Self-Explanation on Reading Comprehension in English as Foreign Language using Kit-Build Concept Map

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Abstract: This study aims at increasing and retaining English as foreign language learnres' understanding of English texts. For the purpose we add the Self-Explanation function to Kit-Build Concept Map. Self-explanation is the process of explaining texts or problem to oneself to better understand the material while reading. In this study self-explanation is to connect propositions in the concept map with texts as the source. The result of this study shows learners accept the activity and can correctly make self-explanation when they correctly make the propositions related to the texts.
Keyword: Self-Explanation, Kit-Build Concept Map, Reading Comprehension, English as Foreign Language (EFL)

1. Introduction

Reading comprehension in English as Foreign Language (EFL) require a continuous process of multiple interactions between the learners' background knowledge within their mother language and the knowledge that being described in other Language (English). In general, the reading comprehension of EFL is the same process with the Mother Language (ML) reading comprehension, but in EFL it is slower and less successful than ML reading [(2)].

There are many strategies that being used to support the reading comprehension process. This study focuses on concept mapping and self-explanation.

Concept mapping gives an advantageous effect on reading comprehension of EFL [(3, 4, 5)]. Kit-Build concept mapping (KB Map) method [(6,7)] is effective to reading comprehension in EFL [(2)] and realizes immediate diagnosis.

Self-explanation is the process of explaining texts or problem to oneself to better understand the material while reading. Self-explanation contributes to science text comprehension is by facilitating follow-up processing in which readers maintain textual coherence between sentences through resource-demanding inference processes [(9)]. Readers who explain the text, either spontaneously or when prompted to do so, understand more from a text and construct better mental models of the content [(1)].

This study proposes a learning environment which facilitates reading comprehension in EFL with KB-Mapping and self-explanation. KB-mapping helps learners' structural understanding of the content.

The composition of this paper is organized as follows. The next section gives an overview of KB-mapping, followed by explanation of the difference of KB mapping from original concept map and relation between KB-mapping and EFL reading comprehension. Section 3 shows the setting and the method of the experiment in this study. Section 4 shows the result and make discussion on it. Finally, section 5 concludes this paper and shows some promises of future study.

2. KIT BUILD CONCEPT MAP

"Kit-Build Concept Map" or "KB map" is an application that implemented the closed-end approach of the concept map.

Novak defined a tool named concept map, and it definition is; Concept maps are graphical tools for organizing and representing knowledge. They include concepts that usually enclosed in circles or boxes of some type, and relationships between concepts indicated by a connecting line linking two concepts. Words on the line, referred to as linking words or linking phrases, specify the relationship between the two concepts [(8)]. KB Map framework have two characteristics, they are; (A) concept map building task is divided into segmentation task and construction task, and then the segmentation task is replaced by recognition task of parts of a concept map that is "kit," and (B) a goal map should be prepared as an ideal map that a learner is required to build; the applicable targets of the KB Map are restricted and it requires several additional functions for the learning environment. Therefore, it is necessary to propose an adequate way to use KB map under these restrictions [(6)].

Example of a goal map as shown in Figure 1. Teachers create goal maps to represent the structure of knowledge that learners need to learn. Figure 2 illustrates an example of parts. It is call as kit. Although, in general concept map building, learners are required to extract parts from learning resources, in KB map building learners just recognize the parts

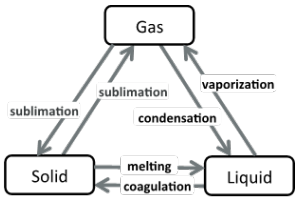

Figure 1 an example of goal map

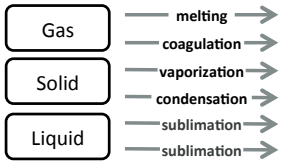

Figure 2 an example of kit

3. Self-explanation in KB map

The purpose of this function is to increase learners' understanding and ideally, they can keep and preserve the information or knowledge in their mind much better. This

new function added one more step on learners' map. After they make a full proposition, new text windows will appear and require student to highlight a specific sentence from the reading material that related to the proposition they have made. see Figure 3.

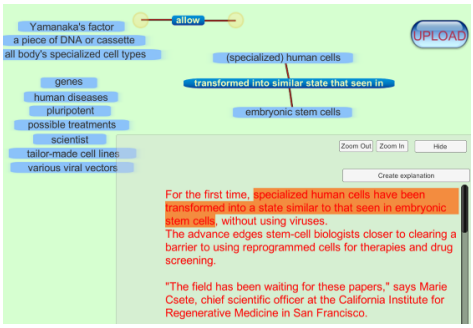

Figure 3. example of self-explanation in KB-Map

4. EXPERIMENTAL SETTING AND METHOD

4.1 Procedure

This experiment involving six undergraduate student who learn English as Foreign Language. We conduct four sessions and using four different material for each session. Each session has the same activity, they are:

- English group discussion
- Reading the material in text
- Map construction
- Test
- Teaching session
- Delayed test after 2 weeks.

4.2 Material

We use four English scientific articles, with Japanese explanation and translation in each article. The number of words in article is between 450 to 500 words. The number of proposition in goal map is also limited from 10 to 16 propositions for each material. We prepared a comprehension test, which were a true or false sentence, around 80% of the question are related to the goal map and the rest are not related but still come from the reading material.

4.3 Results

The purpose of this research is to measure the efficiency of the additional function in KB-Map. The result of the self-explanation function is shown in the table 1. This shows that correct rate of propositions in their learner maps and the correct rate of self-explanation if they can make proposition correctly. From this result, most of the students could make self-explanations if they could make correct propositions.

Table 1. Result of Self-Explanation in the KB-Map

	Correct propositions (%)	Correct Self-Explanation (%)
Session1	60.4	74.1
Session2	91.7	76.4
Session3	62.1	95.1
Session4	64.3	96.3

However, when the text was not fit with the reader's knowledge, consequently, the comprehension process was break down, to follow these kinds of process another process is needed to activate the difficult-to-access knowledge or memory for previous section of the text using effortful, step-by-step reasoning activities (10) In the last 2 sessions, the number of Self Explanation was increased very high, showing that learners feel comfortable and have a strong knowledge to explain the proposition with the Self-Explanation function. Using this function, learners can show the reason why they have made the propositions,

5. CONCLUSION

The tendency of learners using the self-explanation is high, it shown that the function could help their learning process. In the beginning of the experiment some student failed to understand how to use it, but it changes when their understanding increase. Further experiment with bigger participants is needed to measure the efficiency of the self-explanation function.

参考文献

(1) Chi, M. T. H., de Leeuw, N., Chiu, M., & LaVancher, C.. Eliciting self-explanations improves understanding. Cognitive Science, 18, 439–477(1994)
(2) Alkhateeb, M., Hayashi, Y., Rajab, T., Hirashima, T.: Comparison between Kit-Build and Scratch-Build Concept Mapping Methods in Supporting EFL Reading Comprehension, INFORMATION AND SYSTEMS IN EDUCATION, 14(1),pp. 1–15,(2015)
(3) Manoli, P. and Papadopoulou, M.: "Graphic Organizers as A Reading Strategy: Research Findings and Issues", J. of Creative Education, Vol. 3, No. 3, pp. 348–356 (2012)
(4) Salehi, A. D., Jahandar, S. and Khodabandehlou, M.: "The Impact of Concept Mapping on EFL Student's Reading Comprehension", J. of Indian J. of Fundamental and Applied Life Sciences, Vol. 3, pp. 241–250 (2013)
(5) Phantharakphong, P. and Pothitha, S.: "Development of English Reading Comprehension by Using Concept Maps", J. of Procedia-Social and Behavioral Sciences, Vol. 116, pp. 497–501 (2014)
(6) Hirashima, T., Yamasaki, K., Fukuda, H. et al.: "Framework of Kit-Build Concept Map for Automatic Diagnosis and Its Preliminary Use", J. of Research and Practice in Technology Enhanced Learning, APSCE, Vol. 10, No. 1, pp. 1–21 (2015)
(7) Yamasaki, K., Fukuda, H., Hirashima, T. et al.: "Kit-Build Concept Map and Its Preliminary Evaluation", Proc. of the 18th International Conference on Computers in Education, pp. 290–294 (2010)
(8) Novak, J. D. and Cañas, A. J.: "The Theory Underlying Concept Maps and How to Construct and Use Them", Technical Report IHMC Cmap Tools 2006-01 Rev 01-2008 (2008)
(9) Yasuhiro Ozuru, Stephen Briner, Rachel Best. Et al: "Contributions of Self-Explanation to Comprehension of High- and Low-Cohesion Texts", Discourse Processes, 47:641–667 (2010)
(10) Kintsch, W.. Learning and constructivism. In S. Tobias & T. M. Duffy (Eds.), Constructivist theory applied to instruction: Success or failure? (pp. 223–241).Mahwah, NJ: Lawrence Erlbaum Associates, Inc(2009)