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Utilizing artificial intelligence for creating an extensive reading library: A case study with ChatGPT

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Extensive reading has become an integral part of language learning curricula, with digital platforms offering accessible ways to promote reading fluency among students. However, the existing systems often suffer from limitations such as high costs, limited text variety, and gamified features that may detract from authentic reading engagement. This study explores an alternative approach using artificial intelligence (AI) tools to create an extensive reading library tailored to students' interests and language proficiency. Second-year university students ($N = 109$) were surveyed on their reading preferences, and AI tools (ChatGPT and DALL-E) were employed to generate custom e-books. The results showed that 41% of students were unaware that the materials were AI-generated, and 47% expressed a desire to continue reading AI-generated books. This paper discusses the potential of AI in enhancing reading fluency and promoting language learning.

Keywords: Extensive reading, reading fluency, artificial intelligence, ChatGPT

Introduction

Extensive reading (ER) has been extensively researched in applied linguistics. ER is theoretically supported by Krashen's input hypothesis (1985), where language learning occurs most effectively when students are exposed to language slightly above their level of proficiency. With rising digital capabilities in institutions and students, bringing ER to an online platform such as XReading (<https://xreading.com>) was a natural progression. This was exacerbated with the COVID-19 pandemic, where students had no easy way to access physical books (Atmojo & Nugroho, 2020). The XReading website provides a way for educators to assign reading assignments that can be monitored, and students can be quizzed on books they have read to record their progression.

XReading is now one of the more prominent tools associated with ER; however,

it is important to acknowledge some of the platform's inherent and contextual limitations. In a study conducted on 730 second-year university students introduced to XReading, only half were interested in continuing it after a semester (Howarth and Bollen, 2019). Many students claimed that the books available did not suit their interests. Sartika's (2020) study found similar results, where the students did not see how XReading benefited their English needs. Another study on 125 first-year university students required to do XReading assignments found that 22% of the students felt discouraged to continue reading because of the lack of interesting or relevant books (Kirchhoff et al., 2023).

Another issue with XReading is the gamification that arises from focusing on metrics such as word counts and book quotas, which shifts attention to measured outcomes rather than the activity of reading itself. On 12 January 2024, Paul Goldberg of XReading released a statement that a mass network of cheating by sharing quiz answers via the LINE messaging app had been discovered. While the reasons for cheating could be assumed to be because of academic pressure to pass or student procrastination (Jones, 2011), it can be argued that the benefits and goals of ER were not made clear to the students (Tagane et al., 2018).

There is a need for more personalized and engaging reading materials that cater to students' individual interests and proficiency levels. This study investigates the potential of AI-generated content to fill this gap.

Method

Participants

The participants were 109 Japanese second-year university students who were studying engineering at a national public university. All students at this university are required to complete an academic four-skill English class in their spring and fall semesters, and all classes use the same textbook, which utilizes the Common European Framework of Reference for Language (CEFR) scale. Students in their first year take two English classes: Practical English (a communication-focused class), and Academic English (a four-skill class). The content of all first-year classes is dependent on the instructor. At the start of the semester, students were asked about their experience with reading fluency exercises; 77% had no prior experience and 43.5% stated that their only experience with reading in English was the textbook provided in classes.

Treatment

At the start of the semester, students were given an assignment to watch two videos which explained the principles and benefits of XReading (Ryan, 2017; Kramer, 2018) and read a blog post by a Japanese social worker and avid traveler who increased his Test of English for International Communication score through extensive reading (Sugihara, 2023). In addition, the assignment also asked students to write their top three preferred genres or topics they would be interested in reading for their English homework.

AI content generation

After reviewing the results from the survey, the instructor looked at the most common preferences for reading material. ChatGPT was then used to create a total of 62 texts. Care was taken to ensure all the material created was public domain work and no copyright infringement occurred. Since the students' textbook was rated on the CEFR scale as A2 to B1, most of the texts were made within this range, with a few additional texts at the A1 and B2 levels. To ensure consistency with specific CEFR levels, each text was generated using a prompt indicating the target proficiency level. The generated text was then evaluated using the Compleat Lexical Tutor vocabulary profiler (<https://www.lextutor.ca/>). If the resulting text did not correspond to the intended level, ChatGPT was re-prompted until an appropriate match was achieved. Texts were limited to 800–1000 words to minimize the risk of AI “hallucinations,” ensuring the accuracy and coherence of the generated content (Hsieh et al., 2024). A study by Kirchhoff et al. (2023) found that one thing students enjoyed from XReading was the selection of many books with illustrations that helped the reader understand the story and enjoy the immersion. Dall-E was used to create illustrations for every three or four pages of text, and they were then converted to a .pdf file. Texts were uploaded into different folders based on their CEFR level.

Students' interaction with the material

From the second week of the semester, students were then shown how to read the digital texts and instructed to read at least one a week and write or make a video book report each time. At the end of each report, there was a section for students to submit any additional comments they had about the reading fluency activities. Each report was worth 1% of their total assessment score for a total of 13%. For the first three lessons, students were given reading time in class to familiarize themselves with how to access the digital books and to help students if any problems arose.

Data collection

Questionnaires written in Japanese that assessed the student's attitudes towards reading fluency homework were collected in the second (pre) and fifteenth (post) class of the semester. The questions were modeled after a questionnaire on reading attitude developed by Zhao and Day (2021). Responses were four-point Likert scale style responses ranging across “disagree” (1), “somewhat disagree” (2), “somewhat agree” (3), and “agree” (4). The four-point Likert scale was chosen to encourage decisive responses and avoid the neutrality often observed in five-point scales (Nadler et al., 2015). By eliminating the midpoint answer, survey respondents are forced to choose either a disagreement or agreement option (Chyung et al., 2017). In addition, after each question, students had the option to explain why they chose their answer. Both questionnaires informed students that the data from their responses would be confidentially used for research purposes and they were given an option to opt out of having their data used. The data of eight students were removed because they did not complete 0–50% of the reading assignments and thus did not have adequate experience to evaluate the assignment.

Results

Of the data sample of 101, 56% of the students read and submitted a book report every week. In total, 82% of students completed 80% or more of the book reports. In the post-treatment questionnaire, the first question was “Did you have any idea or suspicion that the texts for the reading assignments were created using AI?”. In answer, 41% of the students reported “No”, 25.5% “Yes”, and 33.5% reported that “they had a hunch something was off”.

The phrasing for both the questions and answers was deliberately chosen to capture a spectrum of participant awareness and reflection. Using the word “idea” was intended to include participants who had pre-existing knowledge of what an AI-generated text would look like. Words like “suspicion” and “hunch” were used to capture responses from students who couldn’t clearly identify AI texts but sensed something unusual about them.

Table 1. Pre-treatment and post-treatment questionnaire evaluating reading fluency.

	Mean (pre-treatment)	SD	Mean (post-treatment)	SD
1. I enjoy reading English sentences and books	2.27	0.71	2.58	0.71
2. Reading English is a waste of time	1.63	0.67	1.44	0.61
3. I don't like reading English sentences and books	2.68	0.80	2.42	0.81
4. I sometimes find myself absorbed in reading English sentences and books.	2.36	0.96	2.78	0.93
5. It is difficult to concentrate reading English books and sentences	2.82	0.86	2.58	0.85

SD, standard deviation.

Analysis of the pre- and post-treatment questionnaires revealed meaningful changes in students’ attitudes towards reading English. Students’ enjoyment of reading increased significantly (Table 1, Question 1). In addition, the most substantial improvement was observed in students’ reported ability to become absorbed in reading (Table 1, Item 4), an essential component of reading engagement and intrinsic motivation (Guthrie & Wigfield, 2000). A similar increase was reported by Zhao and Day (2021), who investigated student motivation using XReading and found comparable improvement in the same questionnaire item, with mean scores rising from 2.77 (pre-treatment) to 3.02 (post-treatment).

The final question asked about the students’ overall impression of AI-created books: 47% of students stated that they would like to continue reading books generated by AI, 31% of students would prefer reading books written by a human, and 22% of students did not have a preference. Some of the positive reactions included:

- ▶ I think it’s good for the purpose of language learning.
- ▶ Even if the book is written by AI, if it’s well written, I can enjoy it.
- ▶ The illustrations made me want to read more.
- ▶ It was interesting because it felt a little different to a human’s writing.

- ▶ If it's a difficult book, I think it would be better written by a person, but simple short books I don't mind reading if it's by AI.

Some of the negative comments were:

- ▶ The language was too monotonous.
- ▶ Some parts were hard to understand.
- ▶ I don't think it's bad, but the language was very bland.
- ▶ The writing seemed simpler than a human's writing.
- ▶ I think stories should be written by people.

Discussion

The students' comments after the fourth book report indicated some dissatisfaction regarding the difficulty level of the texts, prompting the creation of additional materials at the CEFR Pre A1 and B2 levels. Following this adjustment, students no longer expressed dissatisfaction with the alignment between their reading levels and language abilities.

Despite the study being conducted over just one semester and within a target word count of 10,400 to 13,000 words, the change in students' attitudes towards ER was considerable. The mean results for all the post-treatment questions improved. Question 4 showed the biggest improvement, where students felt that they could become more immersed in their reading – a fundamental aspect of ER.

Because this study only looked at AI-generated texts in isolation – without a direct comparison with human-authored texts – this limits the conclusions that can be drawn from this research. Future research would benefit from a structured design that includes both AI-generated and human-authored graded readings. By having two different groups engage with both types of texts, further research could better isolate which aspects of their feedback are attributable to AI.

Conclusion

This study demonstrates that AI-generated materials, created using ChatGPT 4.0 with carefully designed prompts, can serve as a viable supplement to traditional ER resources. The results showed an improvement in students' reading attitudes and a relatively high level of engagement, even though many students were unaware the texts were AI-generated. However, it must be noted that different models, prompting techniques, or fine-tuning methods could produce different results. Future research should examine how these variables influence learners' engagement, comprehension, and reading fluency.

While not directly measured, student feedback indicated that personalization and text difficulty matching were critical to their enjoyment. Future studies could explore how AI-generated libraries can scale retroactively to the reader's ability to understand or engage with the content.



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