Improving EFL Students' Self-regulation in Reading English
Using a Cognitive Tool

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Abstract

Problem Statement: One of the techniques which recently have attracted attention of researchers is concept mapping. Although, there are a number of researches investigating the influence of concept mapping technique on different skills e.g. reading, writing and etc, there are quite few studies on the effect of concept maps on motivational factors which are influential in students' success in reading such as self-regulation.

Purpose of Study: This paper strives to investigate if concept mapping as a cognitive tool could contribute to improving self-regulation of students in a reading course.

Methods: To fulfill the aim of the study, sixty university students from one of the universities in Iran were randomly assigned to two groups: one experimental (concept mapping) and the other control (conventional method).

Findings and Results: Results revealed that there was a significant difference between the two groups with students in the experimental group outperforming those in the control group on self-regulation in reading.

Conclusion and Recommendations: The findings of the present study clearly demonstrated that the use of concept mapping strategy in teaching reading comprehension benefited Iranian EFL students who are at the intermediate level of language proficiency. The findings of the study have implications for teaching reading nationally and globally.

Keywords: self-regulation, concept mapping, reading.

Introduction

Reading comprehension possesses a vital role in academic life of many students. Many studies have been conducted in recent years regarding how to find ways influential in enhancing reading comprehension of students. It has been found that motivational factors are closely related to achievement and success of students in academic life. As a result, finding ways which contribute to enhancing students' motivational factors seems quite helpful. But the question which should be answered is that which methods or strategies can result in improving learners' motivational factors and consequently their achievement. One of the motivational variables which act as a facilitative factor leading to students' learning is self-regulation. Unlike the importance of this factor, few researches have been conducted regarding methods and techniques which can contribute to improvement of this trait.

One of the techniques which recently have attracted attention of researchers is concept mapping. Concept mapping has confirmed to be a valuable tool for improving aspects of cognitive processing of conceptual knowledge. It meets the demands of coping effectively with managing conceptual, content and resource knowledge in one consistent visual demonstration (Cañas et al., 2005, as cited in Tergana et al., 2006). Based on the results of many studies, concept mapping has been proved to be very effective in enhancing reading comprehension of students (Chapman & Tunmer, 2003; Chularut & DeBacker, 2004). Concept maps also seem to have a high potential to help learners in self-regulated learning and knowledge management (Tergan, Gräber, & Neumann, 2006). In present study, we hypothesized that due to processes done in concept mapping, it could contribute to self-regulation of students in reading comprehension. As such, the study strives to find if this technique can contribute to self-regulation of students in a reading course.

Review of Literature

Self-Regulation

According to Zimmerman (2002), self-regulation is defined as ones' ability to devise thoughts, feelings and actions that lead to achieve his/her goals. Self-regulation will be enhanced in students to raise motivation since it is one of the very important motivational factors. Those who are highly regulated can be compatible to different situations and come up with a solution while approaching a task in a confident tenacious purposeful manner (Zimmerman, 2002).

Learners need to pass through three processes to be self-regulated: self observation, self judgment and self-reaction (Bandura, 1986). Four regularly cognitive recurring cycles are applied in Pintrich's model (2000) that shares some processes in common with models of self-regulation. The first phase deals with planning, goal targeting and also assessing the presupposition related to approaching a task. Phase two involves a different self-monitoring process that indicates cognitive self-awareness and personal learning strategies. The third phase relates to various aspects of self-control/regulation and the task in situations. In phase four, one's reactions or reflections of the process are manifested. Pintrich (2000) asserts that self awareness and control/regulation processes in stage two and three are the main promising results in the course of schooling. Pintrich & Degroot (1990) conducted some researches which led to Pintrich's (2000) heuristic experiences. The important influence of self-efficacy beliefs in the use of metacognitive learning strategies and regulation of cognition are represented in their research as intending to find and increase self-regulated learning in children (Pintrich & Degroot, 1990). Students' success increase as they use motivational beliefs and learning strategies for self-regulation. It is indicated in literature by (Camahalan, 2006; Dresel, & Haugittz, 2005).

Pintrich (2004) states that motivational beliefs are very important in the learning process. He further emphasizes that these beliefs should be regulated like self-efficacy in order to be serviceable in the learning process. In this line, Zimmerman (2000) proposed three recurring stages for self-regulation process: forethought (premeditation), performance (implementation) or volitional control (decision making control). The first part relates to those activities done earlier than learning; for example, students' motivation, self-efficacy, goal setting and planning. In the second stage, the learners concentrate on the task to raise

their performance; for instance, careful attention, taking notes and monitoring. In self-reflection process, they have processes such as self-observation and self-assessment. In this phase, students run a comparison between their performance and the standard or goal and try to find the reason of the differences if any. They want to know whether the distance between their performance and the standard one is due to their potential weakness or their inadequate attempt.

Self-regulated learning will be emerged with learner's motivational beliefs, and meta-cognitive and cognitive learning strategies. Three main stages of self-regulation process have been defined by Schunk and Zimmerman (1997): self-observation, self judgment and self- reaction. Planning, managing time, attending to and focusing on instruction, using cognitive and meta- cognitive strategies, making a creative study environment and using social sources are essential in this process. Kesici and Erdogan (2007) mention some factors affecting evaluation of motivational process: goals materialization and their results, provision of positive beliefs about one's abilities, learning evaluation and its results and positive experiences influencing learning.

Self-Regulation and Achievement

The relationship between self-regulation and achievement has been confirmed in various studies. Pajares (1998) sought to investigate whether a relationship exist between goal orientation types, processes of self-regulation and school performance, and also why differences between self-regulation, academic performance regarding their profiles resulted from combination of learning and goal orientation. 702 college students i.e. 239 males and 463 females responded to a questionnaire to evaluate their orientation toward performance goals and learning. The outcomes indicated that for all of them, there were systematic relations between self -regulation, learning goals and academic achievement.

Wang & Pape (2003) investigated the verbal protocol data and strategy questionnaire data of 40 sixth and seventh-grade students. The questionnaire was adapted by the interview guide devised by Zimmerman and Martinez Pons (1986) including five scenarios which middle school students might confront in their school work. About 80% of the participants reported some important academic behaviors like seeking information and social assistance, goal setting and planning, organizing and transforming. Furthermore, there existed no significant differences regarding the total number of strategies reported by

mathematics high achievement group than low achievement group. Considerably, both high achievement groups i.e. mathematics, reading and successful problem solvers reported more examples of strategic behavior. Wang and Pape (2003) held that the variability of strategies and categories of strategies are the main causes of student's achievement in mathematics and reading. Their study showed that with confined number of different strategies and categories of strategies available, even less successful students easily used the same strategies available to them. The same results were obtained in other studies (Chamot & El Dinary, 1999).

In another study, Perry et al. (2001) found that academic performance evaluated by the final course grades has positive relationship with some measures such as academic control, intrinsic motivation, self-monitoring and perceived control. In this longitudinal study, data collection was done by the researchers at the beginning and at the end of the academic year. Negative correlation was observed between preoccupations with failure, course anxiety, boredom and final grades. conversely, the students with higher perceived levels of academic control displayed greater motivation, used self–monitoring strategies and had more control over their assignments and life, and it not only affected their perceptions but also their grades. As the results of mentioned studies clearly show, self-regulation and its components like self-monitoring are related to academic achievement of students.

In a recent study, Çelik et al. (2012) strived to find out the use of communication and information technologies for self regulation among university students. The results revealed no significant differences between the male and female students' use of ICT for self-regulated learning and also their academic level. In addition participants reported use of ICT to practice listening, vocabulary and writing skills. The authors continue continue to suggest that ICT for self regulation should be considered in teacher support and learners' education.

Concept Maps and Reading Class

A concept map is a graph organization made of nodes that are connected by labeled lines (see appendix). Concept maps can be utilized as an information illustration device to show relations that exist between concepts that reside in ones' mind (Jacobs-Lawson & Hershey, 2002). Concept mapping is a visualization technique, which has a long tradition in

the educational context as a cognitive tool for enhancing learning. This technique was proposed by Novak and Gowin (1984) based on the ideas of Ausubel (1963), who advocated that an individual's subject matter knowledge is mentally represented in a hierarchy of concepts. Concept mapping is suggested to take advantage of the remarkable capabilities of the human visual perception system and the benefits of visual information representation. These benefits include (a) ease of recognition, (b) the possibility to quickly scan a picture and find differences or keywords, (c) compactness of representation, and (d) the observation that it seems to be easier to keep an overview. (Kommers & Lanzing, 1997, p. 423 as cited in Tergan, et al., 2006). Concept mapping builds upon principles of two theories; namely, assimilation theory Ausubel (1963) and Constructivist theories (Colburn, 2000).

According to Chiou (2008), in a typical concept mapping class, the teacher first explains about usefulness of concept mapping tool for learning, elaborates on how concept mapping can be employed to illustrate relationships among concepts, and then students will be trained how to draw concept maps in accordance with the procedures suggested by Novak and Gowin (1984). After finishing a passage, the students are asked to use concept maps to represent what they had learned from the passage. The teacher then corrects student-constructed concept maps.

Although, there are a number of researches investigating the influence of concept mapping technique on different skills e.g. reading, writing and etc, there are quite few studies on the effect of concept maps on motivational factors which are influential in students' success in reading such as self-regulation. Given this necessity, we conducted a study to see if concept mapping would produce better results than conventional approaches to teaching reading currently in practice in the context of Iran. Specifically, present study aimed to investigate if concept mapping as a cognitive tool could contribute to improving self-regulation of students in a reading course.

Method

Participants

From among 120 students who volunteered to participate in the study, sixty sophomores who had registered for English reading comprehension course π were selected in the study. The age range of participants was 19–25 (who turned out to have the same

intermediate proficiency level based on the results of Nelson English language proficiency test). The students were randomly placed into the experimental (N =30) and control (N=30) groups. In terms of geographical region, they were from the same location. All of the participants had studied English for six years in public schools and university. The teacher and the textbooks for both classes were the same to avoid confounding effects on the experiment. None of the students reported previous experience in concept mapping.

Instruments

In order to evaluate self-regulation of students, 13 items in MLSQ (Pintrich & De Groot, 1990) which measure this trait were used. In this questionnaire, students are required to report their understanding of items in a likert-type manner. These items range from "completely true of me" to "not at all true of me". This questionnaire has been used widely in different countries including Iran. It has been proved to have a high index of reliability.

Instructional materials in classes consisted of six passages selected from TOEFL practice tests (Pyle, 2001) and two passages from Readers Digest magazine. The difficulty level of these passages was medium based on the judgment of two experts and piloting on a sample with similar characteristics of participants. Another instrument used was a booklet which was prepared by the researchers in order to teach students how to draw concept maps. It was complied using many sources such as Novak and Gowin, 1984; Llewellyn, 2007).

Procedure

At the outset of the study students were informed about the aim of the study and necessary consent forms were obtained. In the first phase of the study the homogeneity of students in terms of reading comprehension was insured through Nelson test of English proficiency. In the next phase, the self-regulation in reading measure was administered to all of the students in both groups.

In the learning phase of the study, students in concept mapping group studied the materials using concept maps i.e. they were supposed to draw maps for paragraphs and passages. For both control and experimental groups the reading materials were the same, however, they were taught in two methods. Students in the control group were taught using conventional method i.e. through individual reading and question-answer type. This method

of teaching reading is prevalent in Iran. The strategy instruction phase followed the following steps adopted from Harris and Graham (1996): "(1) Strategy description, (2) Discussion of goals and purposes, (3) Modeling of the strategy, (4) Student mastery of strategy steps, and (5) Guided practice and feedback" (cited in Talebinezhad & Mousapour, 2007: 76)

After familiarizing students with concept mapping, students started drawing maps for passages based on their understanding. The teacher provided feedback on students' performance and helped them correct their mistakes. Upon completion of a 10-week treatment program, the post-test on self-regulation was administered to examine the treatment effect.

Findings and Discussion

As table 1 shows, there were higher post-test scores on self-regulation than on the pre-test in both groups. The analysis of students' post test scores of self-regulation in reading revealed that students in the concept mapping group obtained higher mean post-test scores on self-regulation than the control group.

To ensure that the two groups were initially equivalent and could be compared, a Levene's Test of Equality of Error Variances was performed. No Significant difference was found between two groups' pre-test scores on self-regulation (F=1.584, p> 0.05).

Table 1

Means and standard deviations for pre-test and post-test scores on the self-regulation in reading

Self-regulation scores	M	SD	N
Pre-test			
Experimental group	3.7629	0.5209	30
Control group	3.9740	0.6946	30
Post-test			
Experimental group	4.3222	0.4057	30
Control group	4.0925	0.7921	30

This indicates that students in the concept mapping and the traditional learning strategy group did not differ significantly on pre-test scores of self-regulation.

Table 2

ANCOVA on post self-regulation scores in by group (experimental vs. control), using pre self-regulation as a covariate

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Self-regulation in reading	1091.749	1	1091.749	80.910	.000	.587
Group	184.310	1	184.310	13.659	.000	.193
Error	769.118	57	13.493			

To investigate the effect of the instruction of concept mapping strategy on the students' self-regulation in reading while controlling for the effect of the pre-tests, ANCOVA was applied. Table 2 displays the results. Significant main effect was found for self-regulation strategy (F =13.659, p=.000). It shows that the student's self-regulation in reading improved significantly as the consequence of the concept mapping strategy instruction. The data revealed that students' self-regulation was higher after the instruction of concept mapping.

The findings of the study clearly show that the students' self-regulation in reading improved significantly as the consequence of the concept mapping strategy instruction. These results are consistent with the findings of other researchers (Wang & Pape, 2003; Talebinezhad & Mousapour, 2007; Chularut, & DeBacker, 2004; Perry et al., 2002). The literature suggests that when students use motivational beliefs and learning strategies for self-regulation, their successes increase (Camahalan, 2006; Dresel, & Haugwitz, 2005). Planning, managing time, attending to and concentrating on instruction, using cognitive learning strategies, building a productive study environment, and making use of social sources are crucial in learning.

There are some explanations for the outperformance of students in concept mapping group. In concept mapping group, students applied cognitive and metacognitive strategies

in order to complete the maps e.g. they decided on important material presented in the passages. This may have contributed to students' improvement in self-regulation. In addition, strategies for evaluating motivational processes like setting performance goals and outcomes, holding a positive attitude about one's capabilities, and evaluating learning, its outcomes, and positive experiences that can affect learning have a considerable role (cited in Kesici & Erdogan, 2007). Students in the concept mapping group used mapping as a cognitive strategy. This strategy may have helped them regulate their learning through different processes which necessitates drawing maps. As results showed this strategy leads to students' success.

In addition, According to Pintrich's model (2000) regarding four phases that incorporates the processes common among models of self-regulation. Phase one involves planning and goal setting as well as the assessment of one's prior knowledge in relation to the task at hand. Phase two focuses on various monitoring processes that represent metacognitive awareness. Phase three involves control/regulation of different aspects of one's self and the task in context. Phase four represents one's reactions or reflections of the process. Considering concept mapping strategy, one can suggest that creating concept maps requires most of these phases. In the first phase which is the goal setting, students were given some texts and they were required to draw concept maps based on the given texts. In this phase students set a goal i.e. the goal of drawing concept map is for reading the texts. Phase two is monitoring phase. In concept mapping group, after students drew concept maps they were required to revise and reconsider the maps which they created to see if they were in harmony with the reading material. This can be regarded as monitoring phase. In phase three students corrected the mapping parts which they had not considered. So it can be concluded that concept mapping utilized all four phases and enhanced self-regulation of students in reading.

The study has implications for teaching, learning and syllabus design. Teaching concept mapping strategy will bring organization to activities which are often difficult for EFL students to achieve like reading and changes them to pleasant and attractive tasks. In addition, through direct instruction of concept mapping, students will become familiar with this strategy and can apply it for reading and understanding different texts. Teachers can help students organize their understanding of what they read with concept mapping

strategy. Furthermore, teachers can teach students how to connect their ideas and what they read and find the interrelationship among different ideas.

With the support of concept mapping technique, students' impetus for engaging in different class activities like reading different texts will be increased. Students' more optimistic attitudes of reading and of themselves as readers may act as a step toward amplifying the quantity and quality of reading. Many English language learners are not able to find out how the content illustrated from passage to passage is related. Course-related content should be utilized to strengthen learners' impetus in concept mapping and disclose the real beneficial effects of concept mapping in improving the quality of different courses.

Teachers can employ various methods to help students see how ideas or concepts relate to one another and fit into a larger picture. Understanding the relationships among concepts helps students grasp them more quickly and efficiently and develop well-structured mental pictures about the content they are learning. From the educational practice standpoint, the study will inform instructional designers and teachers about the effective and efficient uses of concept mapping strategies in their instructional design and teaching practice.

Conclusion

The findings of the present study clearly demonstrated that the use of concept mapping strategy in teaching reading comprehension benefited Iranian EFL students who are at the intermediate level of language proficiency. In other words, the students' self-regulation can be improved by explicit teaching of concept mapping strategy. Therefore, a significant consideration in helping students improve their self-regulation which consequently contributes to their achievement in reading is using concept maps. It can be suggested that concept mapping is one of the influential techniques in teaching reading classes because explicit teaching of concept mapping strategy promotes learners' self-regulation and this, in turn, contributes to their reading achievement. Teachers can amplify the chance that readers will self-regulate by turning reading to a pleasant and appealing activity. A vital issue in providing such a situation is providing sufficient opportunities for the students to self-regulate. If students have little or no room for directing their behavior in reading, their self-regulation will be inhibited. When teaching a learning strategy, teachers should identify the strategy, explain why it is useful, demonstrate its use, give students

practice in applying it to a learning situation, and show them how to evaluate its effectiveness and what to do if it does not work (Duffy et al., 1986, as cited in Talebinejad and Mousapour, 2006).

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Yabancı Dil Olarak İngilizce Öğrenen Öğrencilerin İngilizce Okumada Özdüzenleme Becerilerini Bilişsel bir Araç Kullanarak Geliştirme

Öz

Sorun: Son zamanlarda araştırmacıların dikkatini çeken tekniklerden bir tanesi kavram haritası olmuştur. Kavram haritası tekniğinin çeşitli dil becerileri (ör: okuma, yazma vs.) üzerindeki etkisini inceleyen birçok araştırmacı olmasına rağmen, kavram haritalarının özdüzenleme gibi okumada öğrencinin başarısını etkileyen güdüsel faktörler üzerindeki etkisini araştıran çalışmaların sayısı oldukça azdır.

Çalışmanın Amacı: Bu çalışma bir bilişsel araç olarak kavram haritasının okuma dersinde öğrencilerin özdüzenlemesini geliştirmeye katkı sağlayıp sağlamadığını araştırmayı hedeflemektedir.

Yöntem: Çalışmanın amacını gerçekleştirmek için İran'daki bir üniversiteden 60 üniversite öğrencisi rastgele iki gruba bölünmüştür: biri deneysel grup (kavram haritası) ve diğeri ise kontrol grubudur (geleneksel yöntem).

Bulgular ve Sonuçlar: Sonuçlar iki grup arasında belirgin bir fark olduğunu ortaya koymuştur. Deneysel gruptaki öğrenciler okuma becerisinde özdüzenleme konusunda kontrol grubun önüne geçmiştir.

Sonuç ve Tavsiyeler: Bu çalışmanın bulguları kavram haritası stratejisinin kullanımının orta derece dil seviyesine sahip olan İranlı İngilizce yabancı dil öğrencilerinin okumayı anlama becerisinin öğretiminde işlerine yaradığını açıkça göstermiştir. Sonuçların okuma öğretimi konusunda hem ulusal hem de evrensel olarak uygulamaları vardır.

Anahtar Sözcükler: Özdüzenleme, kavram haritası, okuma.

Appendix A

Figure 1

An example of a concept map