

Turn to page 5 to enter the cave: Exploring the effect of interactive fiction on vocabulary learning, comprehension, and motivation

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Research background

- It is important to improve English skills for Japan in an increasingly globalized world.
- The problems are to develop and verify more effective teaching materials for education in Japan.

(Ministry of education 2014)

今後の英語教育の改善・充実方策について 報告～グローバル化に対応した
英語教育改革の五つの提言

Explanation of terms

- **What is the Story type**

Like the textbook, as usual, just reading the story from start to finish.

- **What is the Novel Game type**

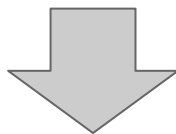
There are some choices to read the story.

- 「An adventure game in which the main objective is to read the text.」(Koike, Fujikawa, CHEN & Suzuki 2019 p.47)

Shota Koike, Daisuke Hujikawa, Zhuojun CHEN, & Orie Suzuki. (2019). 教員養成学部授業におけるノベルゲーム開発ツールを用いた学生自身によるアプリ教材実装の試み 小学校外国語の事例一. Chiba University. Graduate School of Humanities and Study of Public Affairs.

Previous Research (1)

- Neville *et al.* (2009) compared a Story group and Novel Game group



- After the lesson, each group completed a vocabulary test and wrote a summary of the story

Neville, D. O., Shelton, B. E., & McInnis, B. (2009). Cybertext redux: using digital game-based learning to teach L2 vocabulary, reading, and culture. *Computer Assisted Language Learning*, 22(5), 409–424.
<https://doi.org/10.1080/09588220903345168>

Previous Research (2)

Results of experiment

- **Story group**

- Many students said that **reading the story is an effective** way to learn.

- **Novel Game group**

- Students used a **greater variety of words** when writing their **story summary**.
- They could also learn about **German culture**.

Literature review

- The stories used in the Story type group and Novel game type group were different.
- The vocabulary tests were not analyzed in detail (due to small sample size).
- Only nine people joined the experiment (small sample size).

Purpose of study

- To verify the effect of a Story and Novel Game on the following dimensions.
 - Vocabulary learning.
 - Comprehension of story.
 - Learning experience.

System overview(1)

- We created the two stories with Twine, an interactive fiction creating tool.

System overview(1)

Story type

Bus stop

We went to the bus stop in a hurry, to stop people leaving TDU.

I explained what had happened to the bus driver: Mr. Sasaki. He said, "I saw a man with a big red bag come out of Building 6. I will stop him if he tries to get on the bus."

"Thank you for your cooperation," I replied.

The driver was so kind. He gave me a bottle of water and encouraged me to find the criminal.



Next

<https://kasumi21-i.github.io/HTML2/>

System overview(1)

Novel game type



Atrium
愛-AI-
Barber
Pond in TDU

https://kasumi21-i.github.io/AR_Twine/

System overview (2)

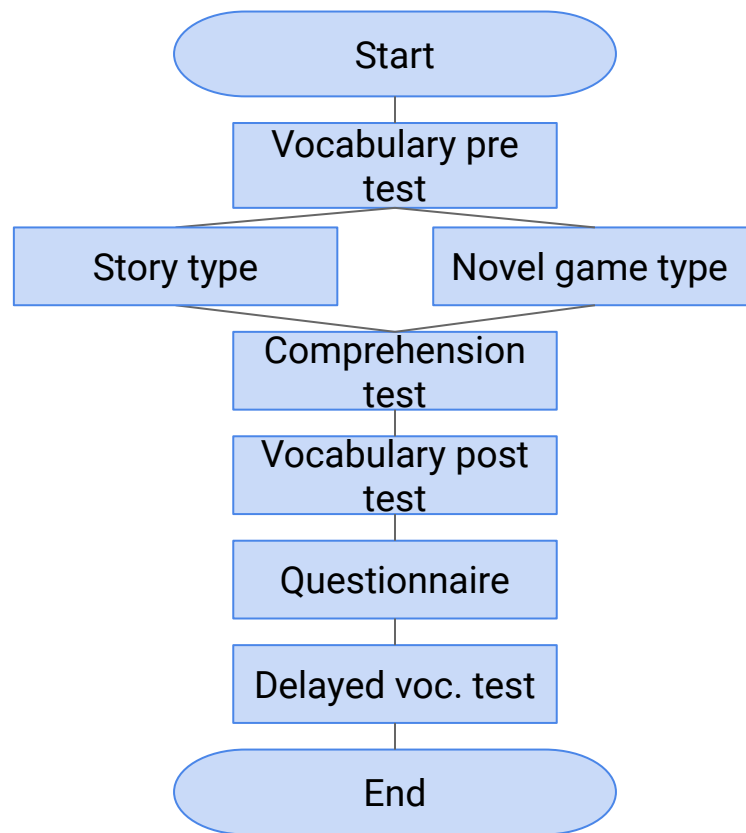
- Storyline

The English class is about to start, but a certain thing has been stolen from all class members. We need this thing to take the class. So, we cooperate to find the criminal and get it back!

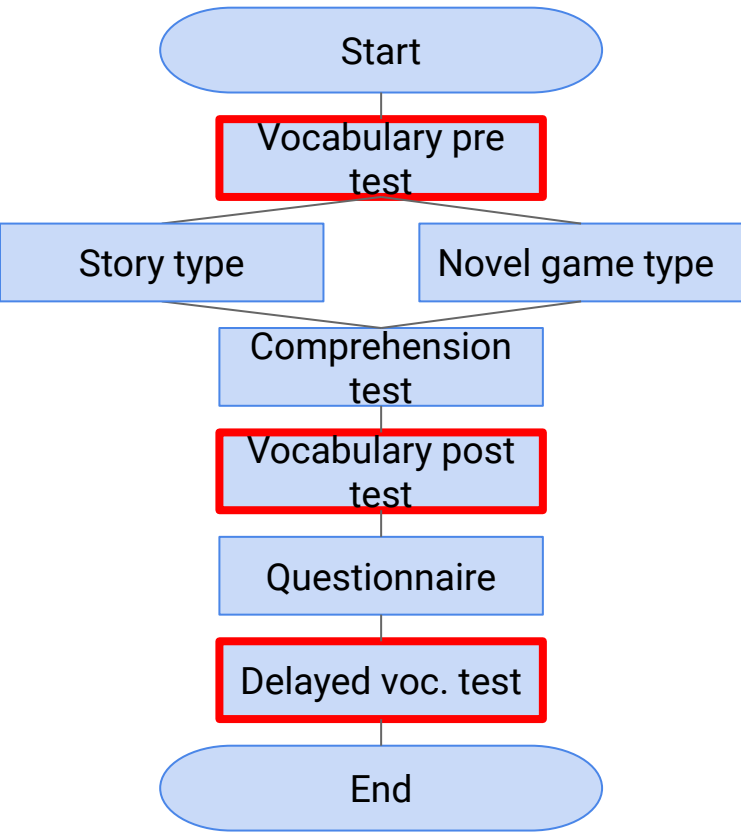
Experiment overview

- We compared the **reading comprehension**, and **motivation** of learners using the two systems (Story type, Novel Game type).
- A **vocabulary test** was given at the pre- and post-experimental stages. We compared mean scores to verify which system is more effective.

Experiment flowchart



Method (vocabulary)



- We used Google Forms to create a vocabulary test.

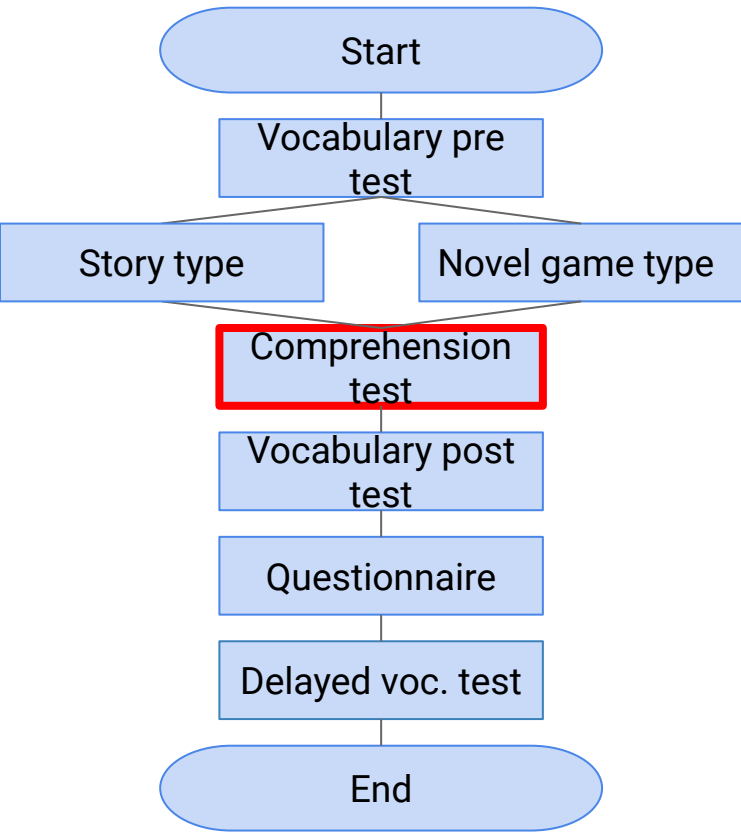
それぞれの英語に対して正しい意味の日本語を選択せよ

テスト中は本文含め一切の参照不可です

barber *

- 床屋
- 売店
- 喫茶店
- おばあさん

Method (comprehension)



- We used Google Forms to check story comprehension.

テスト中は本文含め一切の参照不可です

愛の上にかかれていた言葉は？ *

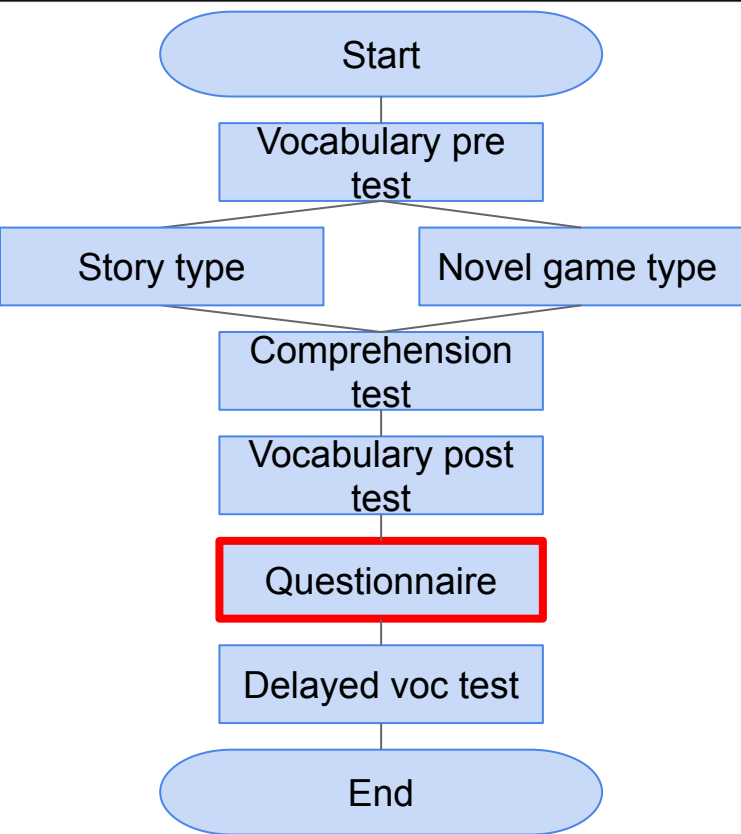
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Method (motivation)



We used a survey on a scale of 1 to 10.

1. It's fun to learn English by using this system.
2. It's easy to read English by using this system.
3. It's difficult to use this system.
4. It's effective to learn English by using this system.
5. The story is interesting.
6. I would prefer to learn English using this system compared to a paper medium.

Experiment environment

- Location: Online lesson
- Subjects: Students of Tokyo Denki Uni. (3 classes)
- Experiment period: Sep 24, 25, 2020
- Number of subjects: 88 people

Results of each systems

- **Vocabulary and comprehension test**
 - There was no significant difference.
- **System questionnaire (motivation)**
 - There was no significant difference.
- **Delay vocabulary test**
 - There was no significant difference.

Categorize the control group

- We divided subjects based on their majors: information science and electrical and mechanical engineering.
- Then, we compared the learning gains of these two groups.

Post test

- There was no significant difference between group mean scores for **vocabulary learning** and **reading comprehension**.

Questionnaire

- There were significant differences in **motivation** scores for the engineering students.

Questionnaire	Novel Game mean score	Textbook type mean score	t-test (paired)
It's fun to learn English by using this system.	8.50	7.18	p<0.05
It's easy to read English by using this system.	8.43	6.94	p<0.05
It's difficult to use this system.	4.07	2.53	
It's effective to learn English by using this system.	7.93	6.47	p<0.05
The story is interesting.	8.79	7.35	p<0.05
I would prefer to learn English using this system compared to a paper medium.	8.43	7.12	p<0.05

Delay test

- There was no significant difference.

Discussion 1

- **No significant result** found for **information science** students:
 - Students who play games on a regular basis may not be affected by a little story intervention to appreciate the system.
- For the **vocabulary test**, we prepared words at EIKEN Level 2, but the number of questions was **too small** and the words were **too easy** for university students, so we may not have been able to obtain valid data.

Discussion 2

- The significant difference found in the **motivation questionnaire data** for **engineering students** may have a relation to frequency of **daily game playing**.

Conclusion

- There were no significant differences between the Story type and Novel Game type system for vocabulary **learning**, story **comprehension**, or **motivation**.
- However, when the subjects were divided by major, the Novel Game type was **rated significantly higher** on almost all items on the **motivation** questionnaire.

Future tasks

- The **vocabulary test** will include not only frequently used words, but we will also require learners to use words as part of the interactivity of the story, so that a learning effect may be more pronounced on vocabulary tests.
- The **number of questions** in the vocabulary test and comprehension test was too small, so we will **increase the number of questions**.

End

Thank you for listening