The Effects of Input Enhancement and Involvement Load on L2 Readers' Incidental Vocabulary Learning With a Pop-up Dictionary

インプット強化と関与負荷がポップアップ注釈つきのL2読解を通した付随的語彙学習に与える影響

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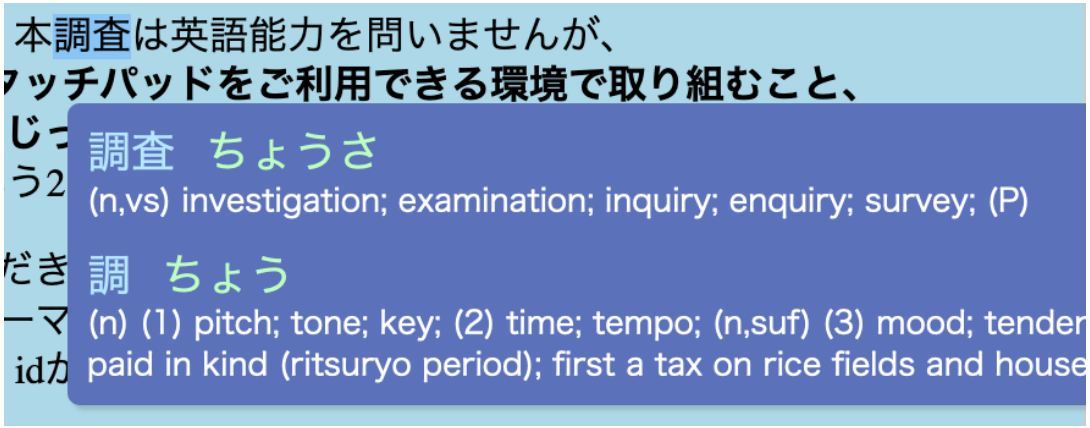
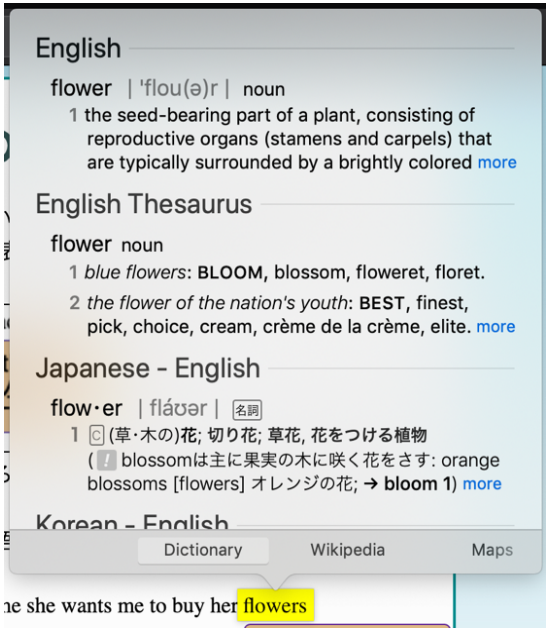
What is a pop-up dictionary?

- Pop-up dictionary is a piece of software that allows readers to look up the meaning of any word in an electronic text.
- Examples:



Rikai-kun, a web browser extension for L2 learners of Japanese.



Pop-up dict. on MacOS

Why research pop-up dictionary?

- With digitalization of education, there will be increasing number of opportunities to use pop-up dictionary.
- It combines strengths of both glosses (not distracting) and dictionaries (can look up any word).
- Personal experience with Rikai-kun: Are pop-up dictionaries too accessible??

Previous Research (pop-up dictionaries)

- Research on pop-up dictionaries is still an emerging field.
- However, previous studies which compared pop-up dictionary with electric or paper dictionaries showed comparable or advantageous results with pop-up dictionary.
- Furthermore, they proved that pop-up dictionary doesn't hinder reading comprehension.

Liu & Lin (2011), Mekheimer (2018)

Previous Research (vocabulary acquisition)

- Increased involvement load should mean higher gains in vocabulary learning with dictionary than with gloss. However, learners will often abandon the use of a dictionary (Hulstijn, Hollander, & Greidanus, 1996).

Experiment 1:
Gloss vs. Pop-up Dictionary

- Experiment 1 compared vocabulary learning and reading comprehension between two groups:

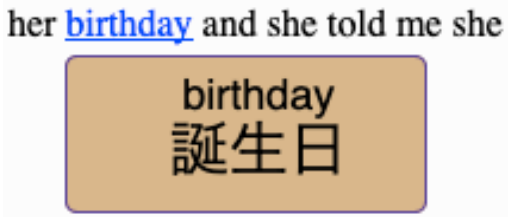
Gloss (G)	Pop-up Dictionary (PD)
Input Enhancement on target words.	No input enhancement.
Can only look up target words.	Can look up any word.

8 target words appearing once (F1) and 8 appearing 3 times (F3)

Single context-fitting meaning is shown after clicking the word.

Experiment 1 Procedure

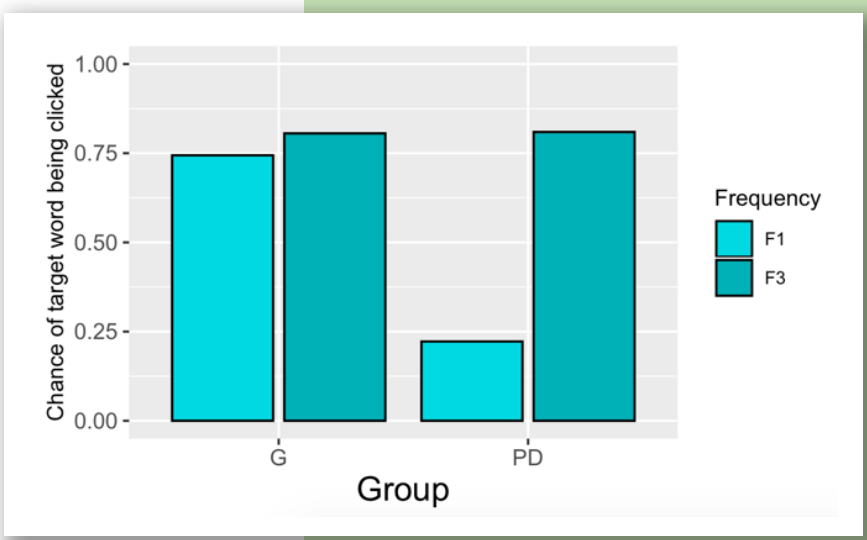
- The Material (821 words, FKGL 7.1, expository)
- Reading comprehension test
- Meaning recall test (no-context)
- Meaning recall test (context)

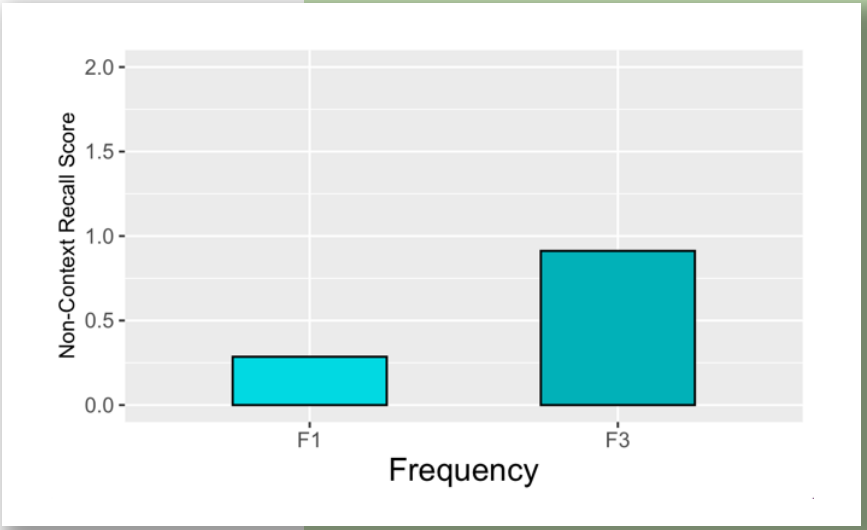


Pop-up dictionary example

Experiment 1 Results

- Both groups looked-up the same amount of words, but PD group only looked up 25% of F1 target words.
- Despite that, non-context scores were the same (p = .039). F3 words were more easy to memorize than F1 words (p = .001).
- No effect of group on reading comprehension (p = .906)





Experiment 1 Discussion

- Participants in PD group learned target words with better efficiency, possibly because they chose words that were relevant to them.
- It was not possible to assess, whether participants ignored some of the target words on purpose or if they didn't notice them.
- Testing sample was very small (11 people).
- Experiment groups were not minimal pairs.

More Previous Research (noticing)

- Noticing (Schmidt, 1990) promotes learning (Godfroid & Schmidtke, 2013).
- Noticing one's gaps in knowledge is necessary for learning new linguistic forms (Izumi & Bigelow, 2000).

"Learners are not free to notice anything and everything they wish to notice."

Izumi (2013)

"It is highly possible that during reading, the readers fail to notice unknown words and vocabulary learning will not occur."

Azari (2012)

More Previous Research (noticing)

- Input enhancement (IE) is thought to promote noticing (LaBrozzi, 2016), but doesn't have a reliable effect on vocabulary acquisition (Corbetta & Schulman, 2002).

To answer the questions brought by Experiment 1, Experiment 2 must measure noticing.

Experiment 2: Research Questions

- RQ2.1 Does **input enhancement** increase the chance a word will be **looked-up** by the participant?
- RQ2.2 Is presenting a **single context-fitting meaning** in a gloss more effective for vocabulary acquisition than **presenting multiple dictionary entries** for each word?
- RQ2.3 Are participants able to pay **attention** to all **unknown target words**?

Experiment 2: Measuring noticing

- 4 experimental groups read text with pop-up dict.:

Single Gloss No Input Enhancement	Single Gloss Input Enhancement
Multiple Choice Gloss No Input Enhancement	Multiple Choice Gloss Input Enhancement

Experiment 2 Procedure

Online measure of noticing

- The Material (1036 words, FKGL 5.1, narrative)
  - Read online, special software was developed to track reading position.

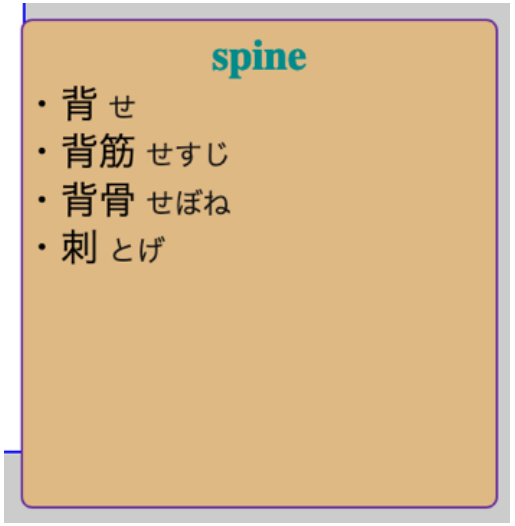
Reading software example

Single gloss (SG)

Single context-fitting meaning is shown.

Multiple gloss (MCG)

Five dictionary translations are shown.



Pop-up dictionary example

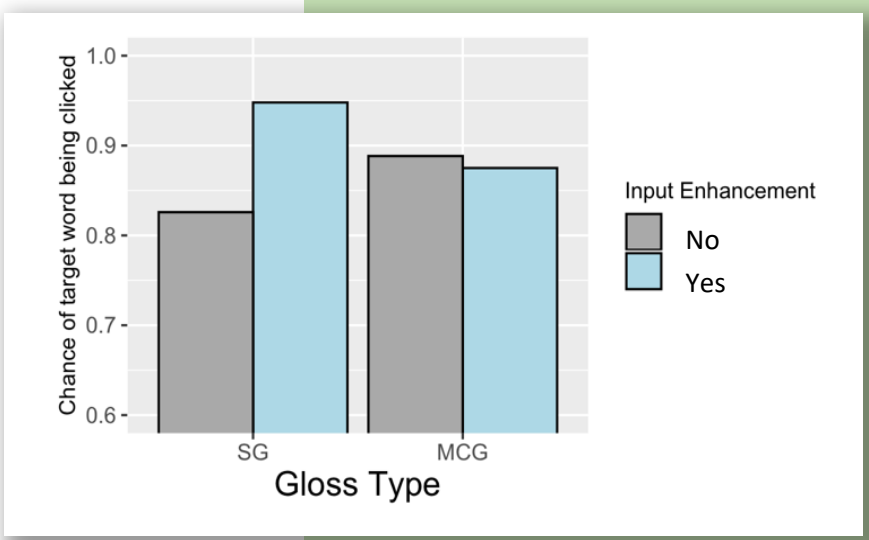
Experiment 2 Procedure

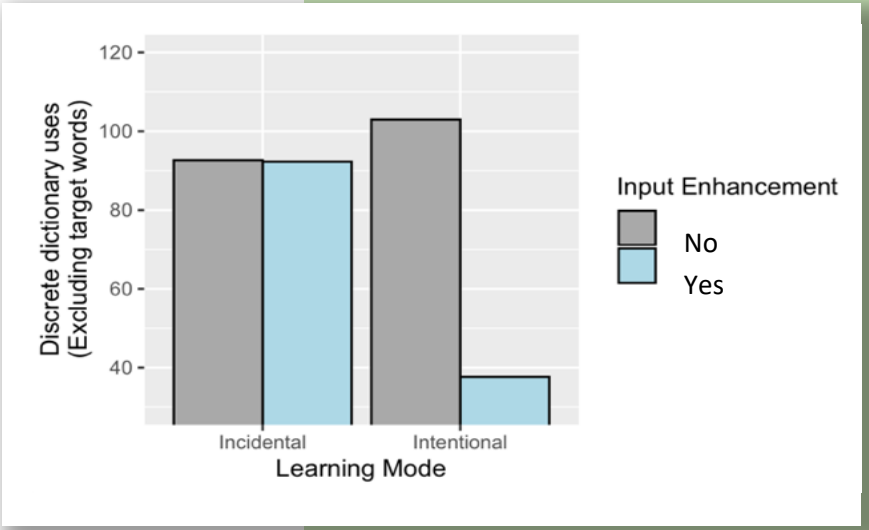
- Reading Comprehension Test
- Vocabulary Post-tests
  - Form Recognition Test
  - Meaning Recall Test
  - Meaning Recognition Test
- Questionnaire
  - Pop-up Dictionary use strategy etc.

Offline measure of noticing

RQ 2.1 Results

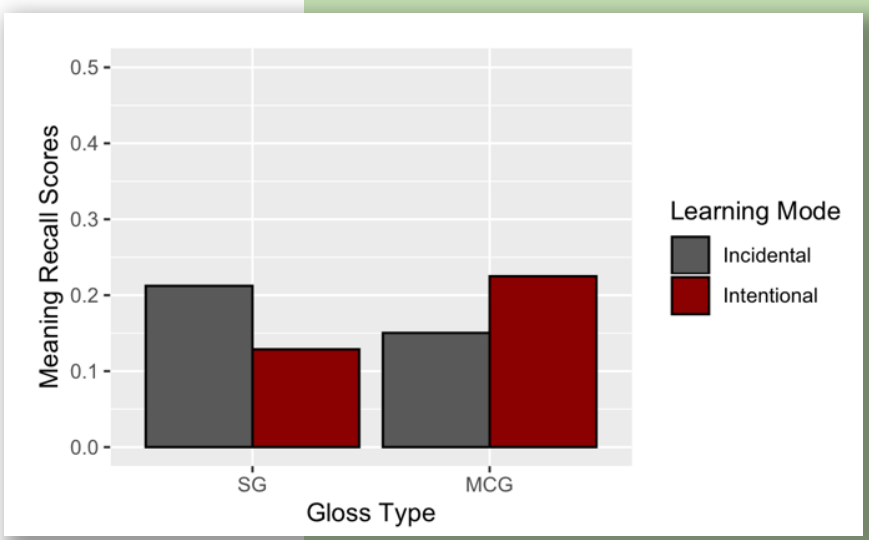
- Input enhancement promotes vocabulary look-ups (p = .023, d = .935).
- Questionnaire showed that one third of participants were learning new words intentionally. Input enhancement limited look-ups on non-target words for these participants (p = .028).

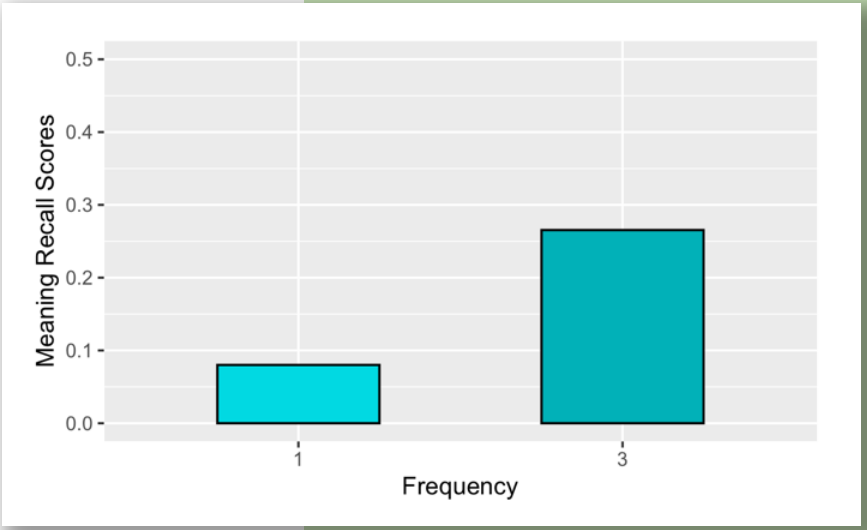




RQ 2.2 Results

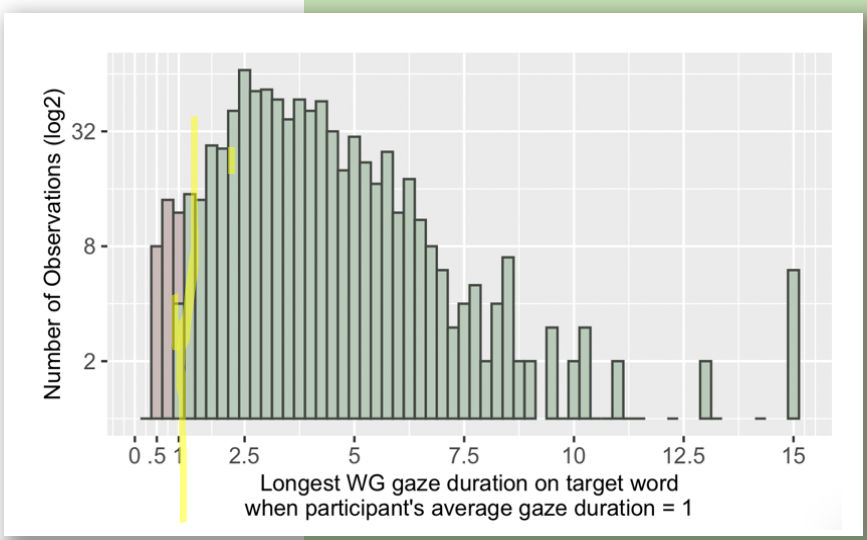
- No direct effect of gloss style on meaning recall (p = .480).
- MCG was more effective for intentional learners (p = .003).
- Word frequency (F1, F3) proved most significant factor (p < .000, d = .516)

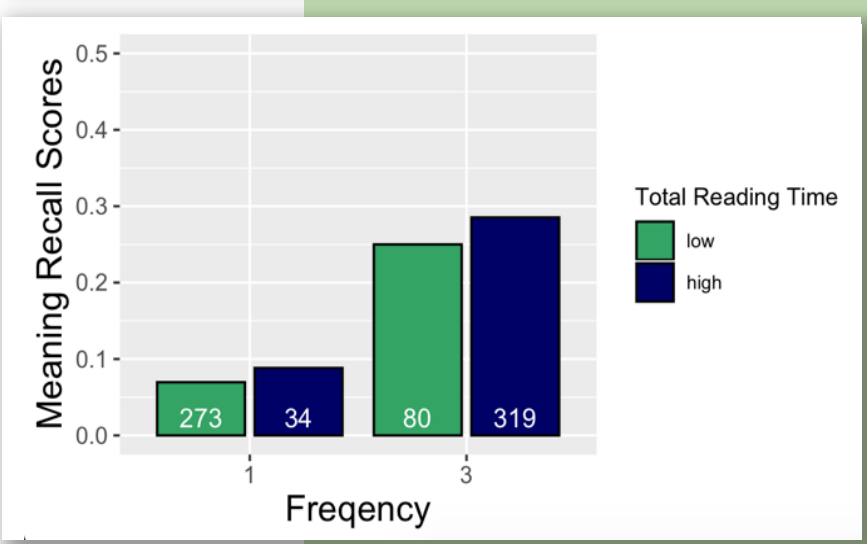




RQ 2.3 Results

- Among skipped words (10%), only 4 were target words across all subjects.
- Target words with longest gaze shorter than the participants' average gaze duration made up 4% of target words.
- When word frequency is the same, longer gaze durations don't promote vocabulary acquisition.





General Discussion

- Whether the participant tried to memorize words had effect on each group.

  Even in incidental vocabulary studies, **never assume** that participants will be only **learning incidentally**.

- Word frequency was a more significant factor than gloss type (SG vs MCG) : c.f. Eckhert and Tavakoli (2012)

  Showing multiple **semantically connected** translations of one word does **not** necessarily **increase involvement load**.

General Discussion

- Participants were able to pay attention to most target words.

Assuming the reader has no learning disorder, it is expected that they should be **able to pay** enough **attention to** most **new words**.

Whether they **look the word up** in a dictionary **rather depends on**:

- word frequency
- relevance to the reader
- input enhancement
- attitude towards vocabulary learning
- guessability

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Thank You for Your Attention