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The Effect of Self-Regulation on Improving EFL Readers' Ability to Make Within-Text Inferences

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Abstract

Self-regulation is the ability to regulate one's cognition, behavior, actions, and motivation strategically and autonomously in order to achieve self-set goals including the learning of academic skills and knowledge. Accordingly, self-regulated learning involves self-generated and systematic thoughts and behaviors with the aim of attaining learning goals. With that in mind, this study aimed to examine the effect of self-regulation instruction to the intermediate EFL readers on their ability to make within-text inferences while reading. Zimmerman's model of self-regulation with its three cyclic phases of forethought, performance and self-reflection constituted the theoretical basis of this study. Two intact intermediate classes in an English language institute were randomly assigned to experimental and control groups. The experimental group was trained in self-regulatory processes which were directed at EFL reading comprehension for ten sessions, while the control group received the routine, traditional reading instruction involving pre-, while-, and post-reading tasks and activities. The results of parametric one-way between-group ANCOVA showed that the experimental group outperformed the control group on the post-test of EFL reading comprehension, particularly in term of within-text inferencing. This finding revealed that self-regulation instruction aimed at EFL reading comprehension significantly contributed to learners' ability to make correct within-text inferences while reading in English as a foreign language.

Keywords: self-regulation, self-regulated learning, EFL reading comprehension, within-text inferences

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INTRODUCTION

Self-regulation, a psychological concept which has attracted the attention of many educational researchers (Zimmerman, 1990), is defined as self-generated thoughts, feelings, and behavior that are planned and cyclically adapted based on performance feedback to achieve self-set goals (Zimmerman, 1989). Zimmerman (2008) viewed self-regulated learning (SRL) as including such processes as setting goals, planning strategically, selecting and using strategies, self-monitoring one's effectiveness and self-evaluation while learning and remembering knowledge and academic skills. Similarly, Schunk and Zimmerman (1997) defined SRL as an approach to making learners autonomous in such a way that they are motivationally, behaviorally and metacognitively active and able to take responsibility for their own learning and problem-solving. This process of making learners autonomous implies that self-regulation is an ability that can be developed. Evidence of the self-regulation teachability can be found in Palincsar and Brown (1984), who showed that self-regulatory processes and strategies can be instructed, and teachers can train learners in self-regulation. This has been confirmed by subsequent research as well (e.g. Perels, Gurtler, & Schmitz, 2005; Perry, Hutchinson, & Thauberger 2007; Stoeger & Ziegler, 2008).

On the theoretical side, there are those who argue that self-regulation plays a major role in reading comprehension. For instance, according to Davis and Gray (2007), readers must use self-regulated strategies to completely use their abilities to understand texts. In other words, SRL leads to engaged reading comprehension when self-regulated readers monitor and adjust their performance in order to meet their individual learning needs. It has also been proved empirically that self-regulatory reading strategies enhance "the student's own planning, decision-making, reflection and evaluation of effective reading strategies" (Mulcahy-Ernt & Caverly, 2009, p. 191), and that self-regulatory processes including selecting and using strategies (Zimmerman, 2008) have proved to be major factors in enhancing reading ability (Kumi-Yeboah, 2012).

As one of the strategies used in the process of second/foreign language reading (Chamot & Kupper, 1989; Martínez, 2011), making inferences refers to a cognitive process to create meaning through

going beyond the text as a result of generalization and explanation (Hammadou Sullivan, 1991). That is, through inferencing, readers move from the semantically surface text-based level to the semantically deep level (Perfetti, 1999). Making inferences is important to second/foreign language learners because it helps them to infer meanings despite their being unfamiliar with words and expressions in the reading passage (Lee & Van Patten, 1995).

There are different taxonomies of inferences made by second/foreign language readers. For example, Barry and Lazarte (1998) identified two categories of inferences. One category is *within-text* inferences which are logical interpretations for the reading selection and are used by readers to summarize ideas found in the text. They refer to those inferences which are logically derived from the reading text and its content and are based on information expressed in propositions and paragraphs (Chikalanga, 1992). The other category proposed by Barry and Lazarte is *elaborative* inferences which refer to propositions that blend text elements with background, world knowledge. In other words, they are not limited to propositions expressed in paragraphs but involve some additional information.

The present study has aimed at investigating the effect of self-regulation training on the improvement of English as a Foreign Language (EFL) readers' within-text inferencing. In other words, this study has aimed at answering the question as to whether training EFL learners in self-regulation which is directed at EFL reading comprehension enhances their ability to make within-text inferences while reading in English.

LITERATURE REVIEW

Background of the Study

Different models of self-regulated learning have been developed (e.g. Pintrich, 2000; Zimmerman, 2000). According to some researchers (e.g. Boekaerts, 1997; Winne & Perry, 2000; Zimmerman, 2000), all models of self-regulation have the sub-processes of cognition, metacognition and motivation. For example, in Pintrich's (2000) model, self-regulation has three sub-processes: motivational, cognitive and metacognitive, behavioral and contextual. In general, most self-regulation models are based on Bandura's (1986) socio-

cognitive theory of human functioning in which people can control their behaviors and environments with their thoughts and beliefs.

The present study is based on the assumption that training EFL learners in SRL in accordance with and by focusing on the components of Zimmerman's (2000) self-regulation model would enhance learners' ability to make correct inferences in English reading at least for two reasons. First, Zimmerman (2002) maintains that the three phases of his self-regulation model keep students active and aware of their reading process. That is, during its three phases, students set goals, monitor and evaluate their progress toward goals, and their future use of strategies. Second, the control of inferences depends on the reader's goals and interests. In other words, inferences are made if they concern information that is relevant to the reader's goals (Vonk & Noodman, 1990) and interests (Kintsch, 1980) which are two aspects of the forethought phase of Zimmerman's model of self-regulation.

The above-mentioned model of self-regulation consists of three cyclic phases, namely *forethought*, *performance*, and *self-reflection*. The first phase, forethought, is important because of its motivational effects and also because individuals evaluate their upcoming performance and learning progress against it (Cleary, Callan, & Zimmerman, 2012). This phase includes some sub-processes such as *goal-setting* and *personal interest* (Cleary & Zimmerman, 2004). Goal-setting which refers to the aim of a behavior in a period of time influences action (Locke & Latham, 2002). Personal interest also affects self-regulated strategy use. For example, there is empirical evidence that interest in a reading texts leads to significantly greater use of cognitive and metacognitive strategies (Mason, 2004), and interest is positively correlated with the use of self-regulation strategies (McWhaw & Abrami, 2001).

The second phase, performance, entails such sub-processes as *record-keeping*, *metacognitive awareness*, and *self-monitoring* that happen during learning and influence attention and action. Record keeping—as a self-observational technique—is "a person's tracking of specific aspects of their own performance, the conditions that surround it and the effects that it produces" (Zimmerman, 2000, p. 19), and it helps to increase self-regulated learners' awareness (Zimmerman & Paulsen, 1995). In this way, they can keep track of

cognitive and metacognitive processes during learning. For example, teachers can have students use self-recording forms in order to know the reasons for problems and then to find solutions to them (Cleary & Zimmerman, 2004). Likewise, self-regulated learners have a large store of metacognitive knowledge about learning strategies (Zimmerman, 1986), and this metacognitive awareness could improve their self-regulation in return (Zimmerman, 2001). In other words, metacognitive strategies lead to higher levels of self-regulated strategy use (Turner, 1995). Finally, in the performance phase, self-monitoring refers to a process through which students systematically monitor their performance to check if they have progressed toward their goals (Zimmerman, 1989, 2002). Self-monitoring involves "cognitive tracking of personal functioning, such as the frequency of failing to capitalize words when writing an essay" (Zimmerman, 2002, p. 38) as well as techniques such as "self-questioning, writing down grades for exams to keep track of and gauge learning success" (Cleary & Zimmerman, 2004, p. 539). It can also take the form of "checking the content of study, judging learning difficulties, assessing progress and predicting learning outcomes" (Cheng, 2011, p. 1). Overall, the application of performance phase in reading is reflected in learners' using their background knowledge, selecting strategies to understand and comprehend the text, and working with others to understand texts better (Davis & Gray, 2007).

In the self-reflection phase, that follows the performance phase, learners evaluate their progress and adjust their strategies (Zimmerman, 2008). In *self-evaluation*, a sub-process of this phase, students evaluate themselves against standards such as one's previous performance or another student's performance (Zimmerman, 2002). They evaluate the effectiveness of their strategies and methods. For example, they examine their answers to questions and compare them with those of another person (Zimmerman, 1989). In this phase, teachers' feedback in the form of non-threatening evaluations helps students to see errors as learning opportunities to improve self-regulation (Perry et al., 2007). Self-reflection phase can, in turn, encourage the students to set some goals for the subsequent learning task (Moos & Ringdal, 2012). In other words, it can set the stage for the start of the forethought phase again.

Self-regulation and First and Second/Foreign Language Reading

Self-regulated reading comprehension entails strategic thinking and action, for example, self-monitoring of reading by pausing to examine the text more closely and reading it again (Zimmerman, 1999). In other words, self-regulated learners are perceived as metacognitively skillful users of cognitive strategies (Zimmerman, 1989) who have metacognitive knowledge about learning strategies (Zimmerman, 1986) and show what it means to be a "strategic reader" (Allgood, Risko, Alvarez, & Fairbanks, 2000, p. 202). However, there are few studies dealing with the effect of self-regulation on reading achievement as well as their interrelationship. For example, Souvignier and Mokhlesgerami (2006) showed that training in self-regulatory strategies along with reading strategy instruction could have long-term, positive impacts on First Language (L1) reading comprehension. Kumi-Yeboah (2012) also found that self-regulatory processes promote achievement in L1 reading in social studies content. Likewise, exploring the effect of metacognitive reading strategies on five college students' ability to self-regulate L1 reading, Nash-Ditzel (2010) found that participants' increased knowledge of reading strategies and their successful use of the strategies contributed to their ability to self-regulate their L1 reading.

As for second/foreign language reading, in a descriptive study, Finkbeiner, Knierim, Smasal, and Ludwig (2012) explored how the adequate use of learning strategies can be facilitated during cooperative reading tasks in the EFL classroom. They not only indentified teachers' support actions which were more conducive to self-regulation and facilitated students' strategy use but also provided recommendations on how to modify teachers' help. Pratontep and Chinwanno (2008) also investigated students' SRL strategies and English reading comprehension in an extensive reading program. Students reported frequent use of metacognitive and performance regulation strategies and the use of self-regulated learning strategies in the performance phase more often than in the forethought or self-reflection phases.

On the whole, successful reading comprehension depends on the effective use of such strategies as making inferences, predicting, looking for relationships, understanding meanings, rephrasing text,

and monitoring (Chamot & Kupper, 1989; Martínez, 2011) which are regarded as self-regulated learning strategies by Byrnes (2008) and Zimmerman and Campillo (2003). Among these strategies, making inferences which is a top-down (Hudson, 1988) and a higher-level process (Grabe & Stoller, 2002) in second/foreign language reading is an important microskill that makes second/foreign language learners efficient readers (Brown, 2001). In other words, an EFL reader should be able to identify the relations between ideas and events in the text as well as the relations between the text and his general background knowledge. It should also be noted that these relations are often not presented explicitly and must be inferred (Horiba, 1996).

Some empirical studies have targeted at inferencing in second/foreign language reading. Kern (1989) found a positive, albeit not significant, effect on ability to infer meaning from context after having taught reading strategies to university-level Second Language (L2) French students. Hopkins and Mackay (1997) also found that good readers were active in making inferences. Likewise, the results by Hammadou Sullivan (1991) showed that beginner students of French drew more overall inferences from the texts than more advanced readers did, and that the advanced readers who had greater familiarity with the topic of the text made fewer incorrect inferences. In a case study by Hammadou Sullivan (2002), ten advanced learners of French were found to be aware of their thought processes as well as their inferencing while reading authentic texts.

Overall, research suggests that self-regulation is correlated with higher levels of academic achievement (e.g., McClelland, Morrison, & Holmes, 2000; Pressley, 1995) and facilitates reading comprehension (e.g. Collins, Dickson, Simmons, & Kameenui, 2001). In addition, self-regulatory behaviors and skills in reading include drawing inferences (Zimmerman & Campillo, 2003) and asking inferencing questions while reading (Schraw, 1997). Nevertheless, only a few researchers have provided empirical evidence on the ways self-regulation training can contribute to second/foreign language development and acquisition in general (e.g. Ellis & Zimmerman, 2001; Magno, 2009; Rose & Harbon, 2013; Vanderveen, 2006; Yough & Fang, 2010) and second/foreign language reading ability in particular (e.g. Finkbeine et al., 2012). Furthermore, given the importance of reading strategies, particularly inferencing in both L1

(Dole, Duffy, Roehler, & Person, 1991; Keene & Zimmerman, 1997) and second/foreign language (Grabe & Stoller, 2002), there seems to be a paucity of research on the ways training EFL learners in self-regulatory reading strategies could lead to their making better inferences while reading.

PURPOSE OF THE STUDY

What seems to be missing in previous research is the investigation of interaction between self-regulation and one of the most important reading strategies, namely making inferences (e.g., Brown, 2001; Grabe & Stoller, 2002; Horiba, 1996) as well as the effect of self-regulation training on improving inferencing ability. In other words, while it seems plausible to believe that self-regulated second/foreign language learners tend to use reading strategies more effectively (Byrnes, 2008; Davis & Gray, 2007; Mulcahy-Ernt & Caverly, 2009; Zimmerman, 1999; Zimmerman & Campillo, 2003), to the best of our knowledge, the effect of self-regulation on the EFL learners' ability to make inferences seems to be under-researched. This study, therefore, seeks to answer the following question:

> Does training in self-regulatory reading strategies and processes on the basis of Zimmerman's (2000) model of self-regulation enhance within-text inferencing ability of intermediate EFL learners?

METHOD

This study with a quasi-experimental design included a pretest and a posttest. The independent variable was training EFL learners in self-regulation processes aimed at reading and on the basis of Zimmerman's (2000) self-regulation model, and within-text inferencing while reading in English was the dependent variable. In what follows, the details are presented of the selection of participants, instrumentation, the instructional materials used, and data collection procedure in the experimental group and the control one.

Participants

The participants were 52 Iranian EFL learners in two intact reading classes taught by the second author in an English language institute. They were placed in two classes at intermediate level on the basis of all sections of the Preliminary English Test (PET) (i.e., speaking, listening, reading, writing, and grammar) administered at the beginning of their program. In other words, those students who scored 70-84, namely B1 of Common European Framework of Reference (CERF) level, were placed in the intermediate classes. Each class was randomly selected as the experimental group or the control group. However, in order to make sure that the participants in the two conditions were homogeneous, the data of those learners whose scores on a TOEFL PBT general proficiency test corresponded to a Z score of between +/–1, that is, 68% of scores which fell within one standard deviation of the mean, were analyzed for the purpose of this study. The data of those learners whose scores fell beyond this range were not taken into consideration because their scores were of lower probability to belong to the distribution obtained in this study. This decision placed 24 students in the experimental group and 28 in the control group.

Instrumentation

Since participants had been placed in the intermediate classes on the basis of all sections of PET, and the focus of the present study was on reading assessed through TOEFL PBT test, the latter was administered to both groups in order to dismiss the outliers. In addition, two parallel TOEFL PBT reading comprehension sections constituted pre-test and post-test of this study. These sections have 50 questions which are divided equally among five passages. The pre-test included four reading selections with 15 multiple-choice within-text inferencing items, and the post-test contained three reading selection with 13 multiple-choice within-text inferencing items altogether. The participants' answers to these within-text inferencing items formed the data for the statistical analyses in both pre-test and post-test.

According to Fulcher and Davidson (2007, p.105), parallel tests measure "the same construct and have similar means and variances." Thus, in order to prove the above TOEFL PBT reading

comprehension sections were parallel, they were piloted with a group of 20 students at the intermediate level in the very institute. It was proved that pre-test (M = 35.1, V = 50.41) and post-test (M = 21, V = 59.29) were parallel.

Likewise, in order to make sure that TOEFL PBT reading comprehension sections suited the proficiency level of participants, difficulty levels of pre-test, post-test and a passage from their reading textbook were calculated through Flesch Readability Ease (FRE) which measures sentence length and the number of syllables per 100-word passages (Courtis & Hassan, 2002) and is available in Microsoft Office Word. The FRE score shows the difficulty of understanding a text on a scale of 0 to 100. A score of 0 would indicate a very complex one, while a score of 100 would show an extremely simple text. The FRE scores obtained for the pre-test, post-test, and the passage from participants' textbook were 43.8, 44.1, and 44.3, respectively, all indicating a difficult text to read.

Instructional Materials

The book both groups were studying in their reading course was Mosaic 1 (Silver Edition) (Wegman & Knezevic, 2007). It includes reading selections of various interesting topics as well as pre-reading and post-reading activities and exercises which, among other things, focus on different reading strategies as well. In the experimental group, the other instructional material consisted of Reading Log (see Appendix A) so that learners could record minutes, pages and titles of reading selections which they had read, and reading selections they would want to read. They could also keep their daily reflection and track their progress in Reading Log (Housand & Reis, 2008).

Data Collection Procedure

Before the treatment, a TOEFL PBT test was administered to both classes in order to exclude the data of outliers from the statistical analysis. Then, before the treatment phase, a TOEFL PBT reading comprehension section was administered to both experimental and control groups as the pre-test in order to check the participants' EFL reading ability, particularly their inferencing ability. The treatment started after this test and lasted for ten sessions in two weeks.

In order to implement the cyclic self-regulation process of Zimmerman's (2000) model in the experimental group, the following steps were taken. The teacher (i.e., the second author) arranged three briefing sessions for the learners in the experimental group before the real administration of the treatment and put the three phases of Zimmerman's (2000) cyclic self-regulation and their sub-processes into practice on sample practice reading selections and tasks in such a way that the learners became adequately familiar with the procedures in the treatment. The self-regulated learning procedures mentioned in the following studies were adapted and implemented: Cleary and Zimmerman (2004), Davis and Gray (2007), and Housand and Reis (2008), all of which were based on Zimmerman's (2000) self-regulation model, as well as Cheng (2011), Hoffman and Spatariu (2008, as cited in Housand & Reis, 2008), and Wilawan (2012), who proposed strategies related to sub-processes of Zimmerman's model (see Appendix B).

Beginning with the forethought phase and on the basis of self-regulated practices referred to in Davis and Gray (2007), the teacher collected professional reading passages and resources to support her efforts. On the basis of the guidelines in Davis and Gray, and Housand and Reis (2008) and for the sake of implementing goal-setting (i.e. a sub-process of forethought phase), the teacher asked students to write down their prior knowledge about all reading selections and made the purpose of reading clear, for instance, through explaining the need for finding unfamiliar vocabulary and writing them down. As for implementing goal-setting, she set the intent to increase the amount of time the students would spend on reading and set milestones for systematically increasing the challenge level of reading selections. In addition, she adapted a question from Cleary and Zimmerman (2004) and addressed it to the students: *Do you have a goal you are trying to achieve in your reading?* Explain. The next sub-process of forethought phase that the teacher implemented was personal interest. In order to put it into practice in the class on the basis of Housand and Reis, she told the students to create a "The Reading selections I Want to Read" list in their Reading Log and provided them with interest-based reading selection opportunities. In other words, they could choose from among reading selections of their textbook. Following Cleary and Zimmerman

(2004), she also asked them the questions: *How interesting is reading for you? How much do you enjoy reading?*

The second phase, performance, included the use of class-based metacognitive strategies and monitoring. In this phase, exhibiting self-regulated behavior of the teacher in Davis and Gray (2007), the teacher monitored and adjusted her behavior and initiatives as needed to support students' learning and asked them to use metacognitive strategies to monitor and repair their understanding during reading. As for record-keeping which is a sub-process of the performance phase, she followed Housand and Reis (2008) and told students to record minutes they had spent reading as well as the pages and the titles of reading selections they had read in their Reading Log in order to track their progress. In order to put metacognitive awareness (i.e., another sub-process of performance phase) into practice, the teacher metacognitively prompted learners on the basis of Hoffman and Spatariu's (2008, cited in Housand & Reis, 2008) guidelines. That is, the teacher provided the students with bookmarkers for writing unfamiliar vocabulary, required them to have weekly reflection on their Reading Log, provided them with open-ended weekly writing prompts, and asked them open-ended questions related to the reading selections at hand. Moreover, she followed Housand and Reis and wanted students to use the reading strategies modeled and explicitly taught to them (e.g., drawing inferences from reading selections, and identifying author's purpose and main idea). In the self-monitoring sub-process of performance phase, the teacher adapted self-questions in Cheng (2011) and wanted the students to ask themselves (a) Can I summarize the main idea of the text? (b) Can I list the five important reading points in this session? (c) Can I write a short comment on this reading selection? (d) Can I discuss the topic addressed in this reading selection? (e) Are the important reading points I have listed the same as those listed by my classmates and teacher? The teacher also adapted some questions from Wilawan (2012) and presented them to students. They included (a) Does the reading selection make sense to you? (b) Do you have any problems with the section we have just read? (c) What is this reading selection about? (d) What does the author mainly discuss? (e) What does he most often mention?

The third phase, reflection, included self-evaluation and conferencing using Reading Logs. In order to execute self-reflection

phase, the teacher followed Davis and Gray (2007), reflecting on and setting new goals for herself and students at various points during the treatment. To achieve this goal, she asked the learners to collaborate with a partner to discuss prior knowledge and new knowledge under her supervision. In addition, as for self-evaluation, a sub-process of self-reflection, she adapted what was referred to in Housand and Reis (2008) and provided nonthreatening feedback in the form of a dialogue with the students in conferences. She asked students to evaluate their own performance, discuss their understanding of texts and assignments with peers under the teacher's supervision, keep weekly reflections in Reading Log, and participate in conferences with the teacher because conferences could promote teacher-student discussion of student progress (Housand & Reis, 2008).

The control group participants studied their reading book on the basis of the routine, traditional method. That is, through answering pre-reading questions, reading the text for comprehension and summarizing or paraphrasing it, and answering post-reading questions. They were also taught some reading strategies such as finding the main idea, skimming, scanning and making inferences as embedded in their reading lessons.

After the treatment, a parallel TOEFL PBT reading comprehension section containing inferencing questions was administered to both groups as the post-test to check whether there was any difference between the two groups in their ability to make correct inferences while reading in English.

Data Analysis

Since Kuder-Richardson (KR-20) is a coefficient alpha formula used for dichotomous data when answers are scored as correct or incorrect, for example, Multiple Choice Questions (Linn & Gronlund, 2000), it was used to calculate the reliability of the pre-test. To control for the possible initial differences between the two conditions in terms of ability to make within-text inference while reading in English, the researchers regarded the participants' pre-test scores as the covariate and analyzed the data through the parametric one-way between-group ANCOVA after checking for the absence of the violation of assumptions. It is noteworthy that the participants' answers to 15 within-text inferencing items in the pre-test and 13 within-text

inferencing items in the post-test constituted the data for the statistical analysis.

RESULTS

The research question addressed the effect of self-regulation instruction aimed at EFL reading comprehension on EFL readers' ability to make within-text inference. After it was checked that its assumptions were not violated, a parametric one-way between-group ANCOVA was run to investigate the research question. The reliability of the pre-test calculated using KR-20 was .71. Table 1 displays the descriptive results of the pre-test and post-test.

Table 1: Descriptive statistics

		N	Mean	Std. Deviation
pre-test	CG	28	6.75	1.71
	EX	24	6.33	1.76
post-test	CG	28	6.83	1.60
	EX	24	10.42	1.37

As Table 1 shows that the mean score obtained by the experimental group (EX) is higher than the one by the control group (CG) in the post-test. Table 2 also illustrates the results of the one-way ANCOVA.

Table 2: Summary of the Results of the ANCOVA test

Source	Type III Sum of Squares	f	Mean Square	F	Sig.	Partial Eta Squared
Group	18.80		18.80	18	.00	.27
pretest	3.92	1	3.92	.147	.70	.53
group * pre-test	1.01		1.01	.97	.32	.02
Total	4276.0	2				

As it can be seen in Table 2, after controlling for the effect of the pre-test, the researchers detected a statistically significant difference between the performance of the EX (M = 10.42, SD = 1.37) and the CG (M = 6.83, SD = 1.60) $F(1, 50) = 18.00$, $p < .05$; $\eta^2 = .27$. This yielded support for the effectiveness of self-regulation instruction as directed at EFL reading comprehension in enhancing the participants' ability to make within-text inferences while reading in English.

DISCUSSION

This study was an attempt to empirically investigate whether self-regulation instruction as directed at EFL reading would enhance EFL learners' ability to make correct within-text inferences in reading comprehension. The results showed that compared to the control group, the experimental group who received training in self-regulatory reading processes on the basis of Zimmerman's (2000) self-regulation model could make better within-text inferences while reading English texts. In other words, it was empirically proved that making inferences during EFL reading comprehension which is regarded as self-regulatory process (Byrnes, 2008; Schraw, 1997; Zimmerman & Campillo, 2003) can be improved through training EFL learners in self-regulatory processes. This is in line with the theoretical suggestions regarding the instruction in self-regulatory strategies. For instance, Paris and Paris (2001) supported instruction in the use of self-regulated learning strategies, and Moos and Ringdal (2012) talked of "teachers' ability to support students' development of self-regulation" (p.3). The findings of this study also chime with those obtained by Kelly, Moore, and Tuck (2001), Palinscar and Brown (1984), Schunk and Rice (1987), and Souvignier and Mokhlesgerami (2006), all of whom found support for the effectiveness of SRL strategy instruction in improving L1 reading comprehension ability. In addition, the results of the present study could extend the finding that self-regulated readers of L1 use inferencing very frequently (Nash-Ditzel, 2010) in EFL reading. This is encouraging in that some researchers (e.g., Chamot & Kupper, 1989; Grabe & Stoller, 2002; Lee & Van Patten, 1995; Martínez, 2011) maintain that drawing inferences is one of the most important L2 reading comprehension strategies.

Likewise, the findings of this study could not only provide new experimental support for Zimmerman's (2000) theoretical model of self-regulation but also confirm its applicability to the EFL context, particularly to EFL reading. For example, this study could provide empirical evidence in the EFL context for Zimmerman's (2002) contention that the three phases of his self-regulation model keep readers active and aware of their reading process. Looking at it from another perspective, Zimmerman's other assertion was also corroborated in this study in the EFL context; he argued that two aspects of the forethought phase of his model of self-regulation, namely the reader's goals (Vonk & Noodman, 1990) and interests (Kintsch, 1980), play a crucial role in making inferences while reading. It is also noteworthy that self-regulated learners' great metacognitive knowledge of cognitive strategies (Zimmerman, 1989) was evident in the experimental group's ability to make inferences while reading in English. In fact, at least in terms of inferencing, they proved to be strategic readers as a result of self-regulation instruction (Allgood et al., 2000). For instance, at a minimum their self-regulatory practice of writing down prior knowledge about each reading selection in the forethought phase of Zimmerman's (2000) model activated their background knowledge about the text topics which plays an important role in making inferences while reading (e.g. Trabasso& Magliano, 1996; van den Broek, Lorch, Jr., Linderholm, & Gustafson, 2001).

Furthermore, the finding that skilled and advanced readers are usually good at drawing valid inferences from text and going beyond it in both L1 (e.g., McNamara & Shapiro, 2005; Snow, Burns, & Griffin, 1998) and L2 (e.g., Hopkins & Mackay, 1997; Horiba, 1996; Kembo, 2001; Shimizu, 2005) could lead us to conclude that training EFL learners in self-regulatory reading strategies—through improving their inferencing ability—can indirectly contribute to their general EFL reading ability as well. Last but not least, the findings of the present study proved self-regulatory reading processes such as selecting and using strategies (Zimmerman, 2008) to be effective complements to the various well-known L2 reading comprehension strategies (e.g. Barnett, 1988; Block, 1986; Carrell, 1988) in enhancing EFL reading comprehension.

CONCLUSION AND IMPLICATIONS

Findings of this study can shed light on the ways in which EFL instructors can help their students to enhance their self-regulatory reading strategies, thereby making more and correct inferences which are vital to EFL reading. That is, the empirical evidence provided by the present study can be an incentive for EFL educators to make use of the self-regulatory processes implemented in this study in teaching reading comprehension. Essentially, having diagnosed their learners' deficiencies in reading, EFL reading teachers can experiment with self-regulatory strategies in order to remedy these deficiencies. To achieve this objective, it is also suggested that EFL teachers whether pre-service or in-service be systematically trained in self-regulation of reading which can be regarded as an innovative approach to language instruction.

Another implication is to include SRL strategies in EFL reading materials and textbooks so as to promote opportunities for learners to self-regulate because when self-regulation strategy training is combined with reading strategy instruction, reading comprehension can improve greatly (Souvignier & Mokhlesgerami, 2006). On the other hand, inclusion of tasks and activities which revolve around self-regulation in textbooks can foster students' active participation in their learning process, help them view themselves as agents of their learning, and develop their autonomy which entail some conditions such as motivation (Schunk & Zimmerman, 1997).

Although in this study the implementation of the self-regulatory processes and strategies in Zimmerman's (2000) cyclic model has proved to contribute to EFL inferencing ability, it remains to be tested whether the effect of this self-regulation treatment would be similar or differential across different EFL skills as well as across different EFL reading sub-skills, EFL reading self-efficacy, reading English for Specific Purposes or English for Academic Purposes passages, motivation for and attitude to EFL reading, and reading different genres of text in English.

Finally, it is important to acknowledge that the present study has a limitation. Two parallel reading components of TOEFL PBT sections were used as the measures of within-text inferencing ability in pre-test and post-test. This can put the validity of these two measures under question since validity index belongs to the whole

test. However, administering the whole TOEFL PBT test would render its other components of no use to the research, and if a teacher-made reading comprehension test had been devised, the criterion-related validity of the devised test would have remained to be tested, and it was not logistically feasible for the researchers. For stronger results, it would be ideal to use measures of reading comprehension which are devised specifically, and their criterion-related validity is established.

Bio-data

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