

## **Assessing Indonesian college students' reading stamina in reading different text formats**

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### **Abstract**

Reading stamina, a term for someone's ability to keep reading in one sit, is believed to be affected by the reading formats. Despite the crucial benefit of reading stamina for lifelong reading performance, it has not received much attention in literacy research. This study, thus, aims to find out the effect of reading formats (digital and print) on the reading stamina of college students. 70 Indonesian college students taking an English course were involved in this study. They were divided into two groups. 35 of them were asked to read a novel in digital format and the rest were asked to read a novel in print format for four-time meetings (30 minutes each). Their reading stamina was assessed through a reading behavior observation sheet. The students' perception about their reading behavior was also collected through a self-reflection questionnaire adapted from Lynch (2018). The data obtained were analyzed quantitatively. The result showed that there was an increase in the students' reading stamina for digital format from meeting one through meeting four, but a decrease in print format. Additionally, statistical analysis showed that there was a significant difference in the students' reading stamina between those who read digital and print format ( $t(68) = 5.013, p < 0.05, d = 1.2$ ). Regarding the students' perception about their reading behavior, 69.20% of them mentioned that reading in print format was easier than reading digital format. These findings suggest that choosing appropriate reading format is pivotal for college students since abundant reading resources are available nowadays.

### **Keywords**

Digital, print, reading format, reading stamina

*First submission: February 2023; Revised: April 2023, Accepted: May 2023*

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## Introduction

The remaining effects from COVID-19 has resulted to the implementation of hybrid learning, where the learning materials (especially the reading ones) are distributed in both print and digital formats. This difference of reading formats, as shown by the literature, may affect the students’ reading process, starting from their reading behavior, reading stamina, reading fluency, to finally their reading comprehension (Akbar et al., 2015; Delgado et al., 2018; Mizrachi, 2015). Specific to reading stamina, this ability is defined by Hiebert et al. (2014) as the ability to maintain attention and keep reading for a long time long. This ability is agreed upon by experts, for example by Delgado et al. (2018) and the report in the Qualifications and Curriculum Authority (2005), as a very important aspect in reading skill.

Despite being a fundamental feature in reading, research on reading stamina has received insufficient attention from reading researchers. Some of the researchers that embrace the topic of reading stamina in their studies include Hiebert (2015), Larson (2015), and Lynch (2018), where, in general, they discuss how important reading stamina is to survive reading in a long time as a required skill for success in the 21st century. They also examine this issue through today's digital reading habits. The results of this studies, thus, indicate the role of reading format in affecting reading stamina. Unfortunately, there is no specific study, as far as we concern, that examine the reading format impact on reading stamina.

This study, thus, tries to provide the answer for whether the difference between digital and print text affects students’ reading stamina. By observing 120 university students’ behaviors when reading in each format, we specifically address the following questions:

- (1) How are the changes of students’ reading stamina between those who read through digital and print media?
- (2) Is there a difference in students' reading stamina between those who read through digital and print media?
- (3) What are the students’ opinions about the effect of reading formats on their reading stamina?

## 1. Literature review

### 1.1. Reading stamina

The term reading stamina first appeared in the mid-1960s, when it was mentioned in the Philosophy of Individualized Reading by Hunt in 1965 (Hiebert et al., 2014). Reading stamina, according to Hunt, is an important characteristic of a true reader. It was the time when the practice of sustained silent reading (SSR) became a hot topic of discussion in the field of reading and this practice is a representation of someone's reading stamina. The concept of reading stamina is mentioned again in Stanovich (1986) as an important part of a person's reading ability. A poor reader is believed to read less than others, and this affects his/her reading stamina when reading longer texts, even if they are not difficult. In short, reading stamina is defined as the ability to maintain attention and keep reading for a long time (Hiebert et al., 2014). Having a good reading stamina is agreed upon by experts, for example, Johnson et al. (2008) and the report in Qualifications and Curriculum Authority (2005), as a very important aspect of reading skills. Reading stamina is also a key element to build a person's confidence in reading, especially in teenagers (Johnson et al., 2008).

According to Lynch (2018), there are several factors that affect a person's reading stamina, namely gender differences, attention span (long-maintained attention), and diverse abilities.

Many studies show that gender differences affect how a person perceives the importance of reading and this affects his motivation (Liu & Huang, 2008; Marinak & Gambrell, 2010; McGeown et al., 2011), which further also affects his reading stamina. In general, the three studies agreed that women were more motivated to read and considered reading important than men. The skill to maintain attention is also performed differently between men and women. Wozniak (2010) found that women were able to maintain their attention to reading longer than men.

In addition, it is undeniable that in one class there must be students with different abilities and this is seen by Lynch (2018) as another factor that affects their reading stamina. Kittle (2013) reports that the different reading abilities possessed by students in one class require teachers to adapt their teaching method to more individualized instruction, otherwise the students' reading stamina would not improve. Glaus (2014) suggests giving different readings to each student according to their interests will provide an opportunity for the students to read fairly and then will build their reading stamina.

There are, in fact, several suggestions conveyed to increase students' reading stamina. In general, Boushey and Moser (2017) suggest four components of the reading pedagogy, comprehension, accuracy, fluency, and vocabulary, that can be assessed as a reference in providing materials to build adolescent reading stamina. Comprehension is an important part of reading stamina since it is the determinant for persistence to occur (Lynch, 2018). The students that understand the texts they read will show some behaviors, including using prior knowledge to predict and/or reread the less comprehensible parts of the text. The students will also show good mastery of the other reading components (accuracy, fluency, and vocabulary) that indicates they comprehend the text. The indicators include recognizing high-frequency words, reading voraciously, and using word parts (G Boushey & Moser, 2017). The level of difficulty of texts that is suitable for the students should also be examined so that they will show fluency and enthusiasm to read.

The four components mentioned above can be supported with other techniques, such as silent reading, choice freedom, and volume increase, to form a person's reading stamina. According to Lynch (2018), silent reading is a core of reading stamina where the students are able to read silently and understand the text without supports from others. This reading condition should be also applied because students must read silently in real-world or even at test (Hiebert et al., 2014). Furthermore, Swanson (2013) also emphasizes the importance of preferred reading choices to increase one's reading stamina. Providing freedom of reading choices aims to get students used to read before they have to read determined and academic materials in college. In addition, Kittle (2013) suggests the importance of increasing one's reading volume so that reading stamina also increases. Independent reading, as an innovative way of teaching reading, is argued by Sanden (2012) to be able to increase the volume of students reading. Once, the students are accustomed to read a lot, their reading stamina will be itself improved.

## **2. Reading formats on reading stamina**

There are two types of reading formats used in learning activities, print and digital format. Literature shows that different reading formats can affect students' reading process, starting from their reading behavior, reading stamina, reading fluency, to finally their reading comprehension (Akbar et al., 2015; Aydemir et al., 2013; Delgado et al., 2018; Mizrachi, 2015). Mizrachi (2015) reveals that students show more positive reading behaviors, such as

highlighting and re-reviewing, in reading printed texts compared to reading digital texts. On the other hand, the difficulties in reading through devices, such as following the lines, are argued by Delgado et al. (2018) to negatively influence the students’ comprehension. In addition, Akbar et al. (2015) reports that students have better reading fluency when reading through an app compared to reading in print but at the same time possess lack of stamina when reading through the app.

The differences of reading formats are also found to have an effect for both gender of readers, and this might also affect their difference in reading stamina. Liu and Huang (2008) report that differences in reading formats (digital and print) affect reading preferences between men and women. Men show more interest in reading digitally, while women still prefer to read through print media. Thus, the different modes of reading would probably differentially affect the reading stamina between men and women. Meanwhile, Chen and Chen (2014) said that the use of digital media as a reading mode also affects the length of time to maintain one's attention where the duration of reading through digital tends to be shorter and students find it difficult to read long texts through digital media.

The ability to possess good reading stamina in both print and digital format is essential in this era. It is because students from generation Z are accustomed to encountering information conveyed through various modes of delivery and this require them to be able to maintain their reading focus (Rosen, 2010). Moreover, as shown in Parlindungan et al. (2021) that students will have preferences to read either in print or digital and these preferences would likely contribute to the students’ superiority to read in one mode over the other, it would then expected that students will have better reading stamina in one format compared to the other. The students who are accustomed to digital reading are predicted that they will have difficulty maintaining their reading stamina in reading long-printed texts (Hiebert et al., 2014). Hiebert et al. (2014) also argue that readers who have difficulty reading in the current digital era tend not to have the reading stamina to gather information from various sources or read long texts.

### **3. Previous studies on reading stamina**

While it has been discussed on how important reading stamina is and how the differences of reading format may affect the reading stamina, not many studies, as far as we concern, explore this issue. Some studies, such as Gulla (2012), Hiebert (2015), and Larson (2015), merely present strategies for increase students' reading stamina without reporting any effect of the mode differences may have. Gulla (2012), for instances, describes an ethnography study of a teacher applying independent reading program to build the students’ reading stamina. The students are encouraged to choose the book they want to read and it is reported that one student expands his reading time from two to twenty minutes. In comparison, Larson (2015) explains how to utilize the technologies to enhance digital reading stamina. He emphasizes the preparation stage and other technical factors that need to consider to improve students’ reading experience.

Other studies that examine students’ reading stamina include Lynch (2018) and Trainin et al. (2016). Trainin et al. (2016) study the reading stamina of 140 fourth graders in the western United States Middle, where students have to read 5 texts of 200 words each. The results of their research show that the students' reading stamina is quite stable, even though some are slow readers or have low reading understanding skill. Lynch (2018), on the other hand, researches reading practices in high schools in South and North Carolina, United States. The study involves five teachers and approximately 300 students and shows that students perform better stamina and reading behavior in the end of the research period. He argued that at the

beginning of the study students were not used to it to read for a long time and over time they start to enjoy reading.

While it shows that so far, no study explicitly compares the effect of reading format on reading stamina, the research subject is also mostly school students. Possessing good reading stamina is also essential for university students as argued by Springer et al. (2015) that the students will easily feel frustrated, anxious and losing enthusiasm for reading load when they do not have good reading stamina. Therefore, this study tries to explore the effects of digital and print reading format on university students' reading stamina.

## **4. Methods**

### **4.1 Participants and instruments**

This study was conducted at first-semester students of University of Teuku Umar, Indonesia, in the academic year 2022/2023. 120 students, 55 males and 65 females, from four classes of English course were involved to participate. They are around 18 to 19 years old. Each of two classes were required to read a novel in different reading formats, print and digital format. The novel *Diary La Sorbonne* (2014), telling about a journey of a scholarship awardee continuing her master degree in Paris, was chosen because it is written in Bahasa that suited the students' main language expertise.

### **4.2 Data collection**

This study uses a quantitative approach with a two-group experimental design model. The two different groups of students were asked to individually read the novel in silent and their behaviors indicating their reading stamina were observed. To assure the data triangulation, the students were also asked to fill out a Google Form stating their reading behaviors while reading the book.

The data were collected during four meetings of the classes starting from September to October 2022. The students' reading stamina were assessed by using a reading behaviors observation sheet adapted from Lynch (2018). Reading behaviors, according to Lynch (2018), can indicate how someone's reading stamina increases. Positive reading behaviors, including highlighting reading words with a pencil or finger and muttering what is read, indicate high reading stamina. Meanwhile, negative reading behaviors, including restless sitting, frequently leaving the seat, holding books too close or too far, drowsiness, and yawning, indicate low reading stamina. There were 13 behaviors included on the observation sheet and these behaviors were assessed in a Likert scale indicating the frequency of the student's behavior (Table 1). The higher score of the behavior, the better reading stamina it indicates. This observation was carried out for 30 minutes during the students reading the novel and involved two data collectors.

Table 1. Reading behaviors observation sheet (adapted from Lynch, 2018)

<b>Student Name:</b> _____	<b>Date:</b> _____
<b>Behavior</b>	<b>Score</b>

	1 (never)	2 (rarely)	3 (sometimes)	4 (often)	5 always
<b>Visual Behaviors</b>					
1. <i>Tracking with pencil/finger</i>					
2. <i>Not rubbing eyes</i>					
3. <i>Looking at book/media</i>					
4. <i>Not holding book/media to close</i>					
5. <i>Not holding book/media to far</i>					
<b>Auditory Behaviors</b>					
6. <i>Mouthing words</i>					
7. <i>Whispering words</i>					
8. <i>Reading aloud</i>					
<b>Avoidance Behaviors</b>					
9. <i>Not flipping through pages too quickly</i>					
10. <i>Not out of seat</i>					
<b>Body/Posture Behaviors</b>					
11. <i>Not heading down while reading</i>					
12. <i>Not fidgeting</i>					
13. <i>Not standing while reading</i>					

In addition to the observation, the students were also required to fill a Google Form stating their frequency of doing the behaviors. The 13 behaviors were also put on the Google Form and were also assessed in a Likert scale. This addition of students’ own response to their behaviors aimed to provide more accurate data. The behavior statements on the Google Form were also written in Bahasa to ensure the students understand the behaviors intended. Furthermore, there were four additional statements asking the students’ opinions about the effect of book formats on their reading stamina that they had to answer in the last meeting of data collection (Figure 1). Three questions were in yes/no/maybe response asking the students’ perceptions on their ability to read in long time, format that is easier to read, and the impact of format on their reading stamina. Meanwhile, the other question was in long-answer response asking other factors that may influence the students’ ability to read in long time.

### 4.3 Data analysis

The data collected were analyzed using an independent t-test. The method was chosen because there were two different experimental conditions (reading through printed books vs reading through digital media) and different participants (Field, 2009). The analysis was carried out using IBM SPSS Statistics 25.

Before carrying out the t-test, we first compare the data we collected through the observation sheet and the students’ responses in Google Form. In general, we did not find distinctive differences of the frequency of behaviors between the two sources. After determining the fixed scores of each behavior of the students, we calculated the mean scores of the 13 behaviors as the average reading stamina value of the students. Then, we inputted the data to the SPSS application to run the t-test.

Do you think you can read in long time? \*

Yes

No

Maybe

Do you think reading printed books is easier than reading digital books? \*

Yes

No

Maybe

Do you think reading formats (print vs digital) affect your reading stamina? \*

Yes

No

Maybe

What other factors do you think affect your ability to read in long time? \*

Your answer \_\_\_\_\_

Submit Clear form

Figure 1. Four opinion questions on Google Form (translated)

## 5 Results

### 5.1 Students' reading stamina changes

The students' reading stamina changes were measured by comparing the mean scores of the students from initial week to final week in each reading format. The overall trend of reading stamina changes can be seen from the graphs on Figure 2.

At a glance, the reading stamina for digital format increases from the initial week to the final week, while it decreases for print format. The gaps between the mean scores of week 1 and week 4 for both formats, however, is not significant which are from 3.35 to 3.53 for digital format and from 3.01 to 2.86 for print format. Moreover, the results of the t-tests comparing the two means also show insignificant changes for both formats. The t-test value for digital format was .246 and for print format was .405,  $p = .05$ .

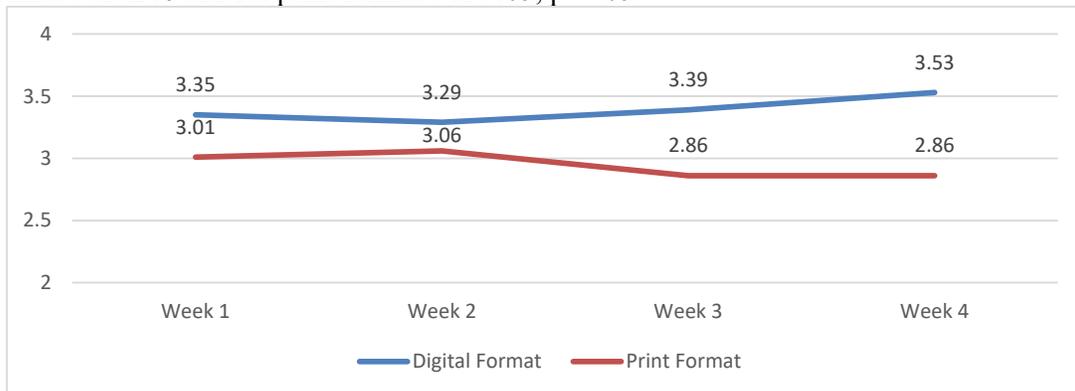


Figure 2. Students' reading stamina changes

## 5.2 Students’ reading stamina differences between digital and print format

The differences of mean values between reading digital and reading print format in each week indicate that there is a different reading stamina between the two groups of students. To see whether the difference is significant or not, we run an independent t-test for the mean values in the final week and the result is as below (Table 2).

Table 2. *Independent t-test result*

	F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Reading stamina	.294	.589	4.870	70	.000	.65000	1.3348	.387379	.91621

The result of the independent t-test shows the Sig. (2-tailed)  $.000 < p = .05$  which means that there is a significant difference in the effect of reading format on students' reading stamina. It can then be interpreted that students who read digital books have better reading stamina than those who read printed books.

## 5.3 Students’ opinions regarding reading stamina

The students’ opinions on their ability to read in long time, effects of book format, and other factors affecting reading stamina were analyzed from the majority responses of the students on Google Form. The charts below show the responses of students (Figure 3).

For the first question, the majority of the students (54.90%) are unsure whether they are able to read in long time. This response is better interpreted that the students believe that their reading stamina depends on many factors. For the second question, the majority of the students (69.20%) believe that print format is easier to read compared to digital format. This finding, however, contradicts the results of the mean scores of the students’ reading behaviors that they perform more positive behaviors when reading digital novel. Despite the majority of the students believe that they can read easier in print, only 44% of them agree that reading formats can affect their reading stamina.

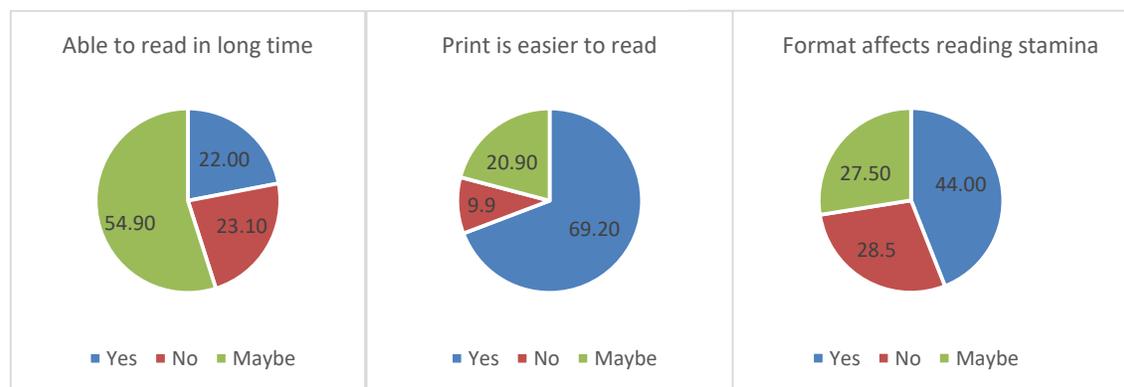


Figure 3. *Students’ opinions on reading stamina*

Furthermore, some of the following students’ statements (have been translated from Bahasa to English) represent the factors that the students believe affect their reading stamina.

“interesting story” (s2)

“interesting or easy to understand story and must be in a quiet situation or no disturbing noises” (s14)

“I can read for a long time depending on the kinds of the book. If it is a novel with love or friendship story, maybe I can read it for a long time. But if it is a textbook or others that are boring, I cannot read it for a long time.” (s46)

“reading media, interesting or not the book is, and situation when reading” (s89)

“interesting story, reading media, and position of reading” (s113)

It can be seen that the majority of the students state that the interesting story of the novel is the main factor that determines whether they can read the novel for a long time or not. The story can be interpreted as the topic in other reading types, as shown in one statement that textbook and other boring readings can make the students unable to maintain their reading. Other factors, such as surrounding situation when reading, position of reading, as well as the media, print and digital, are also mentioned to affect their reading stamina.

## **6 Discussion**

This study attempted to analyze the effect of digital and print format on university students' reading stamina. This attempt was carrying out by observing the students' reading behaviors that indicate their stamina during 30-minute reading in four meetings. There are three aspects that were included in considering the effect of the formats on reading stamina, students' reading stamina changes from initial meeting to final meeting, students' reading stamina differences between digital and print format, and students' opinions on their reading stamina. The results show that, first, the students' reading stamina changed differently between digital and print format, where it increased for digital format but decreased for print format, even though the changes were not significant. Second, the students' reading stamina between digital and print format was found significantly different. The students who read digital novel had better reading stamina compared to those who read print novel. Third, While the students' reading stamina was better at digital novel, they believe that print format is easier to read. In addition, students believe that their reading stamina was affected by many factors, including (the major one stated) topic of reading, reading media, and surrounding situation when reading.

### **6.1 Reading stamina changes**

The increase of students' reading stamina when reading digital text aligns with the finding of Weber (2019). The students in her study engage more in the final week compared to the initial week when reading digital books on an app, named epic! The students' engagement was analyzed roughly similar to this study, which was using a behaviors sheet. However, the engagement increase in her study can be said significant (from 76% to 92% of engagement), which did not happen in this study. This can be a factor of providing free choice for the students to select the books they want to read, which is not provided in this study as we aim to merely investigate the effect of format on reading stamina by reading one book.

In contradiction, the finding of more positive stamina changes on digital texts in this study are different to what found in Akbar et al. (2015) and Baron (2017). While Baron (2017) simply states that students in her study spend more time reading in print than on screen, Akbar et al. (2015) report more complex findings that the students in their study perform more fluent reading but lack of stamina. The students’ fast reading rates are argued caused by the existence of such helping features on the app while the students still read longer in print (approximately 75 minutes each session) compared to screen reading (around 45 minutes). The use of such apps shown in the studies mentioned, which may or may not help students achieving better stamina, should also be noticed as probably an influencing factor that this study provided only a pdf-version of the novel without introducing such apps.

Moreover, such interventions may be applied if we want to see significant changes on students’ reading stamina, which was absent in this study. Studies like DeMaiolo (2017), Gulla (2012), Holschuh (2019) Larson (2015), Springer et al. (2015), and Turner et al. (2020) have described some considerations and techniques to increase students’ reading stamina. DeMaiolo (2017), for example, by applying the Daily Five approach from Boushey and Moser (2012) succeeds to increase students’ reading stamina significantly as the students are more motivated and independent to read. Specific to digital reading, Larson (2015), for example, explains that students need to be familiarized with the e-book tools as well as other features that may help them easy to read. Furthermore, Turner et al. (2020) includes broader scopes, like recursion and social connection, in understanding how students’ reading stamina develop. This study, however, focuses on effect of format without such intervention involved; thus, might explain the insignificant increase of students’ digital reading stamina.

As almost all studies show such increase in reading stamina, especially after being intervened, the finding of the decrease in student reading stamina might not be well explained. One assumption that can be the reason for this is that the students were bored with the story of the novel since choices play important role in reading stamina (Clifton, 2021; Lynch, 2018; Swanson, 2013). Nevertheless, this assumption did not apply for the students who read the digital version of the novel that they, contrarily, had the stamina increased.

## **6.2 Reading stamina differences between digital and print format**

The finding of higher stamina in digital reading compared to print one is consistent with the results of Daniel & Woody (2013) and Duncan et al. (2016). Duncan et al. (2016) states that the students in their study spend more time reading with digital texts such as online magazines, newspapers, textbooks, or social networking websites. The students in Daniel and Woody (2013) also report that they spend more time reading on screen compared to reading in print. It is stressed, however, that the results are not certain coming from the time the students spend to read only and not to access other apps on screen. This explanation could be also happening to this study that the students appeared to look at their devices but not to read the novel. Nevertheless, the students’ responses on Google Form indicated that they did perform more positive behaviors when reading digital novel.

It is undeniable, however, that other studies reveal that better reading stamina is achieved when reading in print (Chen & Catrambone, 2015; Trakhman et al., 2018). The students in Chen and Catrambone (2015) spend more time on paper because they tend to take notes more compared to what they do on screen. This finding cannot be compared to the result of this study since we merely asked the students to read the novel and not to do such annotating activities. On the other hand, the students in Trakhman et al. (2018) spend longer time on paper due to navigate slower compared to digital texts. Thus, it cannot be said that the longer time spent in print is due to the attachment that a book has on students.

In addition, some studies elaborate that familiarity of digital reading plays a role in determining digital reading stamina (Annisette & Lafreniere, 2017; Evans, 2017; Pardede, 2019). The most prominent argument conveyed is that the younger generations are accustomed and exposed more with digital texts; and these digital habits will likely result in more time spending on digital than print texts (Evans, 2017). Pardede (2019) adds that the technology savvy generations would likely have more positive attitudes towards digital reading thus would probably stay longer reading on screen compared to print. These arguments probably become the factor for the students in this study to have better stamina in digital since they are all coming from generation Z. Nevertheless, one argument presented by Annisette and Lafreniere (2017) that the more time someone spend on screen, either for social media or texting purposes, the more difficult they are to maintain attention in challenging tasks, including reading comprehension. This statement cannot be confirmed in this study since we did not carry out reading comprehension tests.

### **6.3 Factors influencing reading stamina**

Students' inconsistency between their reading beliefs and their actual reading behaviors found in this study is also found in Soroya and Ameen (2020). The students in their study state that they prefer print reading but show more engaging time in digital reading. The current digital era effects are probably not realized by recent university students that they are indeed e-book readers (Kurata et al., 2017; Rahmat et al., 2018). This argument probably explains the opinion of the students in this study that they perceive themselves as traditional print readers but, in reality, are more digital readers.

In addition, the most mentioned factor affecting reading stamina conveyed by the students in this study, topics of reading, is also reported in some studies as a key aspect determining reading stamina (Lynch, 2018; Swanson, 2013; Wozniak, 2010). By freely choosing the topics they want to read, the students in the studies increase their engagement and stamina to read the books. In contrast, there is also a study by Clifton (2021) that finds that self-selection of books does not significantly affect the students' amount of time reading. Nevertheless, if the students are guided to choose the books with the consideration of difficulty level, it would likely to result in better reading engagement and stamina (Kittle, 2013).

Furthermore, the statement that the students perceive they cannot read a book that is boring, including textbook, is also found in other studies which makes print texts is preferred for this kind of reading (Foasberg, 2014; Loh & Sun, 2019; Soroya & Ameen, 2020). Overall, these studies report that students prefer to read in print the academic materials that require them to put more focus. While the students in this study did not mention that they would read the kinds of textbook in print media, this can be a reason, with other factors such as eye-health and distraction concern (Parlindungan et al., 2021), for them to perceive print media is easier to read compared to digital one.

The other two factors conveyed by the students in this study, surrounding situation and position of reading, are also mentioned in some studies as considerations in building reading stamina (Horowitz, 2018; Sanden, 2012). Sanden (2012) conveys that a quiet classroom atmosphere is crucial in silent reading as a key activity to build reading stamina. This study has applied silent reading, however, probably due to boredom with the novel, some students made noises at the final meetings. The study of Horowitz (2018), on the other hand, reports the effect of flexible seating in increasing students' reading stamina. The students in her study are given freedom to choose the space to read along with various seating options, like mats, yoga balls, rocking chairs, and cushions. This is probably a limitation in this study that students need to sit on a fixed chair and moving or leaving their seat would be indicated as a negative behavior.

## Conclusion

This study explores the effect of reading format, digital vs. print, on university students’ reading stamina. The students showed an increase in reading stamina when they were provided with digital text even with no significant result. Some factors, such as choice freedom, limited apps, and absence of interventions, probably affect the result. Nevertheless, the students’ reading stamina on digital reading was significantly better compared to print reading. It was, however, not confirmed whether the longer time spent by the students was merely on reading the novel not on other apps on screen. Furthermore, the finding of better reading stamina on digital reading contradicts the students’ belief that they read print text easier than digital one. Other factors conveyed by the students, such as reading topics, situation, and reading positions, could also affect the students’ reading stamina. While this study merely looks at the effect of reading formats on students’ reading stamina, other affecting factors, such as reading choices and interventions could be addressed in future research before determining students’ reading stamina. A wider sample is also needed to be able to claim that students’ reading stamina is better when reading digitally.

## References

- Akbar, R. S., Taqi, H. A., Dashti, A. A., & Sadeq, T. M. (2015). Does e-reading enhance reading fluency? *English Language Teaching*, 8(5), 195–207. <https://doi.org/10.5539/elt.v8n5p195>
- Annisette, L. E., & Lafreniere, K. D. (2017). Social media, texting, and personality: A test of the shallowing hypothesis. *Personality and Individual Differences*, 115, 154–158. <https://doi.org/10.1016/j.paid.2016.02.043>
- Aydemir, Z., Öztürk, E., & Horzum, M. B. (2013). The effect of reading from screen on the 5th grade elementary students’ level of reading comprehension on informative and narrative type of texts. *Educational Sciences: Theory & Practice*, 13(4), 2272–2276. <https://doi.org/10.12738/estp.2013.4.1294>
- Baron, N. S. (2017). Reading in a digital age. *Phi Delta Kappan*, 99(2), 15–20. <https://doi.org/10.1177/0031721717734184>
- Boushey, G., & Moser, J. (2017). Interactive CAFÉ menu. *The Daily CAFÉ: Two Sisters*.
- Boushey, Gail, & Moser, J. (2012). Big ideas behind daily 5 and cafe. *Reading Teacher*, 66(3), 172–178. <https://doi.org/10.1002/TRTR.01116>
- Chen, C. M., & Chen, F. Y. (2014). Enhancing digital reading performance with a collaborative reading annotation system. *Computers and Education*, 77, 67–81. <https://doi.org/10.1016/j.compedu.2014.04.010>
- Chen, D. W., & Catrambone, R. (2015). Paper vs. screen: Effects on reading comprehension, metacognition, and reader behavior. *Proceedings of the Human Factors and Ergonomics Society*, 2015-Janua, 332–336. <https://doi.org/10.1177/1541931215591069>
- Clifton, R. (2021). The effects of student choice on reading comprehension and stamina [Master’s thesis]. Goucher College.
- Daniel, D. B., & Woody, W. D. (2013). E-textbooks at what cost? Performance and use of electronic v. print texts. *Computers and Education*, 62, 18–23. <https://doi.org/10.1016/j.compedu.2012.10.016>
- Delgado, P., Vargas, C., Ackerman, R., & Salmerón, L. (2018). Don’t throw away your printed books: A meta-analysis on the effects of reading media on reading comprehension. *Educational Research Review*, 25(September), 23–38. <https://doi.org/10.1016/j.edurev.2018.09.003>
- DeMaiolo, J. N. (2017). Getting gritty with it : An analysis of grit and reading stamina in first grade students. Miami University.
- Duncan, L. G., Mcgeown, S. P., Griffiths, Y. M., Stothard, S. E., & Dobai, A. (2016). Adolescent reading skill and engagement with digital and traditional literacies as predictors of reading comprehension. *British Journal of Psychology*, 107(2), 209–238. <https://doi.org/10.1111/bjop.12134>
- Evans, E. (2017). Learning From High School Students’ Lived Experiences of Reading E-Books and Printed Books. *Journal of Adolescent and Adult Literacy*, 61(3), 311–318. <https://doi.org/10.1002/jaal.685>
- Field, A. (2009). *Discovering statistics using SPSS*. Sage Publications.

- Foasberg, N. M. (2014). Student reading practices in print and electronic media. *College and Research Libraries*, 75(5), 705–723. <https://doi.org/10.5860/crl.75.5.705>
- Glaus, M. (2014). Text Complexity and Young Adult Literature. *Journal of Adolescent and Adult Literacy*, 57(5), 407–418. <https://doi.org/doi:10.1002/JA AL.25>
- Gulla, A. (2012). Putting the “shop” in reading workshop: Building reading stamina in a ninth-grade literacy class in a Bronx Vocational High School. *English Journal*, 101(5), 57–62.
- Hiebert, E. H. (2015). The forgotten reading proficiency: Stamina in silent reading. In E. H. Hiebert (Ed.), *Teaching stamina and silent reading in the digital-global age* (pp. 16–31). TextProject, Inc.
- Hiebert, E. H., Wilson, K. M., & Trainin, G. (2014). Are students really reading in independent reading context? An examination of comprehension-based silent reading rate. In E. H. Hiebert & D. R. Reutzel (Eds.), *Revisiting Silent Reading: New Directions for Teachers and Researchers* (pp. 151–167). TextProject, Inc. <https://doi.org/10.1598/0833>
- Holschuh, J. P. (2019). College reading and studying: The complexity of academic literacy task demands. *Journal of Adolescent and Adult Literacy*, 62(6), 599–604. <https://doi.org/10.1002/jaal.876>
- Horowitz, L. (2018). The effects of flexible seating on reading stamina in third grade. Caldwell University.
- Kittle, P. (2013). *Book love: Developing depth, stamina, and passion in adolescent readers*. Heinemann.
- Kualakata. (2014). *Diarly La Sorbonne*. Gramedia.
- Kurata, K., Ishita, E., Miyata, Y., & Minami, Y. (2017). Print or digital? Reading behavior and preferences in Japan. *Journal of the Association for Information Science and Technology*, 68, 884–894. <https://doi.org/https://doi.org/10.1002/asi.23712>
- Larson, L. C. (2015). E-books and audiobooks: Extending the digital reading experience. *Reading Teacher*, 69(2), 169–177. <https://doi.org/10.1002/trtr.1371>
- Liu, Z., & Huang, X. (2008). Gender differences in the online reading environment. *Journal of Documentation*, 64(4), 616–626. <https://doi.org/10.1108/00220410810884101>
- Loh, C. E., & Sun, B. (2019). “I’d Still Prefer to Read the Hard Copy”: Adolescents’ Print and Digital Reading Habits. *Journal of Adolescent and Adult Literacy*, 62(6), 663–672. <https://doi.org/10.1002/jaal.904>
- Lynch, M. E. (2018). *Filling the reading void: Studying reading stamina in a rural high school through action research: A companion research study*. Gardner-Webb University.
- Marinak, B. A., & Gambrell, L. B. (2010). Reading motivation: Exploring the elementary gender gap. *Literacy Research and Instruction*, 49(2), 129–141. <https://doi.org/10.1080/19388070902803795>
- McGeown, S., Goodwin, H., Henderson, N., & Wright, P. (2011). Gender differences in reading motivation: Does sex or gender identity provide a better account? *Journal of Research in Reading*, 35(3), 328–336. <https://doi.org/10.1111/j.1467-9817.2010.01481.x>
- Mizrachi, D. (2015). Undergraduates’ Academic Reading Format Preferences and Behaviors. *Journal of Academic Librarianship*, 41(3), 301–311. <https://doi.org/10.1016/j.acalib.2015.03.009>
- Pardede, P. (2019). Print vs Digital Reading Comprehension in EFL: A Literature Review. *JET (Journal of English Teaching)*, 5(2), 77. <https://doi.org/10.33541/jet.v5i2.1062>
- Parlindungan, F., Rahmatillah, R., & Lisyati, L. (2021). Academic reading preferences and behaviors of Indonesian undergraduate students during Covid-19 Pandemic. *TESOL International Journal*, 16(4), 4–27.
- Qualifications and Curriculum Authority. (2005). *Qualifications and Curriculum Authority (Vol. 18, Issue March)*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/231739/1195.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/231739/1195.pdf)
- Rahmat, N. H., Rahman, S. A. S. A., & Hassan, H. R. (2018). Exploring reading issues among millennials and Genz. *European Journal of English Language Teaching*, 4(2), 112–125.
- Rosen, L. (2010). *Rewired: Understanding the IGeneration and the way they learn*. Palgrave Macmillan.
- Sanden, S. (2012). Independent reading: Perspectives and practices of highly effective teachers. *Reading Teacher*, 66(3), 222–231. <https://doi.org/10.1002/TRTR.01120>
- Singer Trakhman, L. M., Alexander, P. A., & Silverman, A. B. (2018). Profiling reading in print and digital mediums. *Learning and Instruction*, 57(March), 5–17. <https://doi.org/10.1016/j.learninstruc.2018.04.001>
- Soroya, S. H., & Ameen, K. (2020). Millennials’ Reading Behavior in the Digital Age: A Case Study of Pakistani University Students. *Journal of Library Administration*, 60(5), 559–577. <https://doi.org/10.1080/01930826.2020.1760563>
- Springer, S. E., Wilson, T. J., & Dole, J. A. (2015). Ready or not: Recognizing and preparing college-ready students. *Journal of Adolescent and Adult Literacy*, 58(4), 299–307. <https://doi.org/10.1002/jaal.363>
- Stanovich, K. E. (1986). Matthew Effects in Reading: Some Consequences of Individual Differences in the Acquisition of Literacy. *Reading Research Quarterly*, 21(4), 360–407. <https://doi.org/10.1598/rrq.21.4.1>

- Refanja Rahmatillah & Firman Parlindungan “Assessing Indonesian college students’ reading stamina in reading different text formats”
- Swanson, M. (2013). The effects of choice on young children’s reading engagement and stamina. University of WI - River Falls.
- Trainin, G., Hiebert, E. H., & Wilson, K. M. (2016). A comparison of reading rates, comprehension, and stamina in oral and silent reading of fourth- grade students. *Reading Psychology*, 36(7), 595–626. <https://doi.org/10.1080/02702711.2014.966183>
- Turner, K. H., Hicks, T., & Zucker, L. (2020). Connected Reading: A framework for understanding how adolescents encounter, evaluate, and engage with texts in the digital age. *Reading Research Quarterly*, 55(2), 291–309. <https://doi.org/10.1002/rrq.271>
- Weber, L. (2019). Digital texts and engagement in 2nd grade [University of Wisconsin-River Falls]. <http://digital.library.wisc.edu/1793/81408>
- Wozniak, C. L. (2010). Reading and the boy crisis: The effect of teacher book talks, interactive read-alouds , and students’ unrestricted choice of books for independent reading on fifth-grade boys’ reading attitude, reading self-efficacy, and amount of reading and fifth-grad. The University of San Francisco



#### Acknowledgement

This research was funded by the Lembaga Penelitian, Pengabdian Masyarakat, dan Penjaminan Mutu Pendidikan (Institution for Research, Community Services, and Educational Quality Assurance) of University of Teuku Umar with No.091/UN59.7/SPK-PPK/2022.