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The Role of Narrow Reading in L2 Learners' Reading Rate and Text Comprehension*

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ABSTRACT

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Researchers have suggested that reading thematically related texts, referred to as narrow reading, can allow second language (L2) learners to process textual information more efficiently due to the repetition of content and content-related words. Although the benefits of narrow reading have been proposed in the literature, these ideas have not been widely investigated empirically. This quasi-experimental study investigated whether narrow reading can facilitate English language learners' reading rate and text comprehension. Sixty-eight Korean high school students from two intact classes were assigned to either a narrow or a comparison group. While the narrow reading group engaged in theme-based reading, the comparison group read about various topics. After treatment sessions, each participant took reading comprehension tests, and their reading rate was measured. All participants also completed an exit questionnaire on their experiences in the reading sessions. The findings revealed that topically linked narrow reading aided text comprehension of the topic. In addition, narrowly reading about one topic promoted L2 learners' reading rate, even though the mean reading rate of the narrow reading group was not significantly higher than that of the comparison group both on the immediate and delayed post-tests. The study concludes with pedagogical implications for L2 reading instruction.

I. INTRODUCTION

Reading is an important skill that every English learner should master. Consequently, there is a great deal of interest and research into effective methods for teaching reading to English learners. To date, many different teaching strategies have been proposed including extensive reading (Krashen, 1981, 1985; N. Suk, 2016), repeated reading (Han & Chen, 2010; Webb & Chang, 2012), and audio-assisted reading (Chang & Millett, 2015). Nonetheless, scant attention has been paid to the investigation of theme-based reading, referred to as narrow reading (Krashen, 2004; Schmitt & Carter, 2000). Researchers have suggested that reading thematically related texts can allow L2 learners to process textual information more efficiency due to the repetition of content and content-related words (Krashen, 2004; Schmitt & Carter, 2000). For instance, texts dealing with the topic of elections are likely to include words like *ballot, vote, poll* and *candidate*. The recurrence of similar content and related words emerging from narrow reading

* This study is partly based on the author's doctoral dissertation.

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can lessen L2 learners' processing burden, which may help readers improve their reading rate and comprehension. Although the benefits of narrow reading have been proposed in the literature, these ideas have not been widely investigated empirically. The present study intends to explore the contribution of narrow reading to L2 learners' reading rate and sitext comprehension. In addition to considering how narrow reading itself influences text comprehension, L2 learners' own perspectives about narrow reading are investigated by means of several post-reading questionnaires to capture the effects of narrow reading on L2 text comprehension in more detail.

II. LITERATURE REVIEW

1. What is Narrow Reading?

Narrow reading is generally defined as reading collections of texts (1) in one genre, (2) by one author, or (3) about the same topic (K. S. Cho, K. O. Ahn, & Krashen, 2005; Krashen, 1981, 1985, 2004; Schmitt & Carter, 2000). Although all three conditions of narrow reading were originally believed to contribute to reading comprehension, Krashen (1985) particularly emphasizes the benefits of reading about the same topic, as texts dealing with the same topic provides many exposures to the same content and relevant words and built-in review on them. Indeed, many corpus-based studies (e.g., K. H. Hwang & Nation, 1989; Schmitt & Carter, 2000) have shown that texts addressing a related topic include multiple repetitions of content and content-related vocabulary. Krashen (1985) explains how reading narrowly about one topic facilitates L2 learning as follows:

> The more one reads in one area, for example, the more one learns about the area, and the easier one finds subsequent reading in that area. In addition, each topic has its own vocabulary, and to some extent its own style; the same can be said for each author. Narrow input provides many exposures to these new items in a comprehensible context and built-in-review. (p. 73)

As suggested above, the hallmark of narrow reading lies in the redundancy of content, stylistic features, and vocabulary. Such repetition emerging from narrow reading can enhance development in reading abilities including reading comprehension and reading rate. For instance, repeatedly reading about the same topic presumably allows readers to develop background knowledge about the topic, which, in turn, improves reading comprehension. A number of studies have shown that background knowledge plays a key role in comprehending a text (Pulido, 2004, 2007). Therefore, reading about a single topic can be a good way to obtain specific background knowledge, which could help learners improve text comprehension of the topic.

In addition, the repeated occurrence of the same content and vocabulary can lessen readers' processing burden, consequently freeing up attentional resources (Han & D'Angelo, 2009). Freed-up cognitive resources, in turn, might support efficient lower-level (e.g., lexical access and syntactic parsing) as well as higher-level reading processes (e.g., inference). Reading is a complex and attention demanding cognitive task, requiring a host of skills including letter recognition, lexical access, syntactic parsing, and sentence understanding (Pulido, 2007). In addition, relevant background knowledge needs to be activated, and comprehension should continue to be monitored to reach a more complete understanding of a text. Unlike L1 readers, who already have a basic linguistic foundation by the time reading training starts, L2 learners often start reading in the target language before they have acquired sufficient L2 linguistic knowledge (Koda, 2005). As a result, most L2 learners are not fully capable of performing what is known as low-level processes, such as rapidly recognizing words, analyzing the grammatical structures of sentences, and forming semantic propositions (Grabe & Stoller, 2011). This lack of automaticity in performing low-level processes impedes higher-level comprehension processes, in which learners make inferences to assign meaning to text (Grabe & Stoller, 2011). When low-level reading processes demand attention (e.g., lexical access and syntactic parsing) and consume a great deal of cognitive capacity, less capacity is available for high-level reading processes. Narrow reading can afford learners opportunities to practice a variety of reading skills more fluently (Schmitt & Carter, 2000) by helping them efficiently allocate their attentional resources through repetition, which in turn can improve learners' reading rate.

2. Empirical Studies on Narrow Reading

Although the concept of narrow reading was first introduced more than three decades ago, it has not been widely researched empirically. Most of the studies on narrow reading are corpus-based, analyzing texts dealing with similar topics. While these corpus-based studies suggest evident vocabulary-recycling benefits of narrow reading, they do not prove whether L2 readers can actually employ these benefits to improve their reading comprehension proficiency. Only a very few studies have directly explored learners' reading comprehension of thematically connected texts. One example is a study by Lee (1996) investigating whether narrow readings of topically related texts improve learners' textual comprehension. She examined the effectiveness of narrow reading on understanding of unfamiliar textual concepts, among adolescent English as a Foreign Language (EFL) learners in Taiwan. The participants were assigned to either narrow or broad reading conditions. The narrow reading group read two expository texts on the respiratory system, and the broad reading group read two topically unrelated stories: "one about the moon, the other about a bridge" (p. 164). After the two reading sessions, all participants took reading tests. To assess participants' reading comprehension, a new text on

the respiratory system, a topic that only the narrow reading group read about, was used. Participants were asked to recall textual ideas in their native language, Chinese, after reading the text.

Consistent with Krashen's (1985) argument, Lee (1996) found that participants in the narrow reading group performed significantly better on reading tests than the broad reading group participants. These results imply that narrow reading reinforces a grasp of textual concepts. However, the finding of the study should be interpreted with caution due to its limitation. As suggested by Lee, participants were already very familiar with the narrow reading topic before reading. Therefore, Lee's study was not able to demonstrate that topic familiarity emerging from narrow reading could translate into reading comprehension.

Although not investigated in Lee's (1996) study, another issue that needs attention is whether narrow reading can help L2 learners improve their reading rate. As claimed by many L2 researchers, continually reading about one topic offers learners opportunities to practice their reading skills and makes their reading processes more attention-free (Han & D'Angelo, 2009). To the best of the author's knowledge, Chang and Millett's (2017) study is the only empirical investigation that explored the issue. In their study with Taiwanese high school English learners, Chang and Millet examined the effects of narrow reading on reading rate and reading comprehension over a 3-week period. Participants were divided into two groups: one narrow reading group and one comparison group. The students in the narrow reading group (n = 25) completed in-class readings of a graded reader titled The Railway Children printed by three different publishers. That is, they read three versions of the same book and repeatedly encountered similar content and groups of content-related words while reading. The comparison group (n = 28) was also engaged in reading in class, but they read three different books with different stories. Results showed that the narrow reading group made greater gains in reading rate and reading comprehension than did the comparison group. However, there are some methodological issues to be considered. First, as the researchers mentioned, the study did not include a delayed posttest, which might indicate if the positive gains reported could be maintained. Another possible limitation of the study is the inclusion of a listening activity during the treatment phrase. In the study, the participants read and listened to the books simultaneously in class. The audio-assisted reading might have had an impact on test results, so it is difficult to assert whether the effects reported were solely because of narrow reading.

In sum, although one major assertion from narrow reading is the improvement of reading skills, including reading rate and comprehension, few empirical studies were identified to validate this claim. In addition, a couple of existing studies on the effects of narrow reading on L2 reading abilities have methodological limitations, suggesting that additional empirical studies are needed to assert the positive effects of narrow reading on reading rate and comprehension. Therefore, the present study was intended to further explore the effect of narrow reading in an L2 instructional setting. Specifically, the following two research questions were addressed in the study:

1) To what extent does narrowly reading about one topic promote L2 learners' reading comprehension of the topic?
2) To what extent does narrowly reading about one topic promote L2 learners' reading rate?

III. THE STUDY

1. Participants and Context

The participants were 68 female adolescents enrolled in a public high school in Korea. They ranged in age from 17 and 18 and had been studying English for at least eight years. They were drawn from two classes, and each class was randomly assigned to either narrow reading (n = 35) or comparison group (n = 33). Participants' responses from a background questionnaire revealed that they had never lived abroad for more than six months. At the time of the study, they had English classes four times a week for fifty minutes each session. The participants' pre-test reading comprehension scores were generated from an initial reading session. This analysis failed to reveal a significant difference between the two groups (t = -0.83, df = 66, p > .05). In addition, no significant difference between the two groups was found in terms of reading rate (t = -1.02, df = 66, p > .05).

2. Instruments

1) Reading Materials

Participants read newspaper articles dealing with current issues. These materials, written for native English speakers, would normally be considered difficult for English learners. However, newspaper articles covering the latest issues were appropriate because of their predictable content and familiar contexts (Swaffar, 1985). The narrow reading group read three texts on Ebola. The topic of Ebola was selected because it introduces disease-related content and words. All of the narrow reading texts dealt with what Ebola is and included the following words: outbreak, contagious, infect, vomit and transmit. The comparison group also read three newspaper articles, but each article addressed different topics, including Britain's New Princess, Plane Crash, and Ebola. One of the articles overlapped with the narrow reading texts: the one on Ebola. All of the topics described in the reading materials were covered as latest top news headlines in Korean news outlets prior to or at the time of data collection, and therefore participants were expected to have some prior knowledge regarding the topics. Participants had a generally similar level of familiarity regarding the topics, which was confirmed via a five-point Likert type scale measure ranging from 1 (e.g., very unfamiliar) to 5 (e.g., very familiar). Results of the ques-

tionnaire revealed similar levels of topic familiarity of each passage (*Mdn* =3 for all topics).

All texts in the study were about 630 words. Readability of each text was measured using the Flesch-Kincaid grade level. This readability index indicates a U.S. grade school level required to comprehend the text. As can be seen in Table 1 and 2, the texts employed in the present study could be reasonably interpreted by readers from grade 8 to grade 11. The vocabulary in each text was also analyzed with Cobb's (2014) lexical profiling software, which dissects the text into word frequency categories based on the British National Corpus. Approximately, 80 % of the words used in the texts were from the 0-2,000 vocabulary frequency levels. All reading materials were pilot tested with seventy-one students from two classes at the same high school, which included ten reading comprehension questions used in the study. The average score was 60 %, indicating room for improvement.

TABLE 1
Readability of Texts Used for the Narrow Reading Group

Topic	Ebola 1	Ebola 2	Ebola 3
Titles	Things You Should Know about Ebola	Ebola Facts	Ebola: What You Should Know
Word count	516	760	671
Grade level	10.1	10.2	8.7

Note. Grade 10 is equivalent to the first grade of high school in Korea.

TABLE 2
Readability of Texts Used for the Comparison Group

Topic	Ebola 1	Plane crash	A royal name
Titles	Things You Should Know about Ebola	Plane Crashes in French Alps	A Royal Name: Charlotte Elizabeth Diana
Word count	516	789	670
Grade level	10.1	9.4	9.7

2) Reading Comprehension Tests

In order to measure students' comprehension of the text content, ten close-ended reading comprehension questions were presented, where participants were required to select an answer among given choices. The comprehension questions included nine multiple choice questions and one true/false question. The reading comprehension question test was administered in every session of the reading treatments, along with the post-test, and delayed post-test. The scores of the reading test collected from the first reading treatment session served as the pre-test of reading abilities. As for the post-and delayed post-test, a different set of reading comprehension questions were provided along with two different reading texts dealing with the topic of *Ebola.*

3) Questionnaires

Participants completed (i) background, (ii) post-reading, and (iii) exit questionnaires. All items in the questionnaires were written in the participants' first language (L1), Korean. The background questionnaire was administered to collect biographic information in relation to English language learning, and these biographic data were used to create a general profile of the participants.

Subsequent to each reading treatment session, participants' perceptions of text difficulty and topic familiarity were also tapped by means of the post-reading questionnaire. The degree of difficulty of a text was measured using a five-point Likert-type scale with 1 for extremely easy, 2 for somewhat easy, 3 for neither difficult nor easy, 4 for somewhat difficult and 5 for extremely difficult. Similarly, levels of topic familiarity were measured using a five-point Likert-type scale from extremely unfamiliar to extremely familiar. In addition, participants were asked to write down in a given space why they chose certain options on the Likert scales.

Finally, on the exit questionnaire, administered after the immediate post-test, participants commented on their experiences in the reading sessions. Both the narrow reading and comparison groups answered three open-ended questions. Each question was followed by a space in which participants provided written responses. The first question asked whether reading the texts helped them understand the topic better. The second item asked participants about their overall reading experience and what they learned from reading the texts during treatment sessions.

3. Procedure

Because the study was conducted on intact classes, it was necessary to assess whether the classes were equivalent in reading comprehension skills and reading rate. Individual scores collected from the first treatment session were used as a pre-test to determine whether participants' reading abilities were equal. All participants were given a packet including a reading passage and reading comprehension questions and were instructed to open their packets to start reading at the same time. A stopwatch downloaded from the internet was projected on a screen for students to record their finishing time.

The treatment took place, consisting of three sessions, over a two-week period. Each session lasted approximately 25 to 30 minutes, and the interval between sessions was one or two days. Participants read one newspaper article per session. They were asked to record time indicated by the watch right after they finished reading the article. Then, they answered a corresponding reading comprehension test comprised of 10 close-ended questions (i.e., multiple choice questions and one true/false question). Immediately following each reading treatment session, a questionnaire was completed to investigate how participants perceived the difficulty and familiarity of the text. The narrow reading group read only about one topic throughout the sessions, while the regular reading group read about three topics. The researcher was present during treatment sessions to check participants' level of participation.

An immediate post-test was administered in the same week that participants completed the last treatment session. A reading comprehension test assessed their reading comprehension gains. The reading comprehension test dealt with the

topic, *Ebola* (the topic both groups read about in the beginning of the study). All participants were then asked to complete background and exit questionnaires. The delayed post-test, similar to the immediate post-test in terms of format and topic, followed three weeks later.

4. Analysis

This study focused on reading comprehension and reading rate gains as a result of narrow reading. The participants' level of reading comprehension was measured by close-ended reading comprehension questions. Participants received 1 point for answering the question correctly and 0 points for answering the question incorrectly or not providing an answer. Participants received 0.5 points for providing partially correct answers. The reading rate was measured through word per minute (WPM) by dividing the number of total words by the total time in minutes.

As for quantitative analyses, the significance level was set at 0.5. First, prior to analyzing the effects of narrow reading, reading comprehension scores and reading rate (WPM) were examined if they met the underlying assumption of statistical analyses. Next, statistical analyses were performed on learners' scores on reading comprehension and reading rate employing a two-way mixed analysis of variance (ANOVA). The purpose of the analyses was to examine whether differences existed in terms of reading comprehension and reading rate between different reading conditions (e.g., narrow reading vs. regular reading) over time. Finally, post hoc analyses were performed using a Bonferroni correction to identify between-group differences using independent t-tests.

In addition, participants' responses to post-reading questionnaires on topic difficulty and reading familiarity were analyzed. Recall that levels of reading difficulty and familiarity were estimated separately using 5-point Likert scales ranging from 1 (e.g., very unfamiliar or very easy) to 5 (e.g., very familiar or very difficult). The purpose of these analyses was to investigate the changes in the participants' levels of difficulty and familiarity with reading texts as a result of either narrow reading or regular reading. Prior to analyzing the effects of narrow reading, the Mann-Whitney U test, which is the non-parametric version of the independent sample *t*-test, was conducted at the beginning of the study to compare difficulty and familiarity levels between the groups regarding a reading text. Two additional separate non-parametric Friedman tests were performed: one to compare participants' familiarity with the topics, and another to determine their difficulty reading texts across different time points.

IV. RESULTS

1. Preliminary Analysis

To investigate whether participants' perceived levels of familiarity and difficulty with a topic used in the pre-test reading text (i.e., Ebola) influenced their reading comprehension scores on the pre-test, their responses on a post-reading questionnaire were compared. A Mann-Whitney U test did not reveal a statistically significant difference in the levels of topic familiarity between the narrow reading (Mdn = 3.0, n = 35) and comparison groups (Mdn = 3.0, n = 33), U = 498, z = -1.07, p = .28, r = .1 at pre-test. Similarly, no significant difference was found in the difficulty levels of the narrow reading (Mdn = 4.0, n = 35) and comparison groups (Mdn = 4.0, n = 33), U = 504, z = - .96, p = .34, r = .12. These results suggest that all the participants' perceived levels of text difficulty and topic familiarity with the text used in the pre-test were similar.

2. Narrow Reading and L2 Learners' Reading Comprehension

To answer the first question, several data sets were examined, including participants' reading comprehension scores over time and their responses to post-reading questionnaires. First, participants' scores of reading comprehension tests on the topic of *Ebola* was examined. The narrow reading group read three texts on *Ebola*, whereas the comparison group read only one of the texts during the treatments. To investigate whether reading about the same topic improves comprehension of that topic, three different reading tests addressing the theme of *Ebola* were administered as a pre-, a post-, and a delayed post-test, respectively. Participants' reading comprehension scores on the tests were analyzed using a mixed-design ANOVA with a within-subjects factor of testing time (pre-test, post-test, and delayed post-test) and a between-subjects factor of treatment (narrow reading and regular reading).

As indicated in Table 3, the narrow reading group's mean score of reading comprehension surpassed that of the comparison group on the immediate and delayed post-tests. The results of the mixed ANOVA confirmed the observed trend using the between-subjects factor of group and the within-subjects factor of testing session. The results revealed a significant main effect of reading condition on total reading comprehension score, F(1, 66) = 19.29, p < .05. This suggests that the mean score difference between the narrow reading and comparison groups was significant when the overall scores were considered. Participants in the narrow reading group generally performed better on the reading comprehension tests than those in the comparison group.

TABLE 3
Descriptive Statistics for the Reading Comprehension Tests

Groups	Pre-test	Post-test	Delayed post-test
Narrow Reading	5.78 (1.97)	6.99 (1.58)	8.67 (0.87)
Comprehension	6.11 (1.91)	6.47 (1.31)	6.26 (1.1)

In addition, there was a significant time effect, F(1.67, 47.4) = 16.07, p < .001. Thus, both groups' overall levels of reading comprehension were different across testing times. There was also a significant interaction effect be-

tween reading treatment and testing time: $F(1.67, 40.30) = 13.67$, $p < .001$. The significant interaction indicates that the different reading conditions resulted in significantly different patterns of mean gains in reading comprehension over time. Examination of the means in Table 3 shows that the narrow reading group obtained higher scores compared to the comparison group. However, the comparison group did not show much difference in terms of reading scores over time.

Furthermore, post hoc analyses were performed using a Bonferroni correction to identify between-group differences at each testing session. No significant difference in reading comprehension scores was observed between the two groups at pre-test, whereas a significant difference between them was observed at immediate post-test ($t(66) = 2.23$, $p < .001$) and at the delayed post-test ($t(66) = 10.65$, $p < .001$). In other words, the results show that narrow reading of a topic had a positive influence on improving reading comprehension of the topic on both immediate and delayed post-tests.

To supplement the results reported above, two separate nonparametric Friedman-tests were performed to compare participants' degrees of topic familiarity and difficulty with the narrow reading texts dealing with Ebola, across different time points. Recall that the levels of each variable were estimated using a Likert scale ranging from a scale of 1 (very unfamiliar or very easy) to 5 (very familiar or very difficult). An examination of participants' responses to post-reading questionnaires over the narrow reading sessions revealed that the narrow reading group's self-rated levels of familiarity with the narrow reading topic gradually improved across five time periods (treatment1, treatment 2, treatment 3, post-test, and delayed post-test), $\chi2(4) = 59.22$, $p < .001$. The results also showed a statistically significant difference in the narrow reading group's perceived levels of difficulty at the five time points during the study, $\chi2(4) = 59.98$, $p <. 001$. Their difficulty ratings significantly declined from post-test (treatment 1) to delay post-test (see Table 4). As shown in Table 4, at the initial stage of narrow reading, the participants reported a medium (2.5 out of 5) perceived level of familiarity with the topic of Ebola. However, during the five narrow reading sessions, the participants' perceived levels of familiarity with the topic increased to familiar, 4 on a five-point scale. In contrast, their evaluations of the content's difficulty continued to decrease, from 4 to 2 on the scale (somewhat difficult to somewhat easy).

TABLE 4
Degree of Familiarity and Difficulty With the Narrow Reading Texts

M (SD)	Narrow reading groups				
	Treatment 1	Treatment 2	Treatment 3	Post-test	Delayed post-test
Familiarity	2.50 (0.78)	3.34 (0.78)	3.5 (0.61)	3.67 (0.63)	4.14 (0.65)
Difficulty	3.80 (0.79)	3.05 (0.76)	3.11 (0.79)	2.40 (0.55)	2.31 (0.67)

3. Narrow Reading and Reading Rate

To investigate whether the narrow reading positively impact L2 readers' reading rate, a mixed-design ANOVA was conducted on the participants' reading rate with a within-subjects factor of testing time (pre-test, post-test, or delayed post-test) and a between-subjects factor of treatment (narrow reading or comparison group). The results of the reading rate showed that the narrow reading group outperformed the comparison group on both the post-test and delayed post-tests (see Table 5). However, this was only descriptive at the post-test and the delayed post-test. For the post-test, the mean difference between the two reading conditions was 1.1, which was not statistically significant, $t(66) = 1.45$, $p > .05$. As for the delayed post-test, there was also no significant difference between the narrow reading and comparison groups, but the mean reading comprehension score of the narrow reading group was a bit higher than that of the comparison reading group, $t(66) = 1.89$, $p >. 05$.

TABLE 5
Descriptive Statistics for Reading Rate

Groups		Pre-test	Post-test	Delayed post-test
Narrow Reading	*M (SD)*	85.78 (2.01)	114.76 (4.63)	110.89 (4.87)
Comprehension		86.12 (2.84)	112.98 (1.23)	109.46 (1.11)

Note. The reading rate was measured through word per minute (WPM) by dividing the number of total words by the total time in minutes.

4. Qualitative Results of Post-Reading Questionnaire Data

The quantitative results of post-reading questionnaire data reported above (see Table 4) suggest that most of the students in the narrow reading group increased their levels of familiarity with *Ebola* as they continued to read about it. Likewise, their perceived level of difficulty decreased as they became familiar with the topic. Accordingly, the qualitative analysis in this section investigates both how and why narrow reading could improve participants' familiarity with the topic, and summarizes the reasons participants gave for their changes in difficulty level with the topic. To this end, participants' reasons for their own familiarity and difficulty ratings given at the pretest and post-test were compared. Table 6 shows a summary of the reasons the narrow reading group participants gave for their changes in familiarity level. Among the thirty-five participants in the narrow reading group, there were four cases in which familiarity ratings did not improve between pre-test and post-test. Two students reported that they were already familiar with the topic because they had heard about *Ebola* from the news and newspapers. As a result, their levels of familiarity remained the highest throughout the narrow reading sessions.

TABLE 6
Effects of Narrow Reading on the Narrow Reading Group's Familiarity and Difficulty

Increase in familiarity with the topic	Decrease in difficulty with the texts
• Repeated encounters (n = 21) • Recognizing new facts about the topic in each reading (n = 7) • Having chances to understand the topic from different angles (n = 3) • Topic familiarity did not improve because I was already familiar with the topic (n = 2) • Topic familiarity did not improve because I am not interested in topic (n = 2)	• Increased levels of understanding the topic (n = 14) • Practice effects (n = 11) • Reducing processing load and anxiety (n = 5) • Enhancing vocabulary knowledge (n = 2) • Text difficulty did not decrease due to lack of word knowledge and reading skills (n = 3)

However, the other two students reported that they were not interested in science-related topics, and their levels of familiarity with the topic were the same even after narrow reading. The remaining 31 participants reported that narrow reading helped them improve their familiarity with Ebola. To be more specific, 21 participants reported that repeated encounters with the topic helped them to improve their familiarity levels. Seven participants mentioned that reading about the same topic helped them recognize new things they had not noticed in the earlier readings. Three participants stated that they were able to become familiar with the topic because each text addressed the topic from a different angle.

V. DISCUSSION AND CONCLUSION

The main goal of this study was to investigate the effects of narrow reading on L2 reading comprehension and reading rate. Specifically, this study first examined whether the students who narrowly read about a specific topic showed superiority in reading comprehension of the topic over the students in the comparison group, which read about various themes. In line with Krashen's (2004) theoretical claims, participants who engaged in reading organized around a common topic showed superior performance on immediate and delayed reading comprehension tests dealing with the content, compared to those who read about random topics.

In this study, the use of post-reading questionnaire shed some light on the benefits of narrow reading in text comprehension. An examination of participants' responses to post-reading questionnaires that the narrow reading group's self-rated levels of familiarity with the narrow reading topic gradually improved, whereas their levels of difficulty continued to decrease. This suggests that topic familiarity emerging from narrow reading could improve reading comprehension.

Furthermore, topic familiarity might have aided learners in managing cognitive resources more efficiently while reading. Reading is a complicated cognitive process which involves activation of multiple skills, including letter recognition, syntactic processing, and inferential processing (Grabe, 2009). The execution of each of these skills may drain learners' limited cognitive capacity, and reading unfamiliar topics may place additional demands on the learner. In this study, theme-based reading, by alleviating cognitive burdens, might have helped readers to process information in texts more easily.

Students' response to exit questionnaire also offered more reasons why participants in the narrow reading group improved reading comprehension of the narrow reading topic. Most of the participants in the narrow reading condition (n = 32) found narrow reading tasks either helpful or extremely helpful in improving text comprehension. The cited reasons for the usefulness included an increase in background knowledge, repetition of content, improvement in the knowledge of related words and reading speed. These results suggest that the majority of the participants benefited from the recurrence of content to understand the narrow reading texts better. Specifically, several participants mentioned that reading various sentences that were paraphrased to explain the same idea across the narrow reading texts improved their understanding of the topic.

The second research question investigated whether narrow reading promotes L2 learners' reading rate when they read a subsequent text dealing with the same topic. In this study, the narrow reading group's reading rate was measured on the pre- and post-tests using a text on Ebola, the topic that the narrow reading group had continued to read about during the treatment phase. The post-test and delayed post-test results showed that the mean reading rate of the narrow reading group were higher than those of the comparison group. However, there was no statistical difference in reading rate between the groups on the immediate and delayed post-tests.

This study therefore failed to document the positive effects of narrow reading on the reading rate, which is at odds with Chang and Millett's (2017) study. One possible reason for the nonsignificant gain difference in reading rate between the narrow reading and comparison groups may be related to the use of online newspaper articles as reading materials. The reading materials are not particularly written for English learners and might have been challenging to the participants to read without pauses. Although reading authentic texts is crucial for L2 development (Crossley, Louwerse, MacCarthy, & McNamara, 2007), most studies reporting significantly greater gains on reading rate used graded readers written specifically for English learners. Accordingly, Beglar, Hunt, and Kite (2012) suggested that reading easy reading materials is crucial to improve reading rate. As for Chang and Millett's (2017) study, the researchers also had their participants read graded readers and were able to capture significant improvement in reading rate among the narrow reading participants.

However, another possible explanation for the non-significant effects on reading rate may be associated with a lack of training intensity (Jeon, 2009). Beglar et al. (2012) pointed out that L2 readers are more likely to improve reading rate when they constantly read large amounts of

texts. Similarly, Grabe (2009) suggested that fluent reading results from reading extended texts for a considerable amount of time. In the present study, however, the narrow reading groups read three different texts over a span of roughly two weeks. The total practice of narrow reading was approximately less than three hours, which must not have been sufficient to bring about significant changes in the participants' general L2 reading fluency. If the learners had more extended sessions of narrow reading, tangible outcomes might have been detected.

On a pedagogical level, the nonsignificant effect of narrow reading on reading rate found in this study also suggest that teachers should encourage L2 learners to read texts which are within their reading-proficiency level for an extended period of time to increase their reading fluency. That being said, the positive effects of narrow reading on reading rate are not likely to be detected if it is implemented for a short period of time using challenging texts. In addition, if building L2 reading fluency is a main goal, readers should be encouraged to read texts that are within their level.

However, it is worth noting that this study also found the benefits of using authentic reading materials. Even though this study did not find statistically significant difference in reading rate between the groups on the immediate and delayed post-tests, but the narrow reading group performed better than the comparison group both on the immediate and delayed post-tests. This result also suggests that narrowly reading about one topic can promote reading rate even if reading materials are not easy.

Relatedly, this study found that narrow reading of a collection of authentic texts on a single topic can help L2learners to deal with the linguistic challenge of authentic reading materials. Many L2 teachers prefer to use simplified texts written for English learners because of linguistic complexity of authentic reading materials. However, students seem motivated to read authentic materials and also benefit from them. Interestingly, approximately 70 % of the participants in the comparison group (n = 23) also answered positively about their reading experiences during the treatment. They reported newspaper reading helped them learn new words and give them confidence to tackle authentic materials more easily. Hence, L2 learners should not be deprived of the opportunities for acquisition that authentic texts offer.

As for preparing authentic narrow reading materials, the Internet can be used to collect articles dealing with a same issue. In this study, participants read three articles on Ebola obtained through Google News. The titles of them were "Things you should know about Ebola," "Ebola Facts," and "Ebola: What You Need to Know." As their titles suggest, all the articles covered quite similar aspects of Ebola although they were published indifferent news outlets. As a result, the content across the three articles was remarkably close and even redundant. Therefore, Google News could be used as a tool to prepare a cluster of relevant stories.

As is the case for any study, its findings should nonetheless be interpreted in light of the study's limitations. Firstly, although narrow reading can be instantiated in many ways, including reading in the same genre and reading books written by one author (Krashen, 2004), this study focused only on one particular configuration of narrow reading, that is, reading in one topic. Particularly, in this study, the narrow reading group read texts dealing with the same content, but it is possible that the results found in the study cannot be replicated in other studies that define narrow reading differently. It would be interesting also to examine how different forms of narrow input recycle content and content-related words, and to what extent they promote text comprehension. In addition, in this study, narrow reading treatments comprised only three sessions, and participants read one text per session. Implementing more substantial narrow reading sessions and the use of multiple reading texts could increase generalizability. Therefore, future studies may consider a longitudinal design to track the long-term effects of narrow reading on text comprehension and reading rate.

Despite the limitations mentioned above, the current study has contributed to our understanding of the role of narrow reading in L2 text comprehension. Even though the positive effects of narrow reading have been taken for granted in L2 literature, this study presented a direct inquiry into how repetition of content and topic-related words emerging from narrow input promotes L2 learners' understanding of unfamiliar textual concepts. The results of the study showed that learners who engaged in narrow reading significantly improved their levels of text comprehension. They also suggest that, unless narrow reading is sustained for a longer period, reading narrowly about one topic is not likely to promote reading rate. Future research needs to address the limitations of this study and further investigate the effects of narrow reading on various aspects of L2 competence, including writing skills, and grammar learning.

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