ radio waves
B. The most frequent time to detect the ‘repeating’ radio waves
C. The forces that produce the ‘repeating’ radio waves from the space
D. The most effective radio telescope to use to find out the source of radio waves
4. What is the meaning of the acronym **CHIME**, which is the name of the world’s most powerful radio telescope? 4. ____
A. Chicago Hydrogen Intensity Mapping Experiment
B. Canadian Hydrogen Intensity Mapping Experiment
C. Chicago Hydrogen Intensity Measuring Experiment
D. Canadian Hydrogen Intensity Measuring Experiment

Identifying the author’s purpose and intended audience

5. What is the purpose of the author in this article? 5. ____
A. To entertain B. To inform C. To narrate D. To persuade
6. Who are the most intended readers of this article? 6. ____
A. The Science teachers C. The government officials
B. The general public D. The scientists

Identifying the author’s tone or point of view

7. What is the tone of the writer in this article? 7. ____
A. Docile B. Informative C. Uneasy D. Worried

Identifying facts, opinions, and incorrect information

8. All the following statements are true based on the article, except: 8. ____
A. CHIME was constructed in Paris, France.
B. There are 50 scientists who are involved in the research.
C. The source of the ‘repeating’ radio waves remains unknown.
D. The most powerful radio telescope is called by the acronym CHIME.

Identifying the main idea and supporting details

9. Based on the article, which of the following details does not support the idea about CHIME being the most powerful radio telescope? 9. ____
- A. CHIME has the largest signal processing system.
 - B. It was constructed in Paris, the capital city of France.
 - C. In terms of size, it spreads across an area as big as a football pitch.
 - D. It is composed of 4, 100-meter long half-pipe cylinders of metal mesh.
10. Which of the following is the main idea of the selection? 10. ____
- A. CHIME is the most powerful radio telescope in the world.
 - B. The 'repeating' radio waves from deep space puzzle scientists.
 - C. Canadian scientists initiated the study on the mysterious radio waves.
 - D. Astronomers in Canada have detected mysterious volley of radio waves.

******End of the Reading Comprehension Test. Thank you very much******

APPENDIX L

INSTRUMENT 4 (PRINT TEXT FORM)

NAME: _____

AGE: _____

GR/SEC.: _____

STRAND: _____

I. INTEREST TO THE TOPIC

DIRECTIONS: The selection that you are about to read is titled “**Wind turbines contribute to climate change**” an article about the contribution of wind turbines in climate change. **How interested are you to this topic?** Put a **CHECK MARK (✓)** on the column that corresponds to your answer.

Very Much Interested	Interested	Not Interested	Not Very Much Interested

II. CONTENT KNOWLEDGE

DIRECTIONS: **How well do you know the content of the selection?** The statements below are taken from the selection you are about to read. Based on your knowledge, check the appropriate column and tell whether:

4 - you know the given statement.

3 - you guess you know the given statement.

2 - you do not know the given statement.

1 - you really do not know the given statement.

STATEMENTS	4	3	2	1
1. Wind turbines are designed as an alternative to fossil fuels.				
2. The average global temperature has increased by approximately one degree.				
3. Paris Climate Accord calls upon countries to limit temperature increases to between 1.5C to 2C to avoid serious environmental consequences.				
4. The direct climate impacts of wind power are instant, while the benefits accumulate slowly.				
5. Wind power actually has more climate impact than coal or gas in the next 10 years.				

III. SELECTION 3: Climate Change

DIRECTION: Read selection carefully.

Wind turbines contribute to climate change – study

'Wind beats coal by any environmental measure, but that doesn't mean that its impacts are negligible,' says a senior author of the study.

WASHINGTON DC, USA – Wind turbines, designed as an alternative to fossil fuels, still contribute to climate change due to the way they redistribute heat and moisture in the atmosphere, according to a study published Thursday, October 4.

Researchers from Harvard University found that powering the entire United States with wind energy would cause a 0.54 degree Celsius ground temperature rise in the area where the turbines were located, and a 0.24C increase across the continental United States.

*"Wind beats coal by any environmental **measure**, but that doesn't mean that its impacts are negligible," said David Keith, an engineering and public policy professor and senior author of the study, published in Joule.*

By comparison, the average global temperature has risen by approximately one degree since the end of the 19th century.

The Paris climate accord, meanwhile, calls upon countries to limit temperature increases to between 1.5C to 2C to avoid serious environmental consequences.

Previous studies have also examined the impact of wind turbines on climate change. One recent study, published in the journal Science, concluded that covering an area of the Sahara desert with wind turbines would affect local temperature, rainfall, and in turn, vegetation.

The Harvard researchers said that installing solar panels would have an impact around 10 times smaller than wind turbines for the same energy generation rate.

"The direct climate impacts of wind power are instant, while the benefits accumulate slowly," Keith said.

*"If your perspective is the next 10 years, wind power actually has – in some respects – more climate impact than coal or gas. If your perspective is the next thousand years, then wind power is enormously cleaner than coal or gas." – **Rappler.com***

Wind turbines contribute to climate change

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<https://www.rappler.com/science-nature/environment/213597-study-wind-turbines-contribute-climate-change>

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Wind turbines contribute to climate change – study

'Wind beats coal by any environmental measure, but that doesn't mean that its impacts are negligible,' says a senior author of the study

Agence France-Presse

@afp

Published 3:46 PM, October 05, 2018

Updated 3:46 PM, October 05, 2018

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WASHINGTON DC, USA – **Wind turbines**, designed as an alternative to fossil fuels, still contribute to climate change due to the way they redistribute heat and moisture in the atmosphere, according to a study published Thursday, October 4.

Researchers from Harvard University found that powering the entire United States with wind energy would cause a 0.54 degree Celsius ground temperature rise in the area **where the turbines** were located, and a 0.24C increase across the continental United States.

"Wind beats coal by any environmental measure, but that doesn't mean that its impacts are negligible," said David Keith, an engineering and public policy professor and senior author of the study, published in *Joule*.

By comparison, the average global temperature has risen by approximately one degree since the end of the 19th century.

The Paris climate accord, meanwhile, calls upon countries to limit temperature increases to between 1.5C to 2C to avoid serious environmental consequences.

Previous studies have also examined the impact of wind turbines on climate change. One recent study, published in the journal *Science*, concluded that covering an area of the Sahara desert with wind turbines would affect local temperature, rainfall, and in turn, vegetation.

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Wind turbine image from Shutterstock

Source: <https://www.rappler.com/science-nature/environment/213597-study-wind-turbines-contribute-climate-change>

IV. READING COMPREHENSION TEST

DIRECTIONS: Choose the letter of the correct answer and write it in the blank.

Identifying words with multiple meanings

1. Which of the following is the appropriate meaning of the word **measure** as used in the fourth paragraph of the article? 1. ____
- A. A plan or course of action taken to achieve a particular purpose
 - B. To estimate or assess the extent, quality, value, or effect of something
 - C. A standard unit used to express the size, amount, or degree of something
 - D. To ascertain the amount, size, or degree through an instrument or device

Identifying the synonym of the given word

2. In the 6th paragraph of the article, which of the following is the synonym of the word **accord**? 2. ____
- A. Antagonism B. Award C. Grant D. Treaty

Noting significant details

3. To which natural resource below do wind turbines design as alternative based on the article? 3. ____
- A. Fossil Fuels B. Natural Gas C. Oils D. Phosphorus
4. How much increase in ground temperature across the continental US if wind turbines are used to power the said country? 4. ____
- A. 0.24C B. 0.54 C. 1.5C D. 2C

Identifying the author's purpose and intended audience

5. What is the purpose of the author in this article? 5. ____
- A. To entertain B. To inform C. To narrate D. To persuade
6. Who are the most intended readers of this article? 6. ____
- A. The Science teachers C. The government officials
B. The general public D. The businessmen

Identifying the author's tone or point of view

7. What is the tone of the writer in this article? 7. ____
- A. Excited B. Informative C. Joyful D. Zealous

Identifying facts, opinions, and incorrect information

8. Which of the following statements is NOT true based on the article? 8. ____
- A. Wind power has more climate impact than coal or gas in the next 10 years.
 - B. Wind turbines are designed as alternative to fossil fuels as source of power.
 - C. Installation of solar panels have 10 times smaller impact than wind turbines.
 - D. A 0.54C ground temperature increase across the US will happen if the entire country will be powered with wind energy.

Identifying the main idea and supporting details

9. Which of the following statements supports the idea that wind turbines contribute to climate change? 9. ____
- A. Wind power is enormously cleaner than coal or gas.
 - B. Wind turbines are used in the entire United States as main source of power.
 - C. The average global temperature has risen by approximately one degree since the end of the 19th century.
 - D. Redistribution of heat and moisture in the atmosphere from wind turbines adds to climate change.
10. Which of the following is the main idea of the selection? 10. ____
- A. Wind turbines share to climate change.
 - B. The impact of wind energy is not negligible.
 - C. Wind turbines have more impacts than coal or gas.
 - D. Heat and moisture from the wind turbines contribute to climate change.

******End of the Reading Comprehension Test. Thank you very much******

APPENDIX M

LETTER TO THE SCHOOL HEAD

06 March 2019

Dr. Apolonia P. Reynoso

Principal, Senior High School

Coordinator, General Education

San Juan De Dios Educational Foundation, Inc.

2772-2774 Roxas Boulevard, Pasay City 1300 Philippines

Dear **Dr. Reynoso**:

Greetings of Peace of Christ!

I hope this letter finds you well despite the hectic schedule you have as Principal of Senior High School and Coordinator of General Education in your school.

This letter has reference to my research study as part of my requirements for the degree Master of Arts in Education with specialization in English Language Teaching (MAEd-ELT) at Philippine Normal University, Manila. The approved title of my research paper is “**Print Text and Hypertexts: Reading Comprehension Performance of ESL Learners**”.

The study aims primarily to determine whether or not there is a difference on the comprehension performance of readers using two (2) different reading modalities: Print Text and Hypertext. The results of this study will provide your school with information on the reading performance and level of your Grade 12 students and on the effects of the use of digital text to the reading comprehension performance of SrHS students.

In view of the above, I would like to humbly request your approval for me to be allowed to conduct this research study to the target participants who are at least sixty (60) Grade 12 STEM students or at least two (2) equal groups of Grade 12 STEM students composed of at least thirty (30) students per group. It shall be administered (1.) in a regular classroom for the print text; and the other (2.) in a computer laboratory for the hypertext in five consecutive (5) days for 20 to 30 minutes per day. Rest assured that the data and information which will be gathered from this study will be treated with utmost confidentiality and that the undersigned will provide the school with the results of the study for your use. Also, the parents of the participants will be notified and their approval relative to the participation of their children will be assured.

In anticipation of your kind and positive response, I remain.

Yours sincerely,

Lord Celeste E. Balo

#0917-678-9227

lordcelestebalo07@gmail.com

Noted:

Dr. Merry Ruth M. Gutierrez

Thesis Adviser

APPENDIX N

LETTER TO THE PARENTS OF THE PARTICIPANTS

Dear Parent/Guardian,

Greetings of Peace of Christ!

This letter has reference to my research study as part of my requirements for the degree Master of Arts in Education with specialization in English Language Teaching (MAEd-ELT) at Philippine Normal University, Manila. The approved title of the research paper is “**Print Text and Hypertexts: Reading Comprehension Performance of ESL Learners**”.

The study aims primarily to determine whether or not there is a difference on the comprehension level of readers using two (2) different reading modalities: Print Text and Hypertext. The results of this study will provide the school with information on the effect of the use of e-books in the Senior High School unit of the school to the users. It will likewise provide information to the academic unit of the school in terms of the reading comprehension performance and level of our Grade 12 students.

In view of the above, I would like to humbly request your approval to allow me to include your son/daughter as one of the participants for this study. Rest assured that the data and information which will be gathered from this study will be treated with utmost confidentiality and that I will provide the school with the results of the study for the improvement of its SrHS program. Attached to this letter is the Parental Consent form.

In anticipation of your kind and prompt response, I remain.

Yours sincerely,

Mr. Lord Celeste E. Balo

#0917-678-9227

lordcelestebalo07@gmail.com

Noted:

Merry Ruth M. Gutierrez, Ph.D.

Thesis Adviser

APPENDIX O

Parental Permission for Children Participation in Research

Title : “Print Text and Hypertext: Reading Comprehension Performance of ESL Learners”

Researcher: Lord Celeste E. Balo

Introduction

The purpose of this form is to provide you (as the parent of a prospective research study participant) information that may affect your decision as to whether or not to let your child participate in this research study. The person conducting the research will describe the study to you and answer all your questions. Read the information below and ask any questions you might have before deciding whether or not to give your permission for your child to take part in the study. If you decide to let your child be involved in this study, this form will be used to record your permission.

Purpose of the Study

If you agree, your child will be asked to participate in a research study about reading Print Text and Hypertexts and the effect on the comprehension level of readers. The purpose of this study is to determine the effects of print and electronic reading materials on the reading comprehension performance and level of Grade 12 students in reading academic texts.

What is my child going to be asked to do?

If you allow your child to participate in this study, he/she will be asked to answer a survey questionnaire on their reading interests and content knowledge of reading selections, read reading selections, answer sets of 10-item comprehension tests about the selections he/she has read, and answer a question in written form on his/her experiences in reading print and electronic reading texts. This study will take five (5) consecutive days to be completed and there will be forty (60) other students who will participate in this study.

What are the risks involved in this study?

There are no foreseeable risks to participating in this study. The procedures used in this study may involve risks that are currently unforeseeable.

What are the possible benefits of this study?

Your child will receive no direct benefit from participating in this study, except that he/she will be able to know his reading comprehension performance and level based on Philippine Informal Reading Inventory.

Does my child have to participate?

No, your child's participation in this study is voluntary. Your child may decline to participate or to withdraw from participation at any time. Withdrawal or refusing to participate will not affect their relationship with St. Andrew' School in anyway. You can agree to allow your child to be in the study now and change your mind later without any penalty.

This research study will take place during regular classroom hours, particularly during their Research or English class periods.

What if my child does not want to participate?

In addition to your permission, your child must agree to participate in the study. If your child does not want to participate they will not be included in the study and there will be no penalty. If your child initially agrees to be in the study, they can change their mind later without any penalty.

Will there be any incentives for participation?

Neither you nor your child will receive any type of incentive for participating in this study.

How will your child's privacy and confidentiality be protected if s/he participates in this research study?

Your child's privacy and the confidentiality of his/her data will be protected in this study. The researcher will provide and maintain a locked-casing of hard copies which are password-protected. Moreover, electronically produced data will be secured in a software that is also password-protected. Meanwhile, participants have the right to access their own results when they request.

Whom to contact with questions about the study?

Prior, during or after your participation you can contact the researcher **Lord Celeste E. Balo** at #826-2129 or #0917-678-9227 or send an email to lordcelestebalo07@gmail.com for any questions or if you feel that you or your child has been harmed. This study has been reviewed and approved by The Graduate Research Office of Philippine Normal University.

Whom to contact with questions concerning your rights as a research participant?

For questions about your rights or any dissatisfaction with any part of this study, you can contact, anonymously if you wish, the PNU Graduate Research Office (GResO), at 317-17-68 local 539.

Signature

You are making a decision about allowing your child to participate in this study. Your signature below indicates that you are 18 years or older and have read the information provided above and have decided to allow them to participate in the study. If you later decide that you wish to withdraw your permission for your child to participate in the study you may discontinue his or her participation at any time. You will be given a copy of this document.

Printed Name of Child

Printed Name of Parent(s) or Legal Guardian

Signature of Parent(s) or Legal Guardian

Date

Signature of Researcher

Date

APPENDIX P

LETTER TO THE PARTICIPANTS OF THE STUDY

Dear Grade 12 Student,

Greetings of Peace of Christ!

The undersigned is presently writing his thesis entitled “**Print Text and Hypertexts: Reading Comprehension Performance of ESL Learners**”.

The study aims primarily to determine whether or not there is a difference on the reading comprehension performance and level of readers using two (2) different reading modalities: Print Text and Hypertext. The results of this study will provide the school with information on the effect of the use of e-books in the Senior High School unit of the school to the users. It will likewise provide information to the academic unit of the school in terms of the reading comprehension performance and level of Grade 12 students.

In view of the above, I would like to invite you to be one of the participants of this study. Your participation in this study is voluntary and has no grade equivalent, additional grade, or any financial return on your part or to your relatives. Rest assured also that the data and information which will be gathered from this study will be treated with utmost confidentiality. The researcher will also provide and maintain a locked-casing of hard copies which is password-protected, and electronically produced data will also be secured in a software that is also password-protected. However, you have the right to access your own results should you wish to request. If you later wish to withdraw your participation in the study, you will be allowed to discontinue at any time without any penalty. Attached to this letter is an informed consent to participate in a research study.

In anticipation of your kind and favorable response, I remain.

Yours sincerely,

Mr. Lord Celeste E. Balo

#0917-678-9227

lordcelestebalo07@gmail.com

Noted:

Merry Ruth M. Gutierrez, Ph.D.

Thesis Adviser

APPENDIX Q

Consent to Participation in a Research Study

Title : “Print Text and Hypertext: Reading Comprehension Performance of ESL Learners”

Researcher: Lord Celeste E. Balo

Introduction

The purpose of this form is to provide you information that may affect your decision as to whether or not to participate in this research study. The person conducting the research will describe the study to you and answer all your questions. Read the information below and ask any questions you might have before deciding whether or not to give your permission to take part in the study. If you decide to be involved in this study, this form will be used to record your permission.

Purpose of the Study

If you agree, you will be asked to participate in a research study about reading Print Text and Hypertexts and the effects on the comprehension level of readers. The purpose of this study is to determine the effects of print and electronic reading materials on the reading comprehension performance and level of Grade 12 students in reading academic texts.

Description of the Study Procedures

If you decide to participate in this study, you will be asked to answer a survey questionnaire on reading interests and content knowledge of reading selections, read reading selections, answer sets of 10-item comprehension tests about the selections you have read, and answer a question in written form on your experiences in reading print and electronic reading texts. This study will take five (5) consecutive days to be completed and there will be sixty (60) other students who will participate in this study.

Risks/Discomforts of Being in this Study

There are no foreseeable risks to participating in this study. The procedures used in this study may involve risks that are currently unforeseeable.

Benefits of Being in the Study

You will receive no direct benefit from participating in this study, except that you will be able to know your reading performance and level based on Philippine Informal Reading Inventory should you wish to request for the results.

Confidentiality

To ensure privacy and confidentiality, all data that will be gathered in this study will be protected. The researcher will provide and maintain a locked-casing of hard copies which is password-protected. Moreover, electronically produced data will be secured in a software that is also password-protected. Meanwhile, you have the right to access your own results when you request.

Voluntary Participation

Your participation in this study is voluntary. You may decline to participate or to withdraw from participation at any time. Withdrawal or refusing to participate will not affect their relationship with the researcher in anyway. You can agree to allow your child to be in the study now and change your mind later without any penalty.

This research study will take place during regular classroom hours, particularly during their Research or English class periods.

Incentives for Participation

Participation in this study shall have no grade equivalent, additional grade or financial return to your or to your relatives.

Right to Ask Questions and Report Concerns

Prior, during or after your participation you can contact the researcher **Lord Celeste E. Balo** at #826-2129 or #0917-678-9227 or send an email to lordcelestebalo07@gmail.com for any questions or if you feel that you have been harmed. This study has been reviewed and approved by The Graduate Research Office of Philippine Normal University.

For questions about your rights or any dissatisfaction with any part of this study, you can contact, anonymously if you wish, the PNU Graduate Research Office (GResO), at 317-17-68 local 539.

Consent

Your signature below indicates that you have decided to volunteer as a research participant for this study, and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep, along with any other printed materials deemed necessary by the study researcher.

Subject's Name : _____

Subject's Signature : _____ Date: _____

Researcher's Signature: _____ Date: _____

APPENDIX R

STATISTICAL DATA FOR SELECTION 1

Topic: Einstein's Theory of Relativity Faces Satellite Test

Group Statistics

	Text Type	N	Mean	Std. Deviation	Std. Error Mean
Reading Comprehension	Print text	32	7.8125	1.25563	.22197
	Hypertext	32	7.2500	1.45912	.25794

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
ReadCompre Equal variances assumed	1.766	.189	1.653	62	.103	.56250	.34030	-.11774	1.24274
Equal variances not assumed			1.653	60.652	.104	.56250	.34030	-.11804	1.24304

APPENDIX S

STATISTICAL DATA FOR SELECTION 2

Topic: New Phase of Globalization could worsen CO₂ Pollution – study

Group Statistics

	Text Type	N	Mean	Std. Deviation	Std. Error Mean
Reading Comprehension	Print text	32	5.0313	1.84013	.32529
	Hypertext	32	6.3125	1.17604	.20790

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
ReadCompreEqual variances assumed	6.333	.014	-3.319	62	.002	-1.28125	.38605	-2.05296	-.50954
Equal variances not assumed			-3.319	52.703	.002	-1.28125	.38605	-2.05567	-.50683

APPENDIX T

STATISTICAL DATA FOR SELECTION 3

Topic: Repeating Radio Waves from Deep Space Baffle Scientist

Group Statistics

	Text Type	N	Mean	Std. Deviation	Std. Error Mean
Reading Comprehension	Print text	32	6.5938	2.02977	.35882
	Hypertext	32	5.9688	2.00780	.35493

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
ReadCompre	.104	.749	1.238	62	.220	.62500	.50470	-.38389	1.63389
			1.238	61.993	.220	.62500	.50470	-.38389	1.63389
Equal variances assumed									
Equal variances not assumed									

APPENDIX U

STATISTICAL DATA FOR SELECTION 4

Topic: Wind Turbines Contribute to Climate Change - Study

Group Statistics

	TextType	N	Mean	Std. Deviation	Std. Error Mean
Reading Comprehension	Print text	32	5.6875	1.49056	.26350
	Hypertext	64	5.7813	1.44166	.18021

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
ReadCompreEqual variances assumed	.963	.329	-.297	94	.767	-.09375	.31566	-.72050	.53300
Equal variances not assumed			-.294	60.291	.770	-.09375	.31923	-.73223	.54473

APPENDIX V

OVERALL STATISTICAL DATA

Group Statistics

Read Comprehension	Text Modality	N	Mean	Standard Deviation	Standard Error Mean
	Print Text	128	6.2813	1.96400	0.17359
	Hypertext	128	6.3281	1.63673	0.14467

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
ReadCompreEqual variances assumed	5.636	.018	-.207	254	.836	-.04688	.22597	-.49189	.39814
Equal variances not assumed			-.207	246.004	.836	-.04688	.22597	-.49196	.39821

APPENDIX W

AUTHENTICITY TESTING RESULT



Philippine Normal University
The National Center for Teacher Education
PUBLICATION OFFICE
Taft Avenue, Manila 1000, Philippines



AUTHENTICITY RESULT

Date of Release: February 04, 2020
Result Code: 2019-0632
Submission ID: 1251224613
Title of Output: Print Text and Hypertexts: Reading Comprehension
Performance of ESL Learners-
Author (s): Lord Celeste Balo

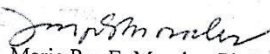
Authenticity Report:

Similarity Report: 17%

• Interpretation: A similarity of 17% means that 17% of the entire paper is similar to sources in Turnitin's (authenticity software) online repository. The colored bibliographical references denote the sources of similarity to previously published work which maybe from internet sources (13%), publications (3%), and student papers (10%) for the remaining similarity percentage.

• Highlighted text in the Manuscript:

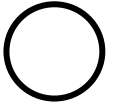
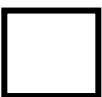
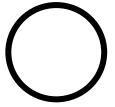
- Red marks and highlights are set of texts directly or exactly copied from online sources.
- Other color marks and highlights are set of text exactly copied from other sources (student papers and publications).

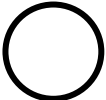
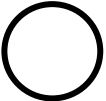
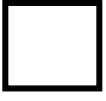
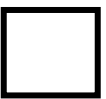
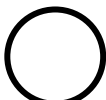
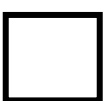
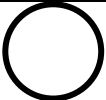
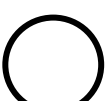
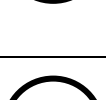
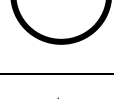
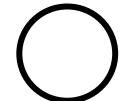

Marie Paz E. Morales, Ph.D.
Director

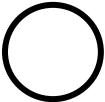
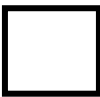
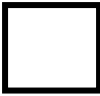
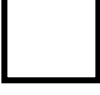
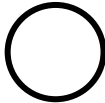
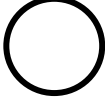
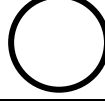
APPENDIX X

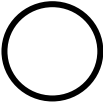
SUMMARY OF RESPONSES OF THE PARTICIPANTS ON MODALITY PREFERENCE AFTER EXPERIENCE

Modality Preference: PRINT TEXTS

Questions: After reading both Print Texts and Hypertexts, which of the two texts forms (Print Text or Hypertexts) did you prefer more? Why?		
GROUP A		
Coding Symbols	Actual Responses	Induced Key Points
	I prefer reading print texts than hypertexts because I am more comfortable with it.	MORE COMFORTABLE
	I prefer Print Text because I can easily remember the selection or the content in the print text than Hypertext and I can easily know the position of the answer of being asked. In terms of distraction, I can easily get distracted in using mobile phones or computer because of social media.	EASY TO REMEMBER, LESS DISTRACTION
	Print Text , because it is easier for me to remember the important details and information. It is also comfortable in the eyes.	EASY TO REMEMBER, MORE COMFORTABLE
	I prefer print text more than hypertexts. Because it I can read it comfortably and effectively while I gain information and knowledge.	MORE COMFORTABLE TO READ EFFECTIVELY
	PRINT TEXT - I prefer reading print texts because I like it more to read with physical things like papers and books	EASY TO READ
	I prefer the Print Text , Because Its takes time to read and to understand to get the point. And it is more comfortable to me answer well and to understand clearly.	EASY TO UNDERSTAND
	Print Text , because it did not damage my eyes because of the light and I'm more comfortable and can answer the question clearly	MORE COMFORTABLE
	Print text , because it's easier to follow the text, fewer distractions, eye to paper contact is easier to comprehend	EASY TO FOLLOW, LESS DISTRACTIONS, EASY TO COMPREHEND

	Print Text - since it is more handy and I can focus more on the text compare in hypertext. The images in hypertext distract me.	EASY TO FOCUS ON THE TEXT
	Print text , it makes my mind more focus on the selection itself. Even I read it once I already got the main idea compared to Hyper text which I re-read it a thrice of times.	EASY TO FOCUS ON THE TEXT
	Print Text - I prefer to use print text because for me it is easier and you will not need any internet just to read it unlike in the hypertext	EASY TO READ
	PRINT TEXT . I UNDERSTAND MORE WHAT I AM READING USING PRINT TEXTS	EASY TO UNDERSTAND
	Print text , because there is no distraction unlike in hypertext I got easily distracted because of I can click other things.	LESS DISTRACTION
	Print text , because it make me more easier to remember what i have read than in Hypertext.	EASY TO READ
	Print Text - In print text I can't see any advertisement that's why I'm more focused in using print text rather than hypertext.	MORE FOCUS, LESS DISTRACTION
	Print texts . It has more feels to reading print texts and that I can freely add notes and highlights. Personally, I think print texts create a more focused environment for reading and prevents external distractions.	MORE FOCUS, LESS DISTRACTION
	I prefer using Print Texts form because I can read simultaneously without any distractions unlike the hypertexts there is so many ads that can distract you form reading.	LESS DISTRACTION
	I prefer reading in Print Text because I'm more comfortable in reading the text when I am holding the it.	MORE COMFORTABLE
	Print Text , because print text allows me to be more focus on the topic that i am reading. In print text it is also less distracting.	MORE FOCUS, LESS DISTRACTION
	Print text - i found it easier and more convenient for me to read on a printed material compared to a digital format. I am more focus reading in printed material than in hypertext format. And it is more mobile and i usually find my comfortable place when i'm reading.	EASY AND MORE CONVENIENT

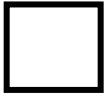
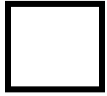
	Print Text - because there are no other images and texts shown, unlike in Hyper Text where there are several images and texts present that can distract the reader.	LESS DISTRACTION
GROUP B		
Coding Symbols	Actual Responses	Induced Key Points
	I prefer Print Text . First is because Hypertext can be seen in any screen (monitor, cp) it makes my eyes hurt that can also cause or affect my vision. Second, it's easy to read and understand a topic or an essay in print text format. That's why I prefer Printed Text Format.	EASY TO READ AND UNDERSTAND
	Print Text because I can easily look back on details and it is not sleepy while reading.	EASY TO LOOK BACK ON DETAILS
	Print Text , because I understand print text rather than Hypertext. And I'm not comfortable because it is irritable to the eyes.	EASY TO UNDERSTAND
	Print Text , I understand the both context more in print text rather than the hypertext.	EASY TO UNDERSTAND THE CONTEXT
	I much prefer reading print text , because it is more visual than hypertext. It gives focus to a reader since it is not using a internet or sites. It is also simple and less distraction to a reader. While in hypertext, it gives an ads.	MORE VISUAL & LESS DISTRACTION
	Print Text as I prefer to be use. It is clearer for me to understand the selections.	CLEARER TO UNDERSTAND SELECTIONS
	I prefer more for Print Text , because it is easy to read and it's not confusing.	EASY TO READ AND NOT CONFUSING
	I prefer having Print Text - Less distraction unlike in hypertext that has ads - Simple	LESS DISTRACTION & SIMPLE
	Print Text . It is because I am comfortable reading texts in print rather than those in the hypertext. It is not irritable to the eyes, compared to hypertext.	COMFORTABLE IN READING TEXTS
	Print Text because I could completely focus to read the printed form than the Hypertext	EASY TO FOCUS ON

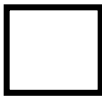
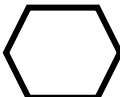
	I prefer print text form. It has lesser content than the hypertext. Lesser content means there's no ads on the sides that distracts me. Thus, I can focus more.	LESS CONTENTS, LESS DISTRACTIONS
	I prefer Print Texts because print texts are easily to understand thus it creates a focus layout on your mind therefore preventing confusion. Also it does not hurt the eyes or the reader.	EASY TO UNDERSTAND & FOCUS
	I prefer more the Print Text because it's easy to read it and my eyes won't get irritated.	EASY TO READ
	Print Text , because I am more comfortable reading texts in a hardcopy than soft copy form.	COMFORTABLE IN READING
	I prefer Print Text reading because it is easy for me to understand and read the article given.	EASY TO UNDERSTAND & READ
	Print text because when I used computer to read the hypertext my eyes was irritated so that I can't understand what I've read.	CONVENIENT

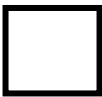
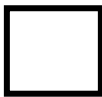
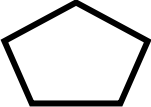
APPENDIX Y

SUMMARY OF RESPONSES OF THE PARTICIPANTS ON MODALITY PREFERENCE AFTER EXPERIENCE

Modality Preference: HYPERTEXTS

Questions: After reading both Print Texts and Hypertexts, which of the two texts forms (Print Text or Hypertexts) did you prefer more? Why?		
GROUP A		
Coding Symbols	Actual Responses	Induced Key Points
	Hypertext - it's attracts my attention even more. and less boring to me.	CATCHES ATTENTION EASILY, LESS BORING
	I prefer Hypertext form because it makes me less sleepy.	KEEP ME AWAKE
	Hypertext , It is easier to see and to understand because images are provided and texts are more readable specially for those who have eye sight problems.	EASY TO SEE AND UNDERSTAND
	I prefer reading in a Hypertext form because it is easily accesible and I don't really consider myself as bookworm person who's into printed ones.	ACCESSIBLE
	Hypertext , because the text can be read clearly when in hypertext	EASY TO READ
	Hypertext because the article is easier to read in a gadget or in a pc and its easier to answer by only clicking the choice of the answer, its less hassle because I don't have to write my answer anymore. And also I am more profound of reading short article in my phone than in paper.	EASY TO READ
	Hypertext , Is the more that i prefer because i'm more comfortable reading and answering using the technology.	MORE COMFORTABLE
	I prefer the Hypertext more because it is easier to just type and click the answer in such question rather than write what is needed.	ACCESSIBLE
	Hypertext -because Hypertext is much more comfortable and easy to use. I can easily understand the text	MORE COMFORTABLE AND EASY TO USE

	in Hypertext because the format is really clear than the Print text.	
	Hypertext , because it is easy and convenient. Also there are words or terms that you don't know but you can easily search them because it has a hyperlink that connects it to another site that will make your understanding of the text well.	EASY AND CONVENIENT
	Hypertext , since most of the people usually used social media its easy for them to read and understand the article, in addition people nowadays are lazy reading those print text.	EASY TO READ AND UNDERSTAND
GROUP B		
	I prefer hypertext because it is easily to see the information than the paper. Maybe they are same but it differs in terms of understanding of the reader. Today, we are using media which students will not get boring in reading and fact it's really happening.	EASY TO SEE THE INFORMATION
	Hypertext . I don't know the reason why I prefer it from Internet. Maybe is because of my generation were I prefer reading digital rather than printed form also maybe it is more appealing? For me I guess.	DIGITAL, MORE APPEALING
	Hypertext , it gets my full attention and for me it is easier to use or to read than the (Print Text).	EASY TO READ
	I prefer Hypertext because I want to enhance my skills when it comes to technology and also it will help me to my chosen course.	ENHANCE TECHNOLOGY SKILLS
	Hypertexts . For I can easily recall and understand the content after reading rather than reading Print Texts.	EASY TO RECALL AND UNDERSTAND
	Hypertext – Because I feel alive when I am using a computer. I didn't get sleepy. And for me using a hypertext the selection is good.	KEEP ME AWAKE
	Hypertext because of our modern generation today. It can catch our attention easily and can be read without getting bored. That's all.	CATCHES ATTENTION EASILY
	I prefer Hypertext because it is easy to access, less effort and not boring.	EASY TO ACCESS, LESS EFFORT, NOT BORING
	I prefer the Hypertext form because it is very easy to answer and it's paperless that can save our environment.	EASY TO ANSWER, PAPERLESS

	Hypertext – more easier to use and understand a reading composition if there is a visual presentation. - It is boring to answer in a print text.	EASY TO USE AND UNDERSTAND
	Hypertext , because as a 21 st century learner. I enjoy more reading hypertext. And it is not costly. It is also accesible and easier.	ENJOYABLE, ACCESSABLE AND EASIER
	Hypertext because you can highlight what you are reading so that you will not be confuse what you are reading next. Its easy to scroll down what you are reading.	HIGHLIGHTABLE, NOT CONFUSING, EASY TO READ
	Hypertext because I can easily go back to the article and highlight important words or phrases. We are inclined I technology.	HIGHLIGHTABLE, EASY TO USE AND READ
	I find Hypertext more preferable because it's easier instead or print text which is very bothersome when you flip/turn pages everytime you read or try to go back to statements.	EASY TO READ
	I prefer Hypertexts because they are more interactive and provides visual content that helps the readers.	MORE INTERACTIVE
	Hypertext because even though it affects my eyes it is more convenient for mr to do do rather than the Print Text.	MORE CONVENIENT

APPENDIX Z: Curriculum Vitae

Lord Celeste E. Balo

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0917-678-9227
lordcelestebalo07@gmail.com



PERSONAL STATEMENT

A hardworking and dedicated pioneering professional with more than 10 years of hands-on experience in administrative and teaching tasks who is capable of teaching any English and Literature courses including Grammar, Technical Writing, Study and Thinking Skills, Writing in the Discipline and Intensive English with excellent oral and written communication skills.

EDUCATION

GRADUATE : PHILIPPINE NORMAL UNIVERSITY, MANILA CAMPUS
Master of Arts in Education with Specialization in English Language Teaching (MAEd-ELT)
Research: Reading Performance and Functional Reading Levels of ESL Learners in Print and Hypertexts

TERTIARY : PHILIPPINE NORMAL UNIVERSITY, MANILA CAMPUS
Bachelor of Secondary Education Major in English (BSE-English) with Specialization Certificate in Reading, March 2009

SECONDARY : PASAY CITY EAST HIGH SCHOOL, PASAY CITY
March 2005

ELEMENTARY : AMADO V. HERNANDEZ ELEMENTARY SCHOOL, MANILA, March 2001

PROFESSIONAL EXPERIENCE

Committee Vice-Chair, DOPPSA COMMITTEE ON SENIOR HIGH SCHOOL

June 2019 – Present, Duties: Assist the committee chairperson to carry out the goals and objectives of the committee; facilitate the formulation of DOPPSA contextualized policy-guidelines on Senior High School in terms of Curriculum, Assessment, Instruction, and Student Learning; and spearheads the implementation of SHS policy-guidelines in SHS DOPPSA schools.

School Principal, ST. ANDREW'S SCHOOL – PARAÑAQUE

June 2018 – Present, Duties: Supervises and oversees the overall operations of the Integrated Basic Education Department including the school units and subject areas; Supervises, mentors, and guides the faculty of the Integrated Basic Education Department.

Vice-Principal for Academic Affairs, ST. ANDREW'S SCHOOL – PARAÑAQUE

April 2014 – May 2018, Duties: Supervises and oversees the implementation of the curriculum, assessment, and instruction, and supervises and mentors the faculty of the of the Integrated Basic Education Department of the school.

Experimental High-Ability Group (EHAG) Adviser, ST. ANDREW'S SCHOOL – PARAÑAQUE

May 2013 – April 2015, Duties: Supervises and oversees the academic and co-curricular programs of the EHAG Classes of the school including linkages with other schools for the outreach programs of the EHAG Classes.

Institutional Subject Area Coordinator – English, ST. ANDREW'S SCHOOL – PARAÑAQUE

May 2012 – April 2014, Duties: Supervises and oversees the promotion of academic excellence in English in the school by creating programs that help students improve their English Proficiency and observe faculty members to ensure effectiveness in instruction.

Subject Area Coordinator – English, ST. ANDREW'S SCHOOL – PARAÑAQUE

May 2011 – May 2012, Duties: Supervises and oversees the promotion of academic excellence in English in the grade school level by creating programs that help students improve their English Proficiency and observe faculty members to ensure effectiveness in instruction.

English Faculty, ST. ANDREW'S SCHOOL – PARAÑAQUE

May 2009 – May 2014, Duties: Teaches English with high level of dedication and competence.

Chair/Co-Chair of different Areas – PAASCU Accreditation, ST. ANDREW'S SCHOOL –

PARAÑAQUE, Duties: spearheads the analysis and evaluation of the Administration and School Staff and Curricular Programs and Instruction Areas and prepare reports during the PAASCU Accreditation Self-Survey of the school.

Homeroom Adviser, ST. ANDREW'S SCHOOL – PARAÑAQUE

SY 09-10, SY 10-11, Duties: handles a particular class and is given the functions and responsibilities in the formation and developmental learning of his students.

Moderator, SAS Courier Jr. – the official student publication of St. Andrew's School

Duties: supervises, oversees and edits the content and technical aspects of the official school publication.

GOVERNMENT EXAMINATION

Licensure Examination for Teachers (LET) No: 1054310
Passed in October 2009

AFFILIATIONS

International Literacy Association (ILA), August 2017 - Present
Reading Association of the Philippines (RAP), March 2012 – Present
PNU Alumni Association (PNUAA), March 2009 – Present

SEMINARS/TRAININGS CONDUCTED

Curriculum Mapping and Learning Assessment

San Roque Catholic School, Alabang, Muntinlupa

24 May 2019

Curriculum Mapping: Aligning Standards, Assessment and Instruction

Veritas Catholic School, BF Homes, Parañaque City

15 May 2019

INTERNATIONAL CONFERENCES/TRAININGS PARTICIPATION

Whole Child Conference

Singapore

May 8 to 11, 2019

Superior Learning for School Leaders (SL2) Hong Kong

Hong Kong

February 18 to 21, 2019

This is to certify that the above information is true and correct to the best of my knowledge and abilities.

Lord Celeste E. Balo

