THE EFFECTS OF CONCEPT MAPPING LEARNING STRATEGY ON CIVIL ENGINEERING STUDENTS' IN ENGLISH READING COMPREHENSION

Ummi Rasyidah [1), **Dedi Mardiansyah** [2)

[1]Program Studi Pendidikan Bahasa Inggris Fakultas Keguruan dan Ilmu Pendidikan
[2]Program Studi Pendidikan Fisika Fakultas Keguruan dan Ilmu Pendidikan
Universitas Pasir Pengaraian; e-mail: ummirasyidah@yahoo.com

ABSTRACT

This study extends the knowledge garnered with civil engineering populations by determining the reading comprehension strategies most important to students' success on adult literacy outcome measures and aligning them with previously researched interventions. Concept Mapping should benefit from strategies that teach looking for clues in or generating questions about a text. A pre-experimental design is used. The result showed that post-test is higher than pre-test. It means that there is an improvement of students' reading comprehension achievement who are taught by Concept Mapping Strategy.

Keywords: *Concept Mapping, Strategy, Reading Comprehension*

INTRODUCTION

Bahasa Inggris I is far more than talking about structure or about language. It is about communicating and understanding English. It is a compulsory subject in Civil Engineering Department. Every students has to take this subject. It emphasizes on performing tasks and carrying out activities, not just discussing what students would do. Furthermore, in *Bahasa Inggris I* students learn all languange skills such as reading, listening, speaking and writing.

Reading comprehension is not a unitary construct but a complex skill dependent on a number of cognitive processes. To understand written text, a learner needs to decode printed words and to access their meanings; relevant background knowledge needs to be activated, and inferences have to be generated as information is integrated during the course of reading. In addition, control processes monitor both ongoing comprehension and the internal consistency of text, allowing the reader to initiate repair strategies if comprehension breakdown is detected (at the simplest level, re-reading a section of the text).

English lecturer may experience the same situation in which the students are unwilling to read. There are, of course, many factors causing this problem. Students feel that they lack of confidence to read aloud as the result of not knowing how to pronounce. Some others might state that they just read without understanding what they read. The rest might tell that the text or passage is difficult.

The role of reading strategies in reading comprehension has been a focus of intense interest. Nowadays, some different methods, approaches, and strategies are employed in order to encourage students to read English. Some strategies used by the teachers recently are the ones characterized as concept mapping. This emphasizes on the ability of the students more in negotiating the meaning and comprehending the text rather than thinking much on the meaning of each word of the sentences in the text or passages.

This experimental research is conducted to find an alternate way to

motivate the students to be more active in reading class. In Civil Engineering Classroom, the students will perform tasks and carry out activities such as reading, finding their own text and answering questions. It is expected that the students will be motivated to perform the task and activities as they are rooted from real life events. It is believe that the more authentic the material is the more motivated the students will be.

What is Concept Mapping

To improve learners' reading and writing abilities, effective strategies and assistant tools are being carefully considered. Researchers have found that the strategy of concept mapping can enhance learners' reading compre-hension (Cassata-Widera, 2008; Liu, 2008; Zittle, 2005).

A concept map is a graphical tool to activate and elaborate on prior knowledge, to support problem solving, promote conceptual thinking and understanding, and to organize andmemorize knowledge (Zwall and Otting, 2012). Similarly, a concept map is a graphic organizer, which uses schematic representation, hierarchically to organize a set of concepts, connected by means of words in order to build meaningful statements (Jena, 2012). Further, Novak (2011) states that concept map includes concepts, usually enclose dincirclesor boxes of some type,and relationships between concepts or propositions, indicated by a connecting line between two concepts. Words on the line specify the relationship between the two concepts. We define concept as a perceived regularity in events or objects, or records of events or objects, designated by a label.

According to Lanzing (2007) concept mapping can be done for for several purposes:

- to generate ideas (brain storming, etc.);
- to design a complex structure (long texts, hypermedia, large web sites, etc.);
- to communicate complex ideas;
- to aid learning by explicitly integrating new and old knowledge;
- to assess understanding or diagnose misunderstanding.

Concept mapping fits under the umbrella of thinking process maps and differs from task specific organizers in very specific ways (Hyerle, 2000). First, concept maps are hierarchical. The hierarchical structure of concept mapping incorporates Ausubel's concept of sub-assumption, namely that new information is often sub sumable under more general concepts. Second, concept maps are open-ended. Maps are not right or wrong but are judged instead on the meanings explicated in the relationships noted. Third, when learners are processing information, concept mapping can stimulate their metacognitive awareness so that it assists learners to not only establish an appropriate monitoring strategy,but also to increase the use of retrieving and memorizing knowledge. Furthermore, a concept map allows instructors to organize information intochunks, enabling learners to remember more information for a longer time (Ruffini,2008).

The Nature of Reading of Reading Comprehension

Reading comprehension has multiple definitions and explanations. Reading comprehension defines as the process of constructing meaning through interaction and involvement with written text (Snow, 2002). When comprehension takes place, the reader is an active participant who engages in intentional, problem solving processes where thinking is influenced by both the text and the reader's prior knowledge (e.g. Trabasso & Bouchard,

2002). Similarly, Rathvon (156: 2004) defined reading comprehension as the ability to derive meaning from text. Successful comprehension enables readers to acquire information, to experience and be aware of other worlds (including fictional ones), to communicate successfully, and to achieve academic success.

Futhermore, Pardo (2004) states that comprehension as the process of readers interacting and constructing meaning from text, implementing the use of prior knowledge, and the information found in the text. Blanton et al., Neufeld and Rapp et al., (Westwood, 2008:42) define reading comprehension as an active thinking process through which a reader intentionally constructs meaning to form a deeper understanding of concepts and information presented in a text.

Westwood (2008:42) says that reading comprehension is often conceptualized as functioning at different levels of sophistication and referred to, for example, as literal, inferential and critical. In addition, Mikulecky and Jeffries (2007:74), state:

> "Comprehending what you read is more than just recognizing and understanding words. True comprehension means making sense of what you read and connecting the ideas in the text to what you already know. It also means remembering what you have read. In other words, comprehending means thinking while you read."

Reading comprehension is a collective term that describes the result of grasping the meaning from a text with one's intellect a task that involves many skills. Skillful readers use various comprehension strategies and have good understanding of how comprehension strategies work and when to use those strategies To achieve reading comprehension the reader employs skills such as identifying the main idea of a passage, summarizing the content of a text, generating questions about the information in the text and looking for clues that answer those questions (Kamil, 2003).

It can be concluded that reading comprehension is an interactive process between the reader and the text. When the reader reads the text, she activated not only her background knowledge but also processed the information in the text.

RESEARCH METHOD

The point of this research project is to determine the effects of concept mapping on student achievement of third grade students. A pre-experiment design namely pre test and post-test design was used. The independent variable is concept mapping strategy. The dependent variable of the experiment was reading comprehension. The research has conducted at Civil Engineering Department, University of Pasir Pengaraian. The sample population will be taken from one of the English Classes of Civil Engineering Department containing 34 students. The students attended the class once a week. The time allotment used in each class is 90 minutes in each meeting. They were the students who studied for Bahasa Inggris I in the 2nd semester of 2013-2014 academic year.

FINDING AND DISCUSSION

There is an improvement of students' reading comprehension achievement who are taught by Concept Mapping Strategy.

$H_1 : \mu A \neq \mu A$

$H_0 : \mu A = \mu A$

The hypothesis stated that H_1 is accepted if there is an improvement of students' reading comprehension achievement who are taught by Concept Mapping Strategy. While H_0 is accepted if there is no improvement of students' reading comprehension achievement who are taught by Concept Mapping Strategy. The result of test can be seen in the following table

Table 1. Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std Deviation	Std Error Mean	95% Confidence Interval of The Diffrerence				
				Lower	Upper			
Pair 1 Pre-Test-Post-Test	-8.8903	13.83777	2.66306	-14.36441	-3.41633	-3.338	26	.003

After calculating the data, it is found that the value of *t* is bigger than *t table (0,003)*. It means that H$_1$ is accepted. There is an improvement of students' reading comprehension achievement who are taught by Concept Mapping Strategy.

This study was meant to test the effectiveness of concept mapping on reading comprehension. It may also be said that for teachers and students to use concept maps effectively and consistently, they must also be able to see evidence of their benefits. This study is designed to test the effectiveness of concept mapping in improving reading comprehension of a science related text. Concept mappling strategy can significantly reduce the amount of time required to attain instructional objectives for both typical learners and those with cognitive area.

Graphic organizers are visual devices, a common misperception is that they are unlikely to work with auditory learners and should used only for visual learners. In reality, the complexity of the to-be-learned information,the learner's innate memory capability, the extent and quality of elaboration the learner applies when processing the information, and the existing background knowledge of the learner dictates the subsequent success in learning far more than one's per- ceptual references. Likewise, teachers' knowledge, ability to facilitate student elaboration and ensure engagement of all students, pedagogical skills associated with using graphic organizers in the classroom, and the opportunity to employ them in a quality manner play a highly significant role in the relative impact of students on student learning.

It is clear that concept maps are graphical tools for organizing and representing knowledge. According to Sturm & Rankin-Erickson (2002) concept mapping help the studnets to comprehend the text because in concept mapping, the students categorize information into a graphic form, create a visual representation of the concepts within the text, the relationships among them and the text structure. In addition, (Novak& Cañas (2006) stated that in concept mapping included concepts enclosed in boxes and relationships between concepts through the use of connecting lines and words linking two concepts.

All the above characteristics of graphical tools can play a positive role in reading comprehension for students, who due to their schemata experience various difficulties in processing a text, understanding the syntax, the concepts and the structure of the text.

According to the results of this study, the concept map improved the students' reading comprehension as this was indicated through their score improvement in post-test. The studnets used concept maps as aided to their reading comprehension as this was indicated through their responses in reading comprehension questions and their comprehending the text.

Due to limitation of research, there are several areas that are not covered by the current research yet:

1. This research was only conducted in reading comprehension on Civil Engineering students. Therefore, it could not tbe reated on the other skills.
2. This research was focused on cognitive aspect.

This research was pre-experimental design. Another experimental research is needed to find out whether the strategy has an effect on other vaeiables or not

CONCLUSION

This research applied concepr mapping strategy which was associated with reading comprehension. After conducting the research and testing the hypothesis, the finding was there is an improvement of students' reading comprehension achievement who are taught by Concept Mapping Strategy.

Based on the result of this research, it could be shown that the students' reading comprehension were higher in post test than in pre-test. Therefore, the researcher promoted some suggestions related to the usefulness of this research and the suggestion to the next research. The suggestions were as follows:

1. The English teachers/lecturers are suggested to use this strategy. It is expected to discuss and apply this strategy in seminar.
2. The English teachers/lecturers who love to apply this stategy are suggested to design the lesson plan based on its steps.
3. The next researchers who interested in this strategy are suggested to apply it in the difference genre, skills, grade and other variables.

BIBLIOGRAPHY

Blackwell, S. & Pepper, K. (2008). The effect of concept mapping on preservice teachers'reflective practices when making pedagogical decisions. *The Journal of Effective Teaching*, 8(2),77-93. http://uncw.edu/cte/et/articles/Vol 8_2/Blackwell.htm

Cantu. E., Schrodoer, N., and da Silva, D.Z.P. 2010. Using concept maps as synthesi tool to construct integrated curriculum in J.Sanchez, A.J Canas and J.D Novak (Eds) *Proceedings of the Fourth International Conference on Concept Mapping*. Vina del Mar, Chile [viewed 1 Apr2012] http://cmc.ihmc.us/cmc2010papers/ cmc2010-a9.pdf.

Cassata-Widera, A.E. (2008). Concept mapping and early literacy: A promising crossroads. In A. J. Cañas, P. Reiska, M. Åhlberg, & J. D. Novak (Eds.), *Concept Mapping: Connecting Educators* (pp. 123-131). Finland, Tallinn :Estonia & Helsinki.

Chiou,Chei-Chang. 2008. The effect of concept mapping on students' learning achievements and interests. *Innovations in Education and Teaching International*. Routledge Taylor & Francis Group

Jena, Ananta Kumar. 2012. Does constructivist approach applicable through concept maps to achieve meaningful learning in Science? *Asia-Pacific Forum on Science Learning and Teaching*, Volume 13, Issue 1, Article 7 (Jun. 2012)

Hyerle, D. 2000.*A field guide to using visual tools*.Alexandria, VA: Association for Supervision and Curriculum Development.

Kamil, M. 2003. *Adolescents and literacy: Reading for the 21st century*. Washington, DC: Alliance for Excellent Education.

Lanzing, Jan. 2007. *Concept Map*. Retrieved from http://edutechwiki. unige.ch/en/Concept_map on 08 December 2013.

Lee,Yongjin. 2013. Collaborative Concept Mappingas a Pre-Writing Strategy for L2 Learning: A Korean Application.*International Journal of Information and Education Technology*, Vol. 3, No. 2, April 2013 http://www.ijiet.org/papers/ 275-IT0038.pdf

Liu, Y. T. et al. 2008. *The effect of concept mapping on English textcomprehension and summari zation*. Unpublished manuscript

Mikulecky, B.S. & Jeffries, L.2007. *Advanced Reading Power: Extensive Reading, Vocabulary Building, Comprehension, Reading Faster*. New York: Longman.

Novak, J. D., & Cañas, A. J., 2008. *The theory underlying concept maps and how to construct and use them*.Technical Report IHMC Cmap Tools 2006-01.Institute for Human and Machine Cognition.

Novak, J.D. The Theory Underlying Concept Maps and How To Construct Them. Retrieved on 08 December 2013 from http://www.stanford.edu/dept/SUS E/projects/ireport/articles/concept_ maps/The%20Theory%20Underlyi ng%20Concept%20Maps.pdf.

Pardo, Laura S. "What Every Teacher Needs to Know About Compre hension" in *The Reading Teacher*.Nov. 2004. pages 272-281.

Rathvon, N. 2004.*Early reading assessment*. New York: The Guilford Press.

Ruffini, M. F. (2008). Using e-maps to organize and navigateonline content. EducaseQuarterly,31(1), 56-61

Snow, C.E. 2002. *Reading for understanding: Toward a research and development program in reading comprehension*. Santa Monica, CA: RAND.

Sturm, J., & Rankin-Erickson, J., 2002. *Effects of hand-drawn and computer-generated concept mapping on the expository writing of middle school students with learning disabilities*. Learning Disabilities, Research & Practice,17, 124-139

Trabasso, T., & Bouchard, E. 2002.Teaching readers how to comprehend text strategically. In C. Collins Block & M. Pressley (Eds.), *Comprehension instruction: Research-basedbest practices* (pp. 176–200). New York, NY: The Guilford Press.

Westwood, Peter. 2008. *What Teachers Need to Know about Reading and Writing Difficulties*.Camberwell Victoria: ACER Press

Zittle, F., Johari, A., & Eastmond, D. 2005. The ASTDe-learninghand book: Best practices, strategies andcases studies for an emerging field. Quarterly Review of Distance Education,6(1), 65-71.

Zwaal, W. ,&Otting, H. (2012). The Impact of Concept Mapping on the Process of Problem-based Learning. *Interdisciplinary Journal of Problem-based Learning, 6*(1). Available at: http://dx.doi.org/10. 7771/1541-5015.1314