The Impact of Training EFL Learners in Self-Regulation of Reading on their EFL Literal and Critical Reading Comprehension: Implementing a Model

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Abstract

Self-regulation is the ability to regulate one's thoughts and actions to attain goals. Accordingly, self-regulated learning (SRL) involves plans and behaviors to achieve learning goals. With this in mind, in this study we investigated whether training English as a Foreign Language (EFL) learners on the basis of a Self-regulated Learning (SRL) model improved their literal and critical reading comprehension. The study also sought to find out whether the learners' proficiency level could moderate the impact of self-regulation training. Two intact experimental groups were taught self-regulatory reading processes, while two control groups received the traditional, routine reading instruction. The data of the study were collected by College-Level Academic Skills Test (CLAST) reading sub-tests including both critical and literal reading comprehension parts. Statistical analyses showed that self-regulation instruction could significantly improve participants' EFL literal and critical reading comprehension, but their proficiency level did not moderate the effect of self-regulation training. These findings can encourage EFL teachers to apply SRL strategies to reading tasks and activities.

Keywords: self-regulation, self-regulated learning, EFL literal and critical reading comprehension, language proficiency

In any EFL class, reading is an important activity because it is a source of information, a pleasant activity, and a means of increasing linguistic knowledge (Mori, 2004). Given that, EFL learners need to develop necessary strategies to be prepared to face the significant task of EFL reading comprehension (Grabe, 1997). In addition to emphasizing on various EFL reading strategies and their positive impacts on reading comprehension achievement (e.g., Block, 1986; Carrell, 1988), researchers have spotlighted self-regulation and SRL strategies as complementing the reading strategy instruction in enhancing First Language (L1) reading comprehension (e.g., Schunk & Rice, 1987; Souvignier & Mokhlesgerami, 2006).

Zimmerman (2000, p.14) defined self-regulation as self-created feelings, behaviors, and thoughts that are planned and adapted to reach one's goals. Accordingly, in SRL, the learner sets goals, plans strategically, selects and uses strategies, self-monitors and self-evaluates his/her performance (Zimmerman, 1990). Through SRL, learners can regulate three dimensions of academic learning: behavior, motivation and affect, and cognition. Self-regulation of behavior entails control of different resources such as study environment and time, self-regulation of motivation and affect involves change of motivational beliefs, and self-regulation of cognition involves control of cognitive strategies (Pintrich, Smith, Garcia, & McKeachie, 1993).

Given that self-regulation makes learners autonomous (Schunk & Zimmerman, 1997), it is an ability that can be developed. Referring to this, Paris and Paris (2001) also maintained that teachers can train students in SRL and its strategies in any academic context and classroom, for example, readers should use self-regulated strategies and processes to understand texts. It has also been proved empirically that self-regulation processes are a major factor in improving L1 reading ability (e.g., James, 2012; Nash-Ditzel, 2010; Souvignier & Mokhlesgerami, 2006).

In the EFL context, Pratontep and Chinwonno's (2008) study showed that the use of SRL strategies in an extensive reading program could improve EFL reading comprehension. Similarly, Ferreira and Simão (2012) conducted a case study of an elementary school teacher who changed her teaching practices to promote SRL strategies in her EFL students. Last but not least, Maftoon and Tasnimi (2014) found that self-regulation strategies proposed by

Zimmerman and Martinez-Pons (1986) had a significant effect on EFL learners' reading comprehension.

In EFL context, critical reading has also been underlined by many researchers (see Wallace, 2003; Correia, 2006), who believed EFL critical reading helps EFL learners feel they have options in how to read the text and be in a more equal relationship with the writer. While the purpose of literal reading is to find the main idea and supporting details (Philips & Sotiriou, 1992), and it depends on the knowledge of word meanings in context (Karlin, 1971), the purpose of critical reading is to identify inferences, assumptions, and implications (Ustunluoglu, 2004). Critical reading which involves being objective so that biases and exceptions do not interfere with one's understanding (Milan, 1995) is also related to critical thinking because critical reading is also defined as using critical thinking skills while reading (Thistlethwaite, 1990).

There is a dynamic interaction between self-regulation ability and critical thinking skills. On the one hand, abilities related to reflective thinking can be considered as self-regulated processes (Zimmerman, 1990). On the other hand, the enhancement of self-regulated strategies leads to the development of critical thinking abilities (Kuiper, 2002). On the whole, critical thinking helps self-regulated learning (Phan, 2010), and some processes necessary to SRL may depend on critical thinking (Wolters, 2010). Indeed, the widely used instrument to assess SRL (Pintrich et al., 1993)—Motivated Strategies for Learning Questionnaire (MSLQ)— includes a sub-scale for critical thinking which assesses the extent to which students apply prior knowledge to new situations and solve problems, and evaluate and analyze information thoughtfully (Pintrich, 2004). Moreover, in self-regulation process, learners become self-aware (Zimmerman, 1990), and self-awareness is linked with reflective thinking and reasoning, that is, critical thinking (Lynch & Dembo, 2004). Likewise, as students become self-regulated readers, they are engaged in problem-solving practices such as analyzing situations, prioritizing goals, making choices and decisions, and evaluating outcomes which are, in fact, the basic skills of critical reading (Ruohotie, 2002).

Zimmerman's (2000) SRL Model

Zimmerman's (2000) model consists of three cyclic phases—*forethought, performance,* and *self-reflection*. The latest revision was made by Zimmerman and Moylan (2009), who included more processes in the performance phase and more comprehensive definitions of all the sub-processes and the interplay between them.

In its latest version (Zimmerman & Moylan, 2009), the forethought phase is broken into two processes: *task analysis* and *self-motivation beliefs*. Task analysis involves *goal-setting* and *strategic planning* about the task the students face. Self-motivation beliefs include *self-efficacy* which consists of beliefs about the one's ability to carry out a task, *outcome expectations* about the success of a given task (Panadero & Alonso-Tapia, 2014), *task interest/value* which refers to variables that cause the students' approach to the task, and *goal orientation* which entails the students' belief about the purposes of their learning (Zimmerman, 2000).

The second phase—performance—is characterized by two processes: *self-control* and *self-observation.* In self-control which has seven sub-processes, *task strategies* involves learners' dividing a task to some parts and reorganizing these parts (Zimmerman, 2000), and *self-instruction* consists of self-directed orders or descriptions about how to do a task (Zimmerman, 2000). *Imagery* which refers to drawing mental pictures is widely used in reading comprehension (Panadero & Alonso-Tapia, 2014). In *time management*, students have a perspective of the aspects of the task at hand (Panadero & Alonso-Tapia, 2014). *Environmental structuring* keeps learners' attention to the task and creates an environment with fewer distractions (Corno, 2001). In *help-seeking,* learners ask the teacher or a more competent classmate for help (Panadero & Alonso-Tapia, 2014). Finally, *interest incentives and self-consequences* involve self-directed messages that remind learners of goals or challenges of the task, increase their effort and interest, and activate more strategies through self-praise and self-punishment (Corno, 2001). The second performance process—self-observation—includes *metacognitive monitoring*, or self-monitoring, which involves comparing one's performance against criteria to evaluate its quality (Panadero & Alonso-

Tapia, 2014), and *self-recording* which can preserve and structure information and provide evidence of progress (Zimmerman, 2000).

In the third phase which is called self-reflection, *self-judgment* is the first process with two sub-processes: *self-evaluation* which serves to compare self-monitored information to criteria and goals (Zimmerman, 2000), and *causal attributions* which refer to learners' explanations about their failure or success (Panadero & Alonso-Tapia, 2014). The second process of self-reflection phase is called *self-reaction* and includes two sub-processes: *self-satisfaction/affect* which refers to students' satisfaction and dissatisfaction when they judge themselves and involves affect concerning their performance (Zimmerman, 2000), and *adaptive/defensive inferences* which are, in fact, decisions about whether students are willing to keep the same strategies or use new ones to gain better outcomes (i.e., adaptive inferences), or to avoid the task in order not to experience new defeats (i.e., defensive inferences). The whole process of self-reflection can set the stage for the start of the forethought phase again (Zimmerman, 2000) (see Table 1).

Table 1

The Latest Version of Zimmerman's (2000) SRL model (Zimmerman & Moylan, 2009)

Forethought phase	processes	*Task analysis*	*Self-motivation beliefs*
	sub-processes	Goal setting	Self-efficacy
		Strategic planning	Outcome expectations
			Task interest/value
			Goal orientation
Performance phase	processes	*Self-control*	*Self-observation*
	Sub-processes	Task strategies	Meta-cognitive monitoring
		Help-seeking	
		Self-instruction	Self-recording
		Imagery	
		Time management	
		Environmental structuring	
		Interest incentives & self-consequences	
Self-reflection phase	processes	*Self-judgment*	*Self-reaction*
	Sub-processes	Self-evaluation	Self-satisfaction/ affect
		Causal attributions	
			Adaptive/defensive

There are two reasons why it is assumed that training EFL learners in SRL in accordance with the latest version of Zimmerman's (2000) SRL model can enhance learners' EFL literal and critical reading comprehension. First, Zimmerman (2002) believes that his SRL model keeps learners active and aware of the learning task. Specifically, readers are helped by having a goal for the reading task, and self-reflection strategies are a main aspect of metacognition in reading comprehension. Second, in addition to Wolters (2010) who believes that self-regulation is closely linked to critical thinking and critical reading, Facione and Facione (1996) regard self-monitoring as one of the major cognitive skills of critical thinkers.

The few studies so far conducted on self-regulation of EFL reading either have not focused on the distinction between critical and literal reading comprehension (e.g., Finkbeiner, Knierim, Smasal, & Ludwig, 2012; Maftoon & Tasnimi, 2014) or have investigated the effect of various instructional programs such as a digital program (e.g., Chen, Wang, & Chen, 2014), a metacognitive approach (e.g., Mbato, 2013), and an extensive reading program (e.g., Pratontep & Chinwonno, 2008) on self-regulation of EFL reading. Furthermore, the available research on the impact of self-regulated strategies on EFL critical reading is limited to Aregu's (2013) correlational study and Ammar's (2009) adopting some elements of three self-regulation models different from sub-processes of Zimmerman's (2000) SRL model and not as inclusive. Thus, this study examined the impacts of the latest version of Zimmerman's SRL model on EFL literal and critical reading comprehension of a cohort of Iranian English learners. Moreover, the participants of the previous research were not selected from different proficiency levels which could possibly influence the generalizability of the claims about the impact of training in self-regulation. Accordingly, these research questions were formulated:

1. Does self-regulation treatment based on the latest version of Zimmerman's SRL model (2000) have any significant effect on the EFL learners' literal and critical reading comprehension ability?
2. Does the proficiency level of the participants (intermediate vs. advanced) mediate between the impact of this SRL model on the EFL learners' literal and critical reading comprehension ability?

Method

Participants

Four intact groups of female Iranian learners of English who were taught by one of the researchers in a reading class in a language school participated in this study. The participants had been placed in intermediate and advanced levels at the beginning of their program. Nevertheless, a sample Preliminary English Test (PET) (Hashemi & Thomas, 1996) was administered to the intermediate classes and a sample Cambridge English: Advanced (CAE) (Cambridge ESOL, 2003) to the advanced ones to ensure about their levels. Within each proficiency level, one group received self-regulation training in EFL reading comprehension based on the latest version of Zimmerman's (2000) SRL model, and one was regarded as the control group. Although all participants in the four classes were instructed and given pre-tests and post-tests, only the scores of 30 randomly selected participants in each class who were regarded as intermediate and advanced according to PET and CAE results were included in data analysis (N = 120). This was done to ensure that ANCOVA could be carried on even if the assumption of equal variances was violated (Rheinheimer & Penfield, 2001). The age of participants ranged between 18 and 30 ($M = 22.30$, $SD = 6.10$).

A point worthy of note is that there are two opposite views concerning the idea of transfer of reading strategies from L1 to L2. One is that strategies are dealt with differently in different languages (McLeod & McLaughlin, 1986), and the other is that L1 reading strategies transfer to the L2 context (Cummins, 1980). However, in the present study, it was assumed that transfer did not occur for two reasons. First, utilizing ANCOVA neutralized the participants' possible initial differences in reading comprehension ability. Second, as Anderson (1991) maintains, successful L2 reading comprehension does not rely only on strategy knowledge but on the knowledge of how to use strategies efficiently.

Instructional Materials

In the intermediate groups, the reading materials were selected from *Mosaic 1 Reading* (Silver edition) (Wegman & Knezevic, 2007a), and the reading selections for the advanced groups were chosen from *Mosaic 2*

Reading (Silver edition) (Wegman & Knezevic, 2007b). The teacher worked on the reading materials in expository mode for two reasons. First, the critical L2 reading approach can be used with a wide variety of genres (Varaprasad, 1997), and Huijie (2007) devised a critical reading test for EFL learners which includes exposition text types. Second, Kobayashi (2007) examined the critical reading in expository reading in L1 Japanese, stressing the importance of ability to read expository texts critically. It is also important to note that in all classes the students only worked on the chosen reading selections and their comprehension questions, and they were not required to do reading exercises, activities or tasks either preceded or followed by the reading texts.

Instruments

A sample PET (Hashemi & Thomas, 1996) was administered to the intermediate classes, and a sample CAE (Cambridge ESOL, 2003) to the advanced ones in order to double-check their levels. Furthermore, four CLAST reading sub-tests which include both critical and literal reading comprehension parts (Huijie, 2010) were the measures of this study. Two parallel reading sub-tests administered as pre- and post-tests to intermediate groups were chosen from Postman (2009), and two other parallel reading sub-tests given as pre- and post-tests to advanced groups were selected from Goldfarb and Johnson (1992). In general, the reliability estimated through KR-20 was reported to be between .71 and .79 for CLAST reading sub-test.

The difficulty level of PET and CAE are 64.7 and 58.4, respectively based on Flesch Readability Ease (FRE) (Taylor & Weir, 2012). Like in PET, the FRE scores obtained for pre-test, post-test, and a reading selection of the intermediate groups were 64.8, 65.2, and 63.9, respectively, all indicating standard/average text to read. Similarly, like CAE, the FRE scores obtained for the pre-test, post-test, and a reading selection of the advanced groups were 53.6, 54.9, and 55.2 respectively, all indicating a fairly difficult text to read.

Moreover, as parallel tests measure "the same construct and have similar means and variances." (Fulcher & Davidson, 2007, p. 105), to make sure the CLAST reading sub-tests were parallel, they were piloted with a group of 20 students at both intermediate and advanced levels in the same institute. It was proved that pre-test ($M = 31.6$, $V = 4.24$) and post-test ($M = 28.3$, $V = 5.5.6$)

of the intermediate groups were parallel. Likewise, pre-test ($M = 31.7$, $V = 8.48$) and post-test ($M = 30.7$, $V = 7.07$) of the advanced groups proved to be parallel.

The CLAST literal comprehension skills include finding main ideas, supporting details, and meanings of words on the basis of context. Its critical comprehension skills include identifying the author's purpose, his/her overall organizational pattern and tone, distinguishing between fact and fiction, identifying bias and valid arguments, recognizing explicit and implicit relationships within a sentence and between sentences, and making inferences and conclusions (Huijie, 2010).

Procedure

Before the treatment which lasted for 15 sessions, two CLAST reading sub-tests which include both critical and literal reading comprehension items (Goldfarb & Johnson, 1992; Postman, 2009), and each of which was designated for one proficiency level were administered to all groups as the pre-test in order to check their EFL literal and critical reading comprehension ability. In order to implement the latest version of Zimmerman's (2000) SRL model in experimental classes, at first three briefing sessions were held to put each phase of the model into practice on sample reading texts and their reading comprehension questions to familiarize the participants of the experimental groups with the treatment procedures. SRL practices in various studies congruent with this model were adapted and implemented in the experimental groups. The teacher tried to encourage the participants to practice SRL processes as they were trying to comprehend the reading selections and answer their reading comprehension questions. It is noteworthy that each phase was practiced in one session (i.e., the whole model was practiced in three sessions), and the teacher also held weekly conferences with students to ensure that they could follow the instruction given to them.

Beginning with the forethought phase, and in order to implement the goal-setting, the teacher used the suggestions by Housand and Reis (2008), made the purpose of reading clear (e.g., finding unfamiliar vocabulary). In strategic planning, she practiced Davis and Gray (2007) and Cleary and Zimmerman's (2004) suggestions, having students to write down their prior

knowledge about the reading and answer this question: *Which strategies should I use during reading?* To actualize self-efficacy, she adapted Cleary and Zimmerman's (2004) questions, urging the students to answer: *How sure am I that I can get 85 on my next reading test and that I can answer 70% of these reading questions?* In practicing outcome expectations, she encouraged the students to ponder on the question adapted from Zimmerman (1998): *Do I believe I will manage the task of reading without help?* In order to execute task interest/value, she encouraged the students to ponder on questions adapted from Cleary and Zimmerman (2004): *How interesting is reading for me? How much do I enjoy reading?* For goal-orientation, she urged the students to contemplate on the questions adapted from Molenaar, van Boxtel, and Sleegers' (2010): *What do I need to do? Do I know what the reading goals are?*

In the performance phase, in order to practice task strategies, the teacher followed guidelines in Hoffman and Spatariu (2008, as cited in Housand & Reis, 2008), providing bookmarkers for writing unfamiliar vocabulary, explicitly teaching reading strategy through modeling, and urging students to use these strategies. In order to implement self-instruction, she followed Schunk (1989), prompting the students to verbalize each step of reading strategies as they applied them. Imagery was executed through her using Panadero and Alonso-Tapia's (2014) suggestion, teaching concept-mapping to the students, and encouraging them to create concept maps of reading selections. In order to work on time management, following Wolters, Pintrich, and Karabenick (2005), the teacher encouraged the students to use their reading time well in the class, also wanted them to stick to a reading schedule, make sure they keep up with the weekly reading tasks, and attend class regularly. She tried to train learners in environmental structuring by using Zimmerman & Martinez-Pons' (1986) suggestions, wanting the participants to isolate themselves from anything that might distract them, for example, by turning off the radio/TV at home and their cell phones in the class. Likewise, in accordance with Wolters et al.'s (2005) ideas, the teacher carried out help-seeking through urging them to seek help from her or capable students if they had a problem. In order to help participants practice interest incentives and self-consequences, she encouraged students to set a goal and to promise

themselves a reward if they reached that goal based on the guidelines in Wolters et al. (2005). In metacognitive monitoring, the teacher instructed students to use metacognitive strategies to monitor and repair their understanding during reading through pondering on these questions adapted from Cheng (2011): *Can I summarize the main idea of the text, list the five important learning points in this reading selection, write a short comment on reading, and discuss the topic raised in this reading selection? Are the important learning points I list consistent with those proposed by my classmates and teacher?* In self-recoding, she exhibited self-regulated behavior of the teachers in Cleary and Zimmerman (2004), and Housand and Reis (2008), encouraging students to keep track of what and how long they read and to record minutes and pages read.

In the first sub-process of self-reflection phase—self-evaluation—the teacher followed Davis and Gray (2007) and encouraged students to collaborate with a partner to discuss prior and new knowledge as well as their understandings of reading texts and assignments. Executing causal attributions, she adopted Zimmerman's (1998) ideas, urging students to attribute their poor results in previous reading tasks not to their ability limitations rather to wrong strategy and insufficient practice. In self-reaction, she carried out self-satisfaction/affect following Cleary and Zimmerman's (2004) advice and having students think: *How satisfied am I with my performance on my last reading test/task?* In adaptive/defensive inferences, as suggested by Cleary and Zimmerman (2004), she had students shift their goals or choose a more effective strategy to have a better performance through reflecting on: *What do I need to do to improve my performance on my next reading task?*

Therefore, every session the experimental groups practiced self-regulatory techniques on a reading text. Nevertheless, the control groups were involved in comprehending the same reading selections specific to their levels based on the routine method, that is, they were told to read the text word for word for meaning, use no specific reading strategy or process and then answer its comprehension questions. After the treatment, a parallel CLAST reading sub-test designated for each proficiency level was given to the participants to

find out about any possible improvement in the participants' EFL literal and critical reading comprehension ability in English.

Results

In order to answer the research questions, the data gathered from CLAST critical reading sub-tests were analyzed through the parametric two-way ANCOVA as its assumptions had been met. The descriptive results of the self-regulation pre- and post-tests of CLAST critical reading sub-tests are illustrated in Table 2.

Table 2

Descriptive Statistics of CLAST Critical Reading Data

	Groups	Proficiency	Mean	Std. Deviation	N
Pre-test	Experimental	Advanced	18.30	2.12	30
		Intermediate	15.90	3.53	30
	Control	Advanced	16.36	2.82	30
		Intermediate	17.86	3.43	30
Post-test	Experimental	Advanced	25.93	5.38	30
		Intermediate	23.40	5.51	30
	Control	Advanced	19.10	5.57	30
		Intermediate	19.83	5.71	30

The reliability estimates of the CLAST critical reading pre- and post-tests as calculated by KR-21 were .71 and .75 respectively. Table 3 shows the results of the summary of the two-way ANCOVA and between-subject effects for the EFL critical reading comprehension.

Table 3

Two-way ANCOVA for CLAST Critical Reading

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Precritical	3213.809	1	3213.809	1037.805	.000	.900
Group	815.913	1	815.913	263.475	.000	.696
Proficiency	7.269	1	7.269	2.347	.128	.020
Group* Proficiency	.508	1	.508	.164	.686	.001
Error	356.125	115	3.097			
Total	62918.000	120				

a. R Squared = .921 (Adjusted R Squared = .918)

As Table 3 depicts, after adjusting for pre-test scores, the results of the two-way ANCOVA on the CLAST critical reading sub-tests data yielded significant differences between the performance of the participants in the experimental and control conditions in the post-test, with the experimental groups outperforming control ones in CLAST critical reading sub-tests, F (1, 115) = 263.475, $p < .05$; $\eta^2 = .69$. However, no moderating effect was observed for the proficiency level of the participants, F (1, 115) = .164, $p > .05$; $\eta^2 = .001$.

As for the literal reading comprehension, since two assumptions of two-way ANCOVA—reliability of the covariate and normality of pre- and post-tests—were not met, the two-way ANCOVA was run together with bootstrapping the results. As displayed in Table 4, the experimental condition ($M = 8.32$, $SE = .086$, bootstrapped 95% CI [8.09, 8.54]) had a higher mean than the control condition ($M = 7.11$, $SE = .086$, bootstrapped 95% CI [6.86, 7.40]) on the post-test of literal reading comprehension.

Table 4

Descriptive Statistics; Post-test of Literal Reading Comprehension by Group by Pre-test

	Mean	Std. Error	95% Confidence Interval		Bootstrap for Mean[mr]			
			Lower Bound	Upper Bound	Bias	Std. Error	95% Confidence Interval	
Group							Lower	Upper
Experimental	8.323[a]	.086	8.152	8.493	.006	.116	8.097	8.546
Control	7.111[a]	.086	6.940	7.281	.004	.137	6.865	7.408

a. Covariates appearing in the model are evaluated at the following values: Preliteral = 5.8917. mr. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

As depicted in Table 5, the intermediate participants ($M = 7.75$, $SE = .085$, bootstrapped 95 % CI [7.51, 8.02]) had a slightly higher mean than the advanced ones ($M = 7.68$, $SE = .085$, bootstrapped 95 % CI [7.43, 7.94]) on the post-test of literal reading comprehension.

Table 5

Descriptive Statistics; Post-test of Literal Reading Comprehension by Proficiency by Pre-test

	Mean	Std. Error	95% Confidence Interval		Bootstrap for Mean[mr]			
			Lower Bound	Upper Bound	Bias	Std. Error	95% Confidence Interval	
Proficiency							Lower	Upper
Advanced	7.683[a]	.085	7.516	7.851	.004	.127	7.431	7.947
Intermediate	7.750[a]	.085	7.582	7.918	.006	.128	7.517	8.025

a. Covariates appearing in the model are evaluated at the following values: Preliteral = 5.8917. mr. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

As displayed in Table 6, the intermediate participants in experimental condition ($M = 8.41$, $SE = .121$, bootstrapped 95% CI [8.13, 8.75]) had a higher mean than the advanced one ($M = 88.22$, $SE = .121$, bootstrapped 95% CI [7.96, 8.49]), while the advanced participants in control condition ($M = 7.14$, $SE = .120$, bootstrapped 95 % CI [6.84, 7.48]) had a higher mean than the intermediate participants ($M = 7.08$, $SE = .121$, bootstrapped 95 % CI [6.79, 7.39]); although the mean differences were marginal.

Table 6

Descriptive Statistics; Post-test of Literal Reading Comprehension by Groups by Proficiency by Pre-test

Group	Proficiency	Mean	Std. Error	95% Confidence Interval		Bootstrap for Mean[mr]			
				Lower Bound	Upper Bound	Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Experimental	Advanced	8.226[a]	.121	7.987	8.465	.005	.137	7.963	8.499
	Intermediate	8.419[a]	.121	8.180	8.658	.006	.159	8.133	8.758
Control	Advanced	7.140[a]	.120	6.903	7.378	.004	.159	6.842	7.480
	Intermediate	7.081[a]	.121	6.841	7.321	.005	.156	6.792	7.399

a. Covariates appearing in the model are evaluated at the following values: Preliteral = 5.8917. mr. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Based on the results displayed in Table 7, F (1, 115) = 96.187, p = .000, η^2 = .455, it can be claimed that the self-regulation training had a significant effect on the EFL learners' literal reading comprehension ability, and the proficiency level did not moderate the effect of self-regulation training on the learners' EFL literal reading, F (1, 115) = 1.115, p = .293, η^2 = .010.

Table 7

Two-way ANCOVA for CLAST Literal Reading

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Preliteral	133.089	1	133.089	309.961	.00	.729
Group	41.300	1	41.300	96.187	.000	.455
Proficiency	.134	1	.134	.312	.578	.003
Group * Proficiency	.479	1	.479	1.115	.293	.010
Error	49.378	115	.429			
Total	7342.000	120				

Discussion

The results indicated that EFL critical and literal reading comprehension ability of experimental groups who received training in self-regulatory reading processes on the basis of the latest version of Zimmerman's (2000) SRL model improved significantly in comparison with that of control groups. This is in line with the theoretical suggestions regarding the significant role of self-regulation in reading. According to Davis and Gray (2007), readers should use self-regulated strategies to be able to use their ability and knowledge optimally to make meaning of texts, and Schunk and Zimmerman (2007) contend that self-regulation is the key variable in reading achievement and has a great influence on it. In addition, the findings not only have provided new experimental support for the latest version of Zimmerman's (2000) theoretical SRL model but also have confirmed that this model is applicable to EFL reading comprehension.

The results obtained in this study are also important as they appear to confirm empirically Zimmerman's (2002) contentions. He maintains that through self-regulation readers know how and when to use strategies during reading to make meaning, that learners are helped in reading comprehension if there is a goal or reason for the reading task, that SRL model keeps readers active and aware of their reading process, and that educators can teach

learners how to use metacognitive processes explicitly. The results, likewise, indicate the tecahability of self-regulation and are congruent with the theoretical postulations of Paris and Paris (2001), who support instruction in the use of self-regulated learning strategies, and Moos and Ringdal's (2012), who believe in teachers' ability to develop self-regulation in students.

The obtained results can also extend the finding that teaching self-regulatory reading techniques and strategies could significantly improve learners' L1 reading comprehension (e.g., James, 2012; Souvignier & Mokhlesgerami, 2006; Nash-Ditzel, 2010) in EFL reading. However, these studies were not as comprehensive as the present research. James (2012) taught students some reading comprehension strategies as well as goal-setting and self-evaluation as the self-regulatory processes, Nash-Ditzel (2010) taught self-regulation of L1 reading merely through metacognitive reading strategies, and Souvignier and Mokhlesgerami (2006) compared the effectiveness of teaching reading strategies and self-regulation of reading separately and combined. Additionally, the findings of this study chime with those obtained by those researchers who reported that training learners in self-regulation of reading could lead to enhanced EFL reading comprehension ability. Of course, these studies either have overlooked the distinction between critical and literal reading comprehension (e.g., Finkbeiner et al., 2012; Maftoon & Tasnimi, 2014) or have not implemented an entire model, for example, they examined the impact of different instructional programs such as digital program (e.g., Chen et al., 2014), a metacognitive approach (e.g., Mbato, 2013), and extensive reading (e.g., Pratontep & Chinwonno, 2008) on self-regulation of EFL reading.

Considering the significance of critical reading in English as a second or foreign (Wallace, 2003), this study showed that a viable option for development of EFL critical reading ability is to train learners in self-regulation of reading. The results also echo the theoretical contention that there is interplay between critical reading and self-regulation which is referred to by many (e.g., Kuiper, 2002; Wolters, 2010). In other words, they empirically indicated that SRL with its features including autonomy and engagement (Schunk & Zimmerman, 1997) is a prerequisite for the development of critical reading ability. This is consistent with Ammar's (2009) findings which indicated that integrating self-regulation into reading instruction resulted in significant gains in their EFL critical reading skills. However, it is worth noting that Ammar's (2009) instructional design of EFL

self-regulated reading included some elements of three SRL models different from those in Zimmerman's (2000) SRL model, and he did not implement an entire SRL model. The present study, hence, contributed to the field through the examination of the entire Zimmerman's SRL model.

The finding that their EFL literal reading ability also improved as a result of self-regulation training is interesting. In other words, self-regulation of EFL reading not only contributes to the identification of implications, assumptions, and inferences in the texts while reading critically (Ustunluoglu, 2004), but also improves the learners' ability to find the main idea and its supporting details in EFL literal reading (Philips & Sotiriou, 1992). Hence, it can be argued that Zimmerman's (2000) SRL model can be integrated easily into any ordinary EFL reading comprehension class to train self-regulated readers who can handle both literal and critical reading effectively.

The improved EFL critical reading ability of experimental groups is further justified in the light of Zimemrman's (2002) contention that two aspects of the forethought phase of his SRL model—the reader's goals and interests—play an important part in inferencing which is an important critical reading skill (Ustunluoglu, 2004). The present study also empirically proved Zimmerman and Campillo's (2003) idea that making inferences can be considered as a self-regulatory behavior. Moreover, given that self-awareness is related to critical thinking (Lynch & Dembo, 2004), which Thistlethwaite (1990) equates with critical reading, this study has provided empirical evidence for Zimmerman's (1990) idea that self-regulation make learners self-aware. Overall, considering the fact that critical reading is considered as an active process which needs an activity on the part of the reader (Schwegler, 2004), it can be claimed that self-regulation training in this study could make EFL readers active agents and participants in the reading process metacognitively and behaviorally, as Zimmerman (1989) asserts.

The results of this study have also confirmed empirically Ruohotie's (2002) argument that when learners are involved in self-regulated reading, they are engaged in deeper problem-solving practices necessary for developing critical reading, for example, analyzing situations, setting goals, considering alternatives and choices, making decisions, and assessing outcomes. This is, in fact, aligned with Finkbeiner's (2005) finding that SRL is vital to deep processing while reading. Therefore, the results can be considered as an empirical approval of the recommendations of Woolley (2011) regarding the significance of self-regulation in skilled reading

comprehension, the need for specific training in self-regulation in order to develop deep engagement in reading, and developing higher levels of comprehension when using self-regulating strategies. They also correspond with Souvignier and Mokhlesgerami's (2006) postulations that SRL is an effective framework to maximize impacts on reading comprehension.

The results also showed that participants' proficiency level did not moderate the effect of self-regulation training on learners' EFL literal and critical reading. This endorses the idea that self-regulation training in EFL reading can benefit both intermediate and advanced proficiency learners and is congruent with Souvignier and Mokhlesgerami's (2006) contention that reading instruction directed at self-regulatory strategies can be useful to all students, irrespective of their reading skills.

Conclusions

This study made an important contribution to the field in that it was the first to examine the impact of practicing SRL reading strategies drawn from the latest version of Zimmerman's (2000) SRL model on EFL literal and critical reading comprehension and found a positive effect of self-regulation training on both. One practical implication of the findings for EFL theoreticians and practitioners is that self-regulated strategies and processes of EFL reading comprehension can be introduced to them. For example, its findings can assist syllabus designers and material developers to incorporate such self-regulated reading strategies in EFL reading books so that EFL reading instructors can easily use and introduce them to learners in order to promote their literal and critical reading.

The detailed procedure section which presents a viable model for EFL teachers to develop self-regulation in EFL readers constitutes another important contribution of this study to the field. The finding indicating no moderating role for proficiency level in self-regulation training can also be an impetus for the material developers and instructors to include self-regulation strategies in reading books and pedagogical practices at all levels. However, as this study did not investigate the impact of self-regulation instruction on starter and elementary levels, this should be examined in further studies. Likewise, since only female learners participated in the study due to practical reasons, generalizations to male learners should be done cautiously. That is, given the fact that the findings on the role of gender in SRL have not been conclusive (Pintrich & Zusho, 2007), future studies seem warranted to

examine how gender would mediate the impact of self-regulation training on EFL reading. A final limitation was that due to practical restrictions, it was not possible to delve into the reading processes qualitatively through such measures as interviews or think-aloud protocols, so it would be interesting to conduct more research with such measures. By so doing, it would be possible, for instance, to identify the self-regulatory reading processes utilized more frequently by EFL readers.

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