

# Reading Strategies Used by Elementary Students When Comprehending Digital Texts

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**Abstract** Filipino youths are shifting away from reading printed texts in the 21<sup>st</sup> century as more information becomes accessible via the Internet. This study aims to determine the digital reading comprehension levels of Grade six pupils, their use of online reading strategies, and whether proficient and less proficient digital readers use different reading strategies. One hundred seventy-four sixth-grade students at a public elementary school in Naga City, Philippines, took digital reading comprehension and strategy-use tests during the 2019-2020 academic year to achieve this purpose. Of the three types of online reading strategies (*global, problem-solving, and support*), the elementary students reported employing more support strategies than the other types. Moreover, proficient digital readers highly use reading strategies across the three types, while less-proficient digital readers employ the strategies moderately. However, most participants showed a lack of proficiency in digital reading skills. It is recommended that literacy teachers teach the judicious use of online reading strategies to assist elementary students in comprehending digital texts.

**Keywords:** *digital/online reading, metacognitive reading strategies, reading comprehension, multimodality*

## **Introduction**

Literacy is a valued skill worldwide. The United Nations' 2030 Agenda for Sustainable Development (2015) manifesto specifies under goal 4 and target 4.6 that by 2030, all countries must “ensure inclusive and equitable quality education and promote lifelong opportunities for all” (p. 14) through the achievement of high literacy and numeracy rate. To respond to this call, the Philippines' Department of Education (DepEd) has introduced varied intervention programs to encourage children to read and enhance their reading comprehension skills (e.g., *Manitoba Filipino Journal*, 2021). However, in 2018, the OECD Programme for International Student Assessment (PISA, 2018) reported that the average score for reading taken by 15-year-old students from the Philippines was the lowest among test-takers from 77 countries. Local studies corroborate the same finding. For example, Estremera and Estremera (2018) studied the factors affecting sixth-grade students' reading comprehension using the Philippine Informal Reading Inventory (Pado et al., 2018). The findings revealed that fifty-eight percent of respondents were classified as frustration-level readers (they find reading extremely difficult), 30% as instructional-level readers (they can benefit from teacher-directed instruction), and only 12% as independent-level readers (they can comprehend texts on their own). Similarly, Recamara (2018) and Rivera and Taglucop (2019) report that a high percentage of elementary and high school students in their studies were classified as ‘frustration level’ readers.

Many factors affect learners' reading comprehension. One of these factors is students' use of reading strategies. Reading strategies are techniques that people use to be more aware of their thinking and emotional processes as they learn new information (McGuire & McGuire, 2015). Studies have consistently found that students who use more reading

strategies are likely to be proficient readers (e.g., Ghaith & El-Sanyoura, 2019; Khreisat, 2022; Köse & Günes, 2021). In the Philippines, Tupe and Padilla (2011) found that explicit metacognitive strategy instruction showed improvement in high school students' Filipino reading comprehension, while Kilestes (2018) reported a significant positive correlation between metacognitive awareness of reading strategies and the use of information literacy skills by senior high school students. However, while these studies have found a positive association between comprehension level and the use of reading strategies, they mostly involve secondary or tertiary-level students. Moreover, the texts used to measure students' reading comprehension levels are print-based, primarily using words to convey meaning. This study, however, would like to contribute to the growth of empirical research on elementary students' use of strategies as they read digital texts.

### **Purposes of the Research**

This study aims to determine the digital comprehension reading levels of Grade six pupils, their use of online reading strategies, and whether proficient and less proficient digital readers use different reading strategies. To achieve these aims, this study sought to answer the following research questions:

1. What are the Grade Six pupils' digital reading comprehension levels?
2. What strategies are used by the students in comprehending digital texts?
3. Is there a significant difference between the reading strategies used by more proficient and less proficient digital readers?

This study is significant because studies about digital texts are still a relatively new trend in the literacy landscape of the Philippines, especially in primary education. The

results can be utilized to understand better millennial readers who are more exposed to digital texts. Because digital reading requires sophisticated thought processes and reading abilities, understanding the relationship between digital reading proficiency and reading strategies will enable literacy teachers to tailor instruction to the specific needs of students.

## **Theoretical Framework**

In responding to these questions, this study anchors its assumptions on theories on multimodality and digital reading strategies.

### **Multimodality in Digital Texts**

Educational institutions in the Philippines still expose students to print-based texts, which mostly rely on words alone to convey meaning. However, when students leave the classroom, they rarely read printed reading materials, more so when they leave school. They are instead exposed to digital texts which they read from their smart cellphones or laptops. Comprehension problems may occur because they may need to be more proficient at interpreting the meanings presented on digital platforms. After all, they are taught comprehension skills appropriate for print reading (Ziegler, 2019).

However, multimodal literacy theorists (Jewitt, 2005; Kress, 2003) argue that meaning can be conveyed in various modes (linguistic, visual, audio, gestural, tactile, and spatial), with each mode contributing to the overall meaning of the text. Therefore, learners must become familiar with reading multimodal texts, which use a combination of these modes to represent concepts (Cope & Kalantzis, 2009). Digital texts which often use a combination of modes to impart messages (e.g., words, still images, videos, sounds, and layout), are examples of multimodal texts.

## Use of Digital Reading Strategies

Mokharti and Sheorey (2001) classified online reading strategies into three: global strategies, problem-solving strategies, and support strategies. Global reading strategies prepare the reader for digital reading. *Global reading strategies* include gaining a broad overview of the text, making inferences about the text's content, and setting a reading goal.

*Problem-solving strategies* are based on rational choices made by digital readers when confronted with comprehension difficulties. These strategies are intended to help them overcome reading frustrations, such as re-reading the text to improve comprehension, using context clues to guess unfamiliar words, and reading slowly to understand better and evaluate the digital text.

On the other hand, *support reading strategies* assist digital readers in comprehending a text after applying global and problem-solving strategies. Several techniques for providing support mechanisms include translating the text from the target language to the reader's native tongue, paraphrasing specific text sections, highlighting or underlining key points, and asking questions about the text to gauge reader comprehension.

Researchers who wanted to identify the strategies predominantly used by digital readers commonly use Anderson's (2003) Online Survey of Reading Strategies (OSORS) as an instrument. Chen (2015) investigated the online reading strategies of Taiwanese college students who study English as a Foreign Language (EFL). The study indicated that EFL online readers generally use *global strategies* such as relying on context clues and visual information. The same result was found in Amer et al.'s study (2010), which concludes that highly proficient learners are

inclined to use *global strategies*. *Global reading strategies* need a thorough knowledge of the target language since these skills require the user to utilize higher-level thinking, such as analysis, evaluation, and production.

Meanwhile, Islam et al. (2015) surveyed the reading strategies of undergraduate EFL students in two higher education institutions in Bangladesh. The study's result indicated an overall moderate level of awareness of reading strategies but found a higher level of awareness of using problem-solving strategies among students. Similarly, Ahmadian and Pasand (2017) examined the relationship between online metacognitive reading strategies and self-efficacy in Iran. Problem-solving strategies were used more frequently by the sophomore EFL Iranian college learners, while the support strategies were used less frequently. De Leon and Tarrayo (2014) likewise used the OSORS to identify public high school students' digital reading strategies in the Philippines. They found that most students use problem-solving strategies to extract meaning from the selection. Moreover, students find reading online content fun. Most frequently accessed materials by students are not academic websites but e-books found on Wattpad, which suit millennial learners' tastes.

While some reading strategies can be applied to both print-based and digital texts, such as activating schema or questioning the authors' messages, some strategies are more appropriate for reading printed texts (e.g., underlining information in the text) and digital texts (e.g., locating information) (Boudreaux, 2016). This is because print-based texts are linear and static; they are usually read from left to right and from top to bottom. Moreover, since most print-based texts use words alone to present information, readers must be able to decode the denotation and connotation of the words and the logical relationship among the text sections to grasp the authors' ideas.

Digital texts, however, provide a more complex reading experience. Digital texts are dynamic and interactive and may include videos, photos, sounds, and hyperlinks to extend the meaning of what the words convey. Digital readers also can choose their own reading paths, unlike print readers. These features open up new possibilities and, at the same time, pose new challenges for decoding meaning (Pardede, 2019). Thus, the researchers assume that if students frequently use strategies appropriate to comprehend digital texts that use multimodal features, this will lead to better reading proficiency.

## **Methodology**

### **Research Design and Study Context**

This study used the descriptive-correlational research design (Edmonds & Kennedy, 2007) to survey grade six pupils in a public elementary school in Naga City, Camarines Sur, Philippines. The public school benefits from the Department of Education's computerization program, implemented in 2010, to strengthen schools' use of information and communication technology (Philippine Department of Education, 2017). The school has a computer laboratory where students can use computers with a high-speed internet connection to complete academic tasks.

### **Participants of the Study**

Random sampling was used to recruit the grade six participants for this study. Grade six is considered an exit level in the Philippines when previous grade-level learning competencies are expected to be mastered and assessed using the National Achievement Test. Parents/guardians of 174 grade six students (M=86, F=88) allowed their children/wards to participate in this study through signed informed consent forms.

## Instruments

To measure the students' digital reading comprehension levels, the researchers selected two digital texts from Readworks.org (2020) based on their multimodal features (e.g., use of linguistic and visual meaning-making modes), context neutrality, and suitability for the grade six level. Readworks.org is an award-winning website that houses hand-curated and Lexile-measured text sets for elementary students. Lexile text measures assess the complexity of texts. Articles containing Lexile text measures between 300 and 1340 are suitable for grade six students (Scholastic, 2021).

The first reading test selected was the non-fiction 10-item digital test, 'How do Airplanes Fly?' (Farid, 2015). This first reading test consists of 292 words and three still images and has a Lexile text measure of 1070L. The second reading test is another 10-item non-fiction titled 'Tiger Watch' (Weekly Reader Corporation, 2009). The text uses 278 words, has nine accompanying photos, and has a Lexile text measure of 930L.

The digital texts in ReadWorks.org, however, only provide the answers to the comprehension questions but not about the reader's comprehension level. The participants' comprehension reading levels were thus classified using the categories adopted by the Philippine Informal Reading Inventory (IRI). The Philippine IRI (Pado et al., 2018) categorized students as '*independent level*' readers if, out of a 20-item reading test, students obtain raw scores of at least 14, '*instructional level*' if they obtain scores between 8 and 13, and '*frustration level*' readers if they obtain scores below eight.

This study used Anderson's (2003) 38-item Online Survey of Reading Strategies – OSORS to determine the students' use of online reading strategies. The original



OSORS was pilot-tested to 10 grade six students before its actual administration. Thirteen items were revised for simplicity and clarity when several students indicated confusion regarding particular items. However, to retain the validity and reliability of the original instrument, these items were only minimally rephrased (e.g., “I have a purpose in mind when I read online” was rephrased to “I have a reason why I read online”). The participants reported how frequently they apply a specific online reading strategy classified as *global* (18 items), *problem-solving* (11 items), and *support strategies* (9 items). The inventory is formatted as a 5-point Likert scale (1=never to 5=always). The mean frequency scores for each category were calculated using Oxford’s (1990) classification system: 1) 1 – 2.33 (low usage), 2) 2.34 – 3.66 (medium usage), and 3) 3.67 – 5.00 (high usage). The reported reliability for each subscale was .77 for *global*, .64 for *problem-solving*, and .69 for *support strategies*. Overall, the OSORS has an excellent internal consistency of  $\alpha = .92$ .

### **Data Collection**

Permission from school administrators and grade six teachers was sought before data collection. Test administration was conducted on different time schedules to avoid class disruptions. The tests’ schedules were arranged according to the participants’ and the computer laboratory’s availability. Since the computer laboratory can only accommodate a maximum of 20 users at a time, the digital reading tests were administered in 10 batches, with 15-20 students taking the tests per batch. Another day was allotted for the administration of the OSORS in printed format, which took 30 minutes to complete. The reading comprehension tests and online reading strategies survey was administered within one week in January 2020.

## **Data Analysis**

Frequency counts and percentages were computed to report students' digital reading comprehension levels and the use of online reading strategies. The means of the usage of each strategy were obtained to rank the strategies from the most to least used. Then the students were categorized as 'more proficient' and 'less proficient' digital readers if their reading comprehension levels were at 'independent' and 'frustration' levels, respectively. Then, the correlation coefficient  $r$  was calculated to examine whether there is a significant statistical difference in the reading strategies used by the more and less proficient digital readers. A significant difference is observed if the  $p$ -value is less than .05. The Mann-Whitney U test was used as a post hoc test to determine which type of readers significantly use which online reading strategies. Mann-Whitney U test was deemed more appropriate because the data sets are generally not distributed, and 174 is a relatively small sample size (Agresti, 2018).

## **Results and Discussion**

### **Grade Six Pupils' Digital Reading Comprehension Levels**

Table 1 shows that a little more than half of the sample in this study (50.57%) obtained reading test scores below eight, while 41.38% obtained scores between 8 and 13. Only 8.05% could correctly answer at least 14 of the 20 questions.

In this study, more than 50% of the 174 grade six pupils were categorized at 'frustration' reading comprehension levels, while only about 8% of the students are considered 'independent' readers who can comprehend texts on their own. This result corroborates Recamara's (2018) and Rivera and Taglucop's (2019) studies, which reported a high

percentage of Filipino basic education students classified as ‘frustration’ level readers. Although there is no way of knowing why the students in this study found difficulty reading the digital texts, could this result be attributed to the mismatch between the students’ in-school and out-of-school literacies? Despite the opportunity to enhance the ability to read multimodal texts provided by digital texts, many teachers may still be reluctant to teach digital reading comprehension skills in the classroom. In the Philippines, this may not be entirely due to teachers’ unwillingness to introduce students to new reading repertoires but because teaching students to read digital texts would entail using computer laboratories and Internet facilities, which some schools may not have. The lack of ICT facilities in schools may thus greatly limit teachers’ opportunity to introduce new reading comprehension strategies and students’ ability to practice them (Childhope-Philippines, 2021).

**Table 1**

*Students’ Digital Reading Comprehension Levels*

<b>Comprehension Level</b>	<b>Airplanes (Frequency)</b>	<b>Tigers (Frequency)</b>	<b>Total Frequency</b>	<b>Total Percentage</b>
Independent	3	17	14	8.05%
Instructional	91	73	72	41.38%
Frustration	80	84	88	50.57%
Total Participants	174	174	174	100%

### **Strategies used by the Students in Comprehending Digital Texts**

Among the three types of online reading strategies, the support strategies are the most frequently used ( $M=3.41$ ), followed by problem-solving strategies ( $M=3.38$ ) and global reading strategies ( $M=3.34$ ).

### *Support Reading Strategies*

Table 2 presents the students' use of support reading strategies. These strategies sustain receptiveness and attention to learning. Three (30%) of the 11 support reading strategies were highly used, and eight (70%) were moderately used. None of the support reading strategies were categorized as infrequently used. Most strategies under this category were used moderately ( $M=3.41$ ).

**Table 2**

### *Reported Use of Support Reading Strategies*

	<b>Items</b>	<b>Mean of Usage*</b>	<b>Frequency Rating</b>
4.	I take notes while reading online to help me understand what I read.	3.77	High
15.	I use reference materials (e.g., an online dictionary) to understand what I read online.	3.61	High
38.	When reading online, I think about information in both English and Bikol.	3.58	High
29.	I ask questions for me to answer when I read online.	3.48	Medium
37.	When reading online, I translate from English into Bikol.	3.37	Medium
25.	I go back and forth in the online text to find relationships among ideas in it.	3.30	Medium
12.	I print out a hard copy of the online text then underline or circle information to help me remember it.	3.26	Medium
21.	I paraphrase (restate ideas in my own words) to better understand what I read online.	3.25	Medium
7.	When online text becomes difficult, I read aloud to help me understand what I read.	3.07	Medium
	<b>Over-all Mean</b>	<b>3.41</b>	

\* Mean of Usage from 1.00 to 2.33 = Low; 2.34 – 3.66 = Medium; 3.67 – 5.00 = High frequency rating

Even if many students in this study have poor digital reading comprehension levels, they nevertheless reported using online reading strategies. Students categorized under frustration level reported using more support strategies than problem-solving and global ones. This result is plausible since more students are categorized as frustrated-level digital readers in this study. According to Chen (2015), more proficient digital readers employ more global and problem-solving reading strategies. Support strategies are functional, meaning the reader will consult reference materials, or take notes to ensure continued comprehension. These support strategies are indeed more likely to be used by struggling readers.

Among the support strategies, taking notes while reading online was the most frequently used. Because most students use the Internet to complete their homework or gather ideas for performance tasks, taking notes while reading online enables them to capture critical information later in their learning tasks. Additionally, pupils may view this strategy as essential because it keeps them alert and focused. After all, reading online can be mentally and physically taxing and may lead to drowsiness and disruption.

On the other hand, reading aloud to understand the text better was the least frequently used support strategy. This strategy may only apply to some since reading aloud benefits audio learners more. This finding corroborates Estremera and Estremera's (2018) study, which found that more than 50% of grade six students were labeled under frustration reading level when they read silently, while 71% were classified under the same reading level when they read aloud. This means that reading aloud did not help students enhance their reading comprehension skills.

### *Problem-Solving Reading Strategies*

The extent to which the various problem-solving reading strategies are used is shown in Table 3. Problem-solving strategies are used to diagnose and solve the difficulties that hinder the understanding of textual information. Four (36%) among the 11 problem-solving reading strategies are highly used, and the remaining 7 (64%) are moderately used. None of the problem-solving reading strategies were infrequently used. Based on the overall mean ( $M=3.38$ ), more than half of the strategies under this category are used moderately.

**Table 3**

#### *Reported Use of Problem-Solving Reading Strategies*

	<b>Items</b>	<b>Mean of Usage*</b>	<b>Frequency Rating</b>
9.	I read slowly and carefully to make sure I understand what I am reading online.	3.80	High
28.	When online text becomes difficult, I re-read it to increase my understanding.	3.61	High
11.	I try to get back on track when I lose concentration.	3.52	High
16.	When online text becomes difficult, I pay closer attention to what I am reading	3.52	High
19.	I stop from time to time and think about what I am reading online.	3.36	Medium
22.	I try to picture or visualize information to help remember what I read online.	3.35	Medium
35.	I can identify the facts and opinions in online texts.	3.34	Medium
34.	I critically evaluate the online text before choosing to use the information I read online.	3.30	Medium
31.	When I read online, I guess the meaning of unknown words or phrases.	3.25	Medium
13.	I change my reading speed according to what I am reading online.	3.15	Medium

36. When reading online, I look for websites that discuss both sides of an issue.	3.01	Medium
Over-all Mean	3.38	

*\* Mean of Usage from 1.00 to 2.33 = Low; 2.34 – 3.66 = Medium; 3.67 – 5.00 = High frequency rating*

Reading slowly and carefully to comprehend the online text was the most frequently used problem-solving strategy reported by the participants. Since webpages often contain various elements in their interface, they can easily confuse the young reader, resulting in loss of concentration. Chang and Millet (2015) found that educated first-language readers could read 138 words per minute while memorizing, and up to 300 words per minute while scanning. However, reading rates are slower for second-language readers because they are under pressure to recall information accurately; as a result, they read slower and more carefully. Second language learners, like the students in this study, may still be expanding their vocabulary, so they may read more slowly whenever they encounter an unfamiliar word. Elementary students could also spend more time inspecting the visual images on a webpage. The study’s findings corroborate Rianto’s (2021) study, which found that readers typically, if not always, gravitate toward problem-solving reading strategies to ensure their complete comprehension of the text.

Interestingly, of all problem-solving strategies, the participants reported that searching for websites that discuss both sides of an argument is something they did not often do. Perhaps, at such a young age, the pupils were oblivious to the importance of determining the accuracy and trustworthiness of online information. This is rather unfortunate because reading digital texts necessitates the development of additional mental abilities known as “bricolage” and “juxtaposition” (Horning, 2012). The web is a vast repository of information; some are legitimate, and others are not. An online reader can

thus derive meaning from various sources. Bricolage can be used to assemble information from fragments of texts related to one another. Many students assess the data's credibility based on its details rather than the source. Students must be able to discern between legitimate and suspect sources, given the wealth of online information available.

### *Global Reading Strategies*

Table 4 shows the students' use of global reading strategies. Readers employ global strategies to monitor and manage the reading process intentionally. Five (30%) among the 18 global reading strategies were highly used, while the remaining 13 (70%) were moderately used. None of the global reading strategies were categorized as infrequently used. Based on the overall mean ( $M=3.34$ ), most students used the global strategies moderately.

**Table 4**

#### *Reported Use of Global Reading Strategies*

<b>Items</b>	<b>Mean of Usage*</b>	<b>Frequency Rating</b>
17. I read pages on the Internet to help me with my studies.	3.74	High
26. I check my understanding when I come across new information.	3.69	High
1. I have a reason why I read online.	3.60	High
5. I think about what I know to help me understand what I read online.	3.54	High
18. I use tables, figures, and pictures in the online text to increase my understanding.	3.50	High
20. I use clues from the text to help me better understand what I am reading online.	3.49	Medium
24. I critically analyze and evaluate the information presented in the online text.	3.49	Medium



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27. I try to guess what the content of the online text is about when I read.	3.49	Medium
6. I look at the online text first before reading it.	3.45	Medium
10. I review the online text first by noting its characteristics like length and organization.	3.43	Medium
8. I think about whether the content of the online text fits my reading purpose.	3.31	Medium
30. I check to see if my guesses about the online text are right or wrong.	3.28	Medium
32. I scan the online text to get a basic idea of whether it will serve my purposes before reading it.	3.28	Medium
23. I use typographical features like boldface and italics to identify key information.	3.13	Medium
2. I talk with other learners of English about the text.	3.03	Medium
33. I read pages on the Internet for fun.	3.03	Medium
14. When reading online, I decide what to read closely and what not to read.	2.98	Medium
3. I talk with native speakers of English about the text.	2.69	Medium
Over-all Mean	3.34	

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*\*Mean of Usage from 1.00 to 2.33 = Low; 2.34 – 3.66 = Medium; 3.67 – 5.00 = High frequency rating*

The most frequently used global reading strategy was reading web pages to assist students with their studies. It can be concluded that despite students not being exposed to digital texts in school, they nevertheless make productive use of the Internet outside school hours. Such makes sense because many learning materials are unavailable to public school students. Consequently, they use the Internet to research when assigned specific learning tasks or projects. It is also interesting to note that the students in this study prefer to read on the Internet to aid them in their studies but not for fun. This result contradicts De Leon and Tarrayo's (2014) finding that students prefer to read online for entertainment.

On the other hand, conversing with fellow learners and native English speakers about the texts they read was the least-used global reading strategy. Perhaps this is because participants have little to no opportunity to engage with native English speakers. This result also supports the findings of Mukhlif and Amir (2017), whose participants considered interacting with native speakers via live chat as a superfluous reading strategy because their curriculum, just like in the Philippines, does not permit live chats with native English speakers; the strategy is, therefore, irrelevant to their context.

### **Comparison of the Reading Strategies used by ‘Independent’ (more proficient) and ‘Frustration’ level (less proficient) Readers**

Median values of the test scores obtained by *independent* and *frustration*-level digital readers were computed to determine whether there is a difference in the strategies they used. Data for the *instructional* comprehension level was not anymore included to differentiate strategies used by more proficient and less proficient digital readers. The median score for frustration-level readers is five out of 20, while the median score for independent readers is 15. These median values were then correlated with the mean usage values for each type of online reading strategy. The Mann-Whitney post hoc test revealed a significant difference ( $p\text{-value} < .05$ ) between the online reading strategies used by independent and frustration-level readers across the three types.

Table 5 shows that independent-level readers significantly use more support, global, and problem-solving strategies than their peers at the frustration level.

The results in Table 5 indicate that independent readers highly use online reading strategies across the three types, while frustration-level readers employ the strategies moderately. This result supported the researchers’ assumptions

and the result of other studies, which found a significant relationship between more proficient digital readers and the frequent use of online reading strategies (Ghaith & El-Sanyoura, 2019; Khreisat, 2022; Köse & Günes, 2021). This finding suggests several pedagogical implications: First, to help students comprehend digital texts better, teachers must introduce students to the purpose and process of using varied online reading strategies. However, for this goal to be achieved, schools must have access to computers and the Internet, teachers must be willing to include digital reading practices in their lessons, and students must be motivated to monitor, execute, and control their online reading strategies.

**Table 5**

*Difference between Online Reading Strategies Used by Independent and Frustration-Level Readers*

	Median Value		P-value
	(Frustration level; n=88)	(Independent level; n=14)	
Comprehension Score	5	15	.0000*
Support	3.22 (Medium)	3.94 (High)	.0028*
Global	3.06 (Medium)	3.69 (High)	.0003*
Problem Solving	3.09 (Medium)	3.86 (High)	.0000*

\* Significant at < 0.05 p-value

## Conclusion and Recommendations

This study aimed to determine the digital comprehension reading levels of grade six pupils, their use of online reading strategies, and whether proficient and less proficient digital readers use different reading strategies. This study found that independent readers highly use online reading strategies across the three types, while frustration-level readers employ the strategies moderately. Of the three types of online

reading strategies (*global, problem-solving, and support*), the elementary students reported employing more support strategies than the other types.

Digital reading is a skill that requires a high level of multimodal competence. Readers need to be familiar with the capabilities of these modes and their limitations and potential benefits. Many students, regardless of the characteristics of the text, tend to use the same reading strategies. Students must be aware that certain strategies are more appropriate to be used for certain types of digital texts. They should also understand how proficient digital readers use online reading strategies. It should be emphasized, however, that online reading strategies improve reading performance differently than critical reading skills. They are mere tools that the reader can use to assist in decoding and comprehending the online text.

It is thus recommended that the Department of Education in the Philippines seamlessly integrate online reading practices across the curriculum from kindergarten to Grade 12 to establish a genuinely progressive literacy program in the Philippines. It is, therefore, high time that it revisits the reading curriculum per grade level and adapts them for digital reading environments.

Instructional leaders throughout the country could also initiate workshops on how teachers could further develop learners' online reading competence by using appropriate reading strategies. When teachers teach students online reading skills and the judicious use of digital reading strategies, they help make learning relevant for the 21<sup>st</sup> century.

It should be noted, however that one limitation of this study is that it assessed participants' reading proficiency levels from digital texts taken from an online reading website. Future researchers are encouraged to use or develop

a standardized online reading proficiency instrument to determine intermediate students' reading comprehension levels. Moreover, students' online reading strategies usage was based on their self-reports. Think-aloud procedures may be a more accurate way to gauge how students use the strategies appropriately. Overall, more research needs to be conducted regarding students' comprehension of digital texts. As technology advances, digital reading has developed into a necessary, if not the primary, new literacy skill that young people should be taught and equipped with within this Internet and information-driven era.



## References

- Agresti, A. (2018). *Statistical methods for the social sciences* (5<sup>th</sup> ed.). Pearson Education, Inc.
- Ahmadian, M., & Pasand, P. A. (2017). EFL learners' use of online metacognitive reading strategies and its relation to their self-efficacy in reading. *The Reading Matrix: An International Online Journal*, 17(2), 117-132. <http://www.readingmatrix.com/files/17-097to04m.pdf>
- Anderson, N. J. (2003). Scrolling, clicking and reading English: Online reading strategies in a second/foreign language. *Reading Matrix: An International Online Journal*, 3(3), 1-33.
- Boudreaux, M. K. (2016). Survey of developmental students' print and online metacognitive reading. *Educational Research Quarterly*, 39(3), 3-22.
- Chang, A. C., & Millett, S. (2015). Improving reading rates and comprehension through audio-assisted extensive reading for beginner learners. *System*, 52, 91-102. <https://doi.org/10.1016/j.system.2015.05.003>

- Chen, L. (2015). Taiwanese EFL learners' perceived use of online reading strategies. *The IAFOR Journal of Education*, 3(2), 68-80. <https://doi.org/10.22492/ije.3.2.04>
- Childhope-Philippines (2021). The current education issues in the Philippines – and how Childhope rises to the challenge. <https://childhope.org.ph/education-issues-in-the-philippines/>
- Cope, B., & Kalantzis, M. (2009). “Multiliteracies:” New Literacies, new learning. *Pedagogies: An International Journal*, 4(3), 164-195. <https://doi.org/10.1080/15544800903076044>
- De Leon, J. A., & Tarrayo, V. N. (2014). ‘Cyber’ reading in L2: Online reading strategies of students in a Philippine public high school. *i-manager's Journal on English Language Teaching*, 4(2), 8-17. <https://doi.org/10.26634/jelt.4.2.2793>
- Department of Education - Philippines. (2017). *DepEd computerization program capacitates learners, teachers for 21<sup>st</sup> century*. [https://deped.gov.ph/press-releases/deped-computerization-program-capacitates-learners-teachers-21<sup>st</sup>-century](https://deped.gov.ph/press-releases/deped-computerization-program-capacitates-learners-teachers-21st-century)
- Edmonds, W. A., & Kennedy, T. (2017). *An applied guide to research designs*. Sage Publications, Inc.
- Estremera, M., & Estremera, G. (2018). Factors affecting the reading comprehension of grade six pupils in the City Division of Sorsogon, Philippines as basis for the development of instructional material. *Asia Pacific Journal of Education, Arts and Sciences*, 5(3), 72-78. <https://ejournals.ph/article.php?id=16585>
- Farid, H. (2015). How do airplanes fly? *Readworks*. <https://www.readworks.org/article/How-Do-Airplanes-Fly/ee51c302-912c-4190-8ca7-63a9c95c881b#!articleTab:content/>

- Ghaith, G., & El-Sanyoura, H. (2019). Reading comprehension: The mediating role of metacognitive strategies. *Reading in a Foreign Language*, 31(1), 19-43.
- Horning, A. (2012). *Reading, writing, and digitizing: Understanding literacy in the electronic age*. Cambridge Scholars Publishing.
- Islam, M. S., Rahman, M. S., & Haque, E. (2015). Exploring awareness of online reading strategies used by EFL learners in a developing country: A study on undergraduate students in Bangladesh. *International Journal on E-Learning*, 14(1), 29-54. <https://www.learntechlib.org/p/40649/>
- Jewitt, C. (2005). Multimodality, “reading,” and “writing” for the 21<sup>st</sup> century. *Discourse: Studies in the Cultural Politics of Education*, 6(3), 315-331.
- Khreisat, M. H. (2022). Investigating metacognitive reading strategy awareness of Saudi tertiary students: Comparisons of gender, reading ability and year level. *3L: Language, Linguistics, Literature: The Southeast Asian Journal of English Language Studies*, 28(2), 122-139. <http://doi.org/10.17576/3L-2022-2802-09>
- Kilestes, F. L. B. (2018). Metacognitive awareness on reading strategies and information literacy skills of senior high school students. *Tin-aw Graduate School Book of Abstracts*, 2(1). <https://ejournals.ph/article.php?id=13630>
- Köse, N., & Günes, F. (2021). Undergraduate students’ use of metacognitive strategies while reading and the relationship between strategy use and reading comprehension skills. *Journal of Education and Learning*, 10(2), 99-108. <https://doi.org/10.5539/jel.v10n2p99>
- Kress, G. (2004). Reading images: Multimodality, representation, and new media. *Information Design Journal + Document Design*, 12(2), 110-119.

- Manitoba Filipino Journal (2021). *DepEd launches program to revive interest in reading*. <https://filipinojournal.com/deped-launches-program-to-revive-interest-in-reading/>
- McGuire, S. Y., & McGuire, S. (2015). *Teach students how to learn: Strategies you can incorporate into any course to improve student metacognition, study skills, and motivation*. Stylus Publishing.
- Mokharti, K., & Sheorey, R. (2002). Measuring ESL students' awareness of reading strategies. *Journal of Development Education*, 25(3), 2-10. <https://eric.ed.gov/?id=EJ645740>
- Mukhlif, Z., & Amir, Z. (2017). Investigating the metacognitive online reading strategies employed by Iraqi EFL undergraduate students. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2945916>
- OECD Programme for International Student Assessment – PISA (2018). *Philippines: Key findings*. [https://www.oecd.org/pisa/publications/PISA2018\\_CN\\_PHL.pdf](https://www.oecd.org/pisa/publications/PISA2018_CN_PHL.pdf)
- Oxford, R. L. (1990). *Language learning strategies: What every teacher should know*. Heinle & Heinle.
- Pado, F., Diaz, L., Ongtengco, M. H., Alcazar, M. Y., Salvador, A. M., & Nava, F. J. (2018). *The Philippine Informal Reading Inventory Manual 2018* (1st ed.). Department of Education- Philippines.
- Pardede, P. (2019). Print vs. digital reading comprehension in EFL. *Journal of English Teaching*, 5(2), 77-90. <https://files.eric.ed.gov/fulltext/EJ1266161.pdf>
- Readworks.org. (2020). *Reading comprehension instruction that works*. <https://www.readworks.org/>
- Recamara, J. (2018). Philippine informal reading inventory performances of elementary graders: Keystone for innovative 21<sup>st</sup>-century reading intervention program. *International Journal of Cur-*



*rent Research*, 10(9), 73492-73497. <https://doi.org/10.24941/ijcr.32339.09.2018>

Rianto, A. (2021). Exploring correlation between metacognitive online reading strategy use and online reading comprehension of EFL students. *Turkish Online Journal of Distance Education*, 23(2) Article 14.

Rivera, J., & Taglucop, L. (2019). Improving reading comprehension of students through reciprocal reading: The case of Canitoan National High School. *International Journal of Sciences: Basic and Applied Research*, 46(2), 83-96. <https://www.gssrr.org/index.php/JournalOfBasicAndApplied/article/view/10049/4373>

Scholastic (2021). *Lexile levels: What parents need to know*. <https://www.scholastic.com/parents/books-and-reading/reading-resources/book-selection-tips/lexile-levels-made-easy.html>

Tupe, B. A., & Padilla, P. P. (2011). Metacognitive strategy instruction and bilingual readers' comprehension of expository texts. *The RAP Journal*, 34(1). Retrieved from <http://ejournals.ph/form/cite.php?id=7069>

United Nations (2015). *Transforming our world: The 2030 agenda for sustainable development*. [https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A\\_RES\\_70\\_1\\_E.pdf](https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf)

Weekly Reader Corporation. (2009). Tiger watch. *Read-Works*. <https://www.readworks.org/article/Tiger-Watch/aaa424ee-d4dd-4832-ad73-e655d5640032#!articleTab:content/>

Ziegler, A. (2019). The effect of students' reading digital text versus print text on comprehension. *Minnesota State University Moorhead* [Master's thesis]. <https://red.mnstate.edu/cgi/viewcontent.cgi?article=1190&context=thesis>